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Transformative Teaching

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Transformative Teaching: Focus on Pedagogy 2022



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INTRODUCTION

Transformative Teaching: Focus on Pedagogy 2022

The past two years of online teaching have forced educators to reconfigure their pedagogical practice. As a result, we have been obliged to look at academia in practical ways. However, the higher education sector has never only been about delivering classes. It has also never existed in isolation. It teaches students the skills of their disciplines – from art, design, the social sciences and the humanities, to health studies, environmental sciences, technology and engineering. It prepares them for a world of work and practice. In the process, it seeks to ‘transform’ them – opening them to the myriad possibilities education brings.

Considered in this context there are multiple issues we need to consider. How we support entry level students. How we develop disciplinary knowledge and expertise. How we avoid thinking in silos. How we foster critical self-reflection and lifelong learning. In a technologically fluid world, how do we keep up with changing uses of media? How do educators stay ‘connected’ with modes of student learning? How do we respond to cultural expectations?

All this is connected to the ‘world outside’. The professionals we ‘produce’ will engage with communities. In the best of cases, they will transform them. They will also work with industry – whether in the built environment, the creative industries, the cultural sector, or the worlds of health and education. How then, do we prepare our students for the social and workplace issues and players they will meet? In short, how are we contributing to the transformative experience of education?

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EXPLORING TEACHING BELIEFS IN STUDENTS' LEARNING: A CASE STUDY IN URBAN JUNIOR HIGH SCHOOLS

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INTRODUCTION

As Barr and Tagg suggested, there are two competing paradigms in education. The instructional paradigm which is more traditional and teacher-centric and the learning paradigm which is more student-centered.¹ They also noted that the learning paradigm has also been around for a while, but education reformers tend to integrate it into an existing paradigm rather than shifting from one paradigm to another. Furthermore, according to Doyle, teachers have been so conditioned in traditional teacher-centered approaches that they find it difficult to adjust in a learner-centered.² As learner-centric education is now mandated by virtue of RA 10533, it is worth exploring in which paradigm the beliefs held by Filipino teachers reside since literature says that teachers' beliefs directly influence their classroom practices.³ Furthermore, Barr and Tagg also noted that previous attempts to shift to the learning paradigm have failed due to reformers merely trying to integrate the new paradigm to the old paradigm.⁴ In light of the fairly new learner-centered delivery of learning mandate, the following questions were explored:

- A) What do junior high school teachers believe about teaching and learning?
- B) What educational experiences shape their beliefs about teaching and learning?
- C) To what extent do their teaching and learning beliefs affect their classroom practice?

Methodology

Research Perspective

As a member of a progressive university, I have been exposed to many source materials that attest to the effectiveness of student-centered learning. Through various trainings, seminars, and retooling engagements I have also come to the realization that there is value in subjectivity and knowledge construction. Due to this, I have concluded that my research paradigm should also be aligned with these values. The role I undertook throughout the entire research process is that of a co-constructor knowledge. This role informs my methods of data gathering up to its interpretation. The interactions I had with the participants are influenced and aligned by the values of the interpretivist paradigm.

Research Approach and Design

This paper utilized a qualitative research design to explore teachers' beliefs on how students learn. Qualitative researchers work from the "bottom-up, using the participants' views to build broader themes and generate a theory interconnecting themes".⁵ Also, due to the exploratory nature of this

paper, a qualitative approach is more appropriate.⁶ Furthermore, qualitative research is described as a way to understand how people cope in real-world scenarios.⁷ Moreover, as the nature of this paper is exploratory, a qualitative case studies approach has allowed me to go beyond the ‘what’ questions and also answer the ‘how’ and the ‘why’ while also taking into consideration the context in which the said exploration occurred.⁸ Creswell defines “case study research as a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information (e.g. observations, interviews, audio-visual material, and documents and reports), and reports a case description and case-based themes”.⁹

As there are two cases that are the subject of this paper, I also utilized a multi-case studies approach as suggested by Stake. Each of the cases was considered as an individual case because it is believed that understanding each case individually will lead to better theorizing.¹⁰ These cases were analyzed through a cross-case analysis method. Cross-case analysis is used to examine themes, similarities, and differences across cases and when the unit of analysis is a case.¹¹ The cross-case analysis is presented in Figure 1.

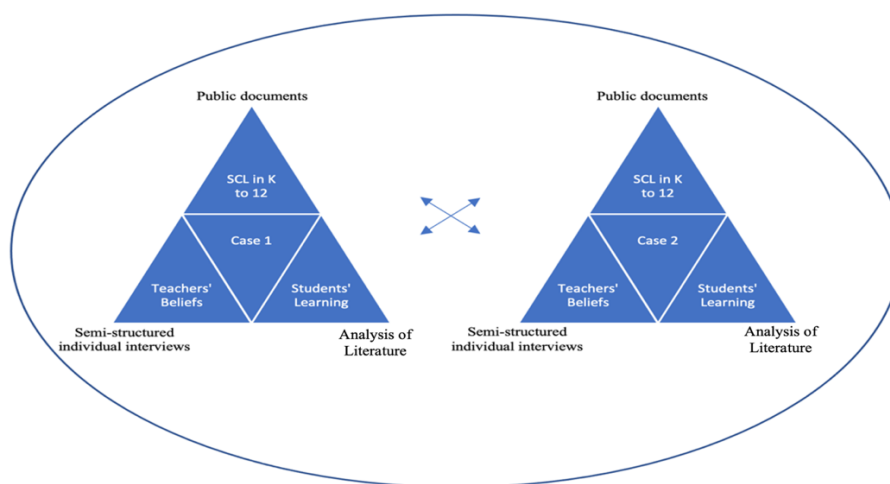


Figure 1. Cross-case analysis triangulation.

App's Foundation for Effective Teaching

An analytical framework guides the inquirer to systematically frame the analysis of the data collected in a study.¹² Due to the naturalistic and emerging nature of this study, an analytical framework is appropriate and necessary to guide the inquiry of teaching beliefs of junior high school teachers. Apps' Foundation for Effective Teaching¹³ (AFET) is utilized as this study's analytical framework. AFET is an analytical tool used to examine teachers' beliefs about learners. This tool was used to analyze the gathered data in relation to the participants' beliefs in teaching and learning. Sisco¹⁴ and Conti¹⁵ cite this framework's importance so that educators can have a working teaching philosophy that they can adhere to when it comes to their beliefs and practices. This framework provides for layers of analysis which is represented in Figure 2.

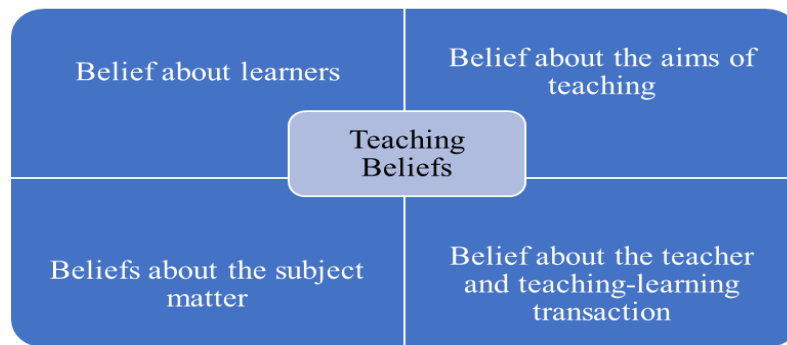


Figure 2. App's Foundation for Effective Teaching.

Each layer of analysis answers a question that can provide an understanding of a teacher's working philosophy.

- Teachers' beliefs about learners – what do teachers believe about how their students learn?
- Teachers' beliefs about aims – what do teachers believe about the purpose of education? What are they trying to accomplish by being mentors to their students?
- Teachers' beliefs about the subject matter – what do teachers believe about the body of knowledge they teach?
- Teachers' beliefs about teachers and the teaching and learning transaction – what metaphors do teachers use in describing their roles as teachers?

Case Profiles

Case 1 (School A) has a younger history compared to Case 2 (School B). The cases were identified as opposite urban junior high schools and their contrasts are presented in Table 1.

	School A	School B
Year Established	2010	1978
No. of Buildings	1	3
Student Population	1244	5110
Teaching Staff Population	46	187

Table 1. Contrasts between School A and School B.

Codes to Strategy Model

A code, in qualitative research, is usually a word or a short phrase that symbolically assigns a summative, salient, essence capturing and/or evocative attribute for a portion of language-based or visual data.¹⁶ Since the proposed thesis is, by nature, naturalistic and emerging and is going to use a multi-case studies approach, I plan to adapt the coding strategy presented by Saldaña in their book *The Coding Manual for Qualitative Researchers*.¹⁷ This strategy is presented in Figure 3 below.

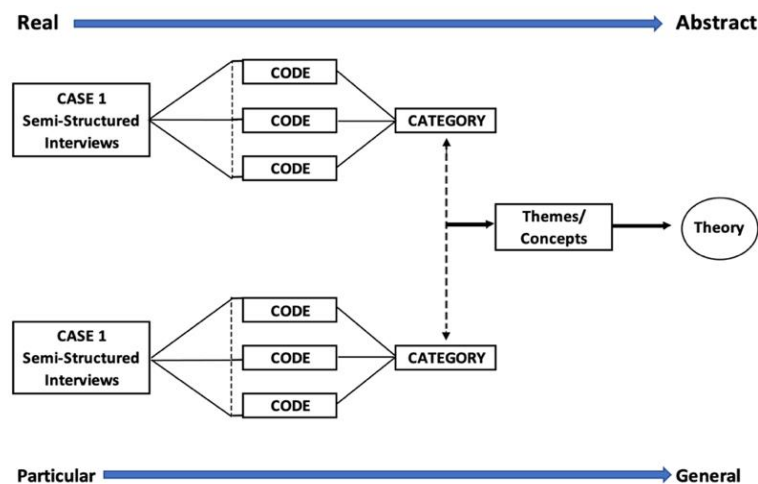


Figure 3. Codes to Strategy Model.

Participants' Profile

A total of 8 participants were interviewed from each case before data saturation was reached.¹⁸ Each of the participant was engaged in a semi-structured interview following the four layers of analysis in the analytical framework.¹⁹ A profile of the participants is presented in Table 2.

School A	School B
Filipino Teacher with 11 years of teaching (Teacher A1)	Filipino Teacher with 6 years of teaching (Teacher B1)
Filipino Teacher with 8 years of teaching (Teacher A2)	Araling Panlipunan Teacher with 28 years of teaching (Teacher B2)
Filipino teacher with 18 years of teaching (Teacher A3)	MAPEH Teacher with 19 years of teaching (Teacher B3)
English Teacher with 18 years of teaching (Teacher A4)	Araling Panlipunan Teacher with 23 years of teaching (Teacher B4)
Science Teacher with 3 years of teaching (Teacher A5)	English Teacher with 18 years of teaching (Teacher B5)
MAPEH Teacher with 13 years of teaching (Teacher A6)	Math Teacher with 10 years of teaching (Teacher B6)
Math Teacher with 9 years of teaching (Teacher A7)	Science Teacher with 10 years of teaching (Teacher B7)
Araling Panlipunan teacher with 11 years of teaching (Teacher A8)	MAPEH Teacher with 6 years of teaching (Teacher B8)

Table 2. Participants' profile.

FINDINGS

The first research question was focused on what type of beliefs teachers from urban junior high schools held regarding how their students learned. Through the data gathered in response to this question, it was found that teachers from School A held more beliefs that are not aligned with what is

being prescribed in the K to 12 curriculum. This was determined by the number of subcategories that were more teacher-centered and pragmatic compared to the data gathered from School B.

For the experiences that influenced the formation of their beliefs, the data gathered from each of the cases led to the identical categories and theme. The categories are personal teaching and experiences and formal education experiences, these consist of the teachers' experiences from practicing their profession and their experiences from when they were students respectively. These experiences are what I termed as practical knowledge following Elbaz's²⁰ definition that states that practical knowledge describes teachers' practices, and principles that guide their behavior.

For how these beliefs influence their practices, it was found that there are different types of relationship that could exist between teachers' beliefs and practices and these relationships are present in each of the cases. The first is that beliefs directly influence practice. This is made evident when teachers who hold beliefs that are constructivist in nature tend to assign activities that are student-centered. Consequently, teachers who hold beliefs that are teacher-centric in nature tend to assign activities that are more teacher-centric. The second type of relationship is when teachers' practices inform their beliefs. This is made evident by the beliefs that were formed due to their personal work experiences. Teachers were able to form new beliefs as they engage with their profession and their students. The third type of relationship is the incongruence of beliefs and practices. This is made evident in some instances where the teachers have to forego what they believe in in place of departmental orders such as the adjustment to ease the assessment activities in light of the MELCs.

This concludes the narrative of the data gathered from both of the cases. This was presented parallel to each other following the cross-case analysis method. The following paragraph is concise version of the data gathered in relation to the research questions.

Through the cross-case analysis for both cases, I found that teachers from both School A and School B still hold beliefs that are different from what is stipulated under RA10533. These beliefs are teacher-centric and pragmatic. These beliefs are held at the same time as the belief that is congruent with what is prescribed under RA10533 which is the constructivist. I also found that the beliefs held by the participants from Case 1 or School A are more teacher-centered than their counterparts from School B. The formation of these beliefs was influenced by the participants' work-related experiences and formal education experiences. It is important to understand how these beliefs were formed because according to Fives & Gill,²¹ this is the only way to make sure whether these beliefs can be changed or not. I also found that there are different relationships between the beliefs held by the participants and what they do in the classroom. Teachers who held student-centered beliefs tend to assign student-centered activities while teachers who held teacher-centric beliefs tend to assign teacher-centric activities. However, there are also instance wherein the relationship of between the beliefs held by teachers and what they do in the classroom are incongruent such as when their beliefs are foregone in place of departmental orders such as the adjustment of assessment activities to accommodate MELCs. This finding could challenge the assumption that beliefs are generally precursors of behavior.²² This also leads me to my suggestion that the ideal relationship between beliefs and action should be reciprocal and interdependent. As I have found that there are still beliefs that are not congruent with what is mandated by RA10533, the most effective way of changing these beliefs is to show the teachers how their beliefs affect their practices.²³ This could be a way to ensure the success of an educational system coming from the observation by Barr and Tagg that most attempts to shift to the new paradigm have failed due to the integration of existing belief systems to the new one.²⁴

Tension between Espoused Theory versus Practiced Theory

This subchapter is dedicated to the finding that teachers from both of the cases could hold beliefs that are not congruent to what they practice in their respective classrooms. Consequently, there are teacher participants who use methods and assign activities that are not aligned with what is mandated by RA 10533. This is made evident by the themes that have emerged when I analyzed the data from the interview transcripts. Also, this subchapter includes a discussion about what could be done with this particular finding.

As previously stated, the teacher participants from both cases could hold beliefs that do not necessarily influence their respective classroom practices. This was also the case for what Lee²⁵ and Liu²⁶ found in their respective studies that showed that the espoused beliefs held by teachers are absent in their enacted practices and that teachers could sometimes enact practices that they do not support. This particular finding could be in danger of negating the importance of beliefs, and by extension this thesis but I argue that due to this finding, it is all the more important to study beliefs and their relationship to teacher practice. The incongruence between beliefs and teacher practices does not necessarily cancel the importance of beliefs because it might be through the incongruence that we may be able to understand the potential internal and external factors that influence this connection/disconnection.²⁷

In Liu's study, it was found that even though 79% of 1340 elementary teachers held learner-centered beliefs, most of them used lecturing as a method instead of more constructivist approaches.²⁸ Though the scope of this thesis is not as large as Liu's, existence of held beliefs and practices that are incongruent with what is advertised in the curriculum could pose potential problems in teaching and learning. To reiterate what Barr and Tagg said, there have been numerous attempts to shift from the instructional to the learning paradigm, but previous attempts failed because they were done in a piecemeal manner rather than in an as-a-whole approach.²⁹ Due to this observation, it can be implied that part of the success of an educational system could be attributed to the alignment of teachers' espoused beliefs and their enacted practices.

Though this paper does not seek to 'correct' or even evaluate the appropriateness of the beliefs of the teacher participants, its findings could still be potentially beneficial. After all, it is only through exploring these beliefs and how they were formed can we understand whether they are changeable or not.³⁰ Also, studies show that the beliefs held by teachers can be changed once they are aware that their beliefs could influence what they do in the classroom.³¹

There are also implications from this finding to our very notion of what beliefs are. From identifying internal and external factors that could potentially influence the disconnect between teachers' beliefs and teacher practices, we could also challenge the notion that beliefs are generally inherent. From this thesis' review of related literature, I have found that there are other possible relationships between teachers' beliefs and teacher practices apart from teacher beliefs directly influencing teachers' classroom practices. One of which is the reciprocal and complex relationship between beliefs and practices, an alternative to the views that beliefs influence practice and practice informs beliefs and that there is a disconnect between teachers' beliefs and their practices. In the complex reciprocal relationship, it is posited that beliefs and practice influence each other instead of just one influencing the other.

If we are to accept this alternate view, then we can already rule out that beliefs are inherent because they are influenced by the teachers' various engagements to their profession, to their students, and to other experiences that could potentially change their previously held beliefs. Therefore, we can conclude that beliefs are not inherent and they are formed through our experiences with our surroundings.

Furthermore, this alternate view also has implications to curriculum developers and policy makers. Keeping in mind the warning of Barr and Tagg about previous failed attempts to shift to a more learner centered paradigm,³² it is now incumbent upon the curriculum developers and policy makers to make sure that teachers should hold beliefs that are aligned to what is espoused in the curriculum. And this alternate view could be useful for curriculum developers and policy makers because the challenge should be posed to them to design or prepare environments in which the teachers could have meaningful experiences where they shall be allowed to examine their beliefs and practices. This might just be a more effective way to introduce them and encourage them to shift into a new paradigm instead of just imposing new rules that they should follow with no further explanation apart from not doing so will result in a poor evaluation or unemployment. After all, studies have shown that some teaching beliefs could only be changed if the teachers are aware as to how their beliefs affect their practices.³³

CONCLUSION

In light of the Philippines getting very low scores on international standardized tests, it is very easy for outsiders to immediately pin the blame on the quality of teachers that handle Filipino students. For instance, in a news article published online by CNN Philippines, the president of the Reading Association of the Philippines (RAP) is quoted stating that the reason Filipino learners score low in international standardized tests in reading comprehension is that they do not receive proper instruction in literacy and numeracy.³⁴ However, it seems unfair to blame the teachers without understanding the different factors that could hinder them from reaching their full potential as educators. It is my hope that this thesis could help provide a richer understanding of different factors that may cause our education system to not work at its intended highest level.

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- ³³ Chant, "The Impact of Personal Theorizing"; Chant, Developing Involved and Active Citizens"; Nespor, "The Role of Beliefs".
- ³⁴ Marga Manlapig, "What's to blame for the low reading comprehension of the Filipino youth," CNN Philippines, April 21, 2020, <https://www.cnnphilippines.com/life/culture/2020/4/21/reading-comprehension-problem.html>.

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THE THICK TIMELINE AS METHOD FOR DESIGN-ORIENTED EDUCATION

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INTRODUCTION

In a time where students in design-oriented education are confronted with images and (digital) information in a fragmented and unstructured way, the need for tools to process this data in a coherent and structured way is prominent. Furthermore, to understand architecture as a cultural signifier, it is necessary to have sufficient knowledge of architectural history and a broad cultural background; especially in the light of writing a master thesis, a critical essay within specific seminars or an analysis of projects within the personal reference frame, being all part of the curricula of design-oriented courses today. However, we also notice that students sometimes struggle to collect and interpret events, edifices, and movements, ... in a coherent fashion. Therefore, this article aims to provide a method for students to identify, capture and compare information through the lens of architecture as a social construct in the format of the “thick timeline”. Additionally, this method can also be used as a teaching tool for architectural history and theory courses.

This article is part of an ongoing Ph.D. research (funded by the Flanders Research foundation FWO – Fellowship fundamental research 1116421N) entitled ‘*Belgian MoMo heritage on the radar, re-reading modernist housing estates: an inquiry into the value of threatened heritage sites and the possibilities of adaptive reuse as a method for re-evaluation*’.

We start from a conceptual basis by referring to Vittoria Di Palma’s *Radical Thought* where she positions history as integral to the creative process, similar to, for example, sketching. Secondly, we apply this to the “thick timeline” as a useful method in design education. The latest version of the timeline can be accessed at <https://indd.adobe.com/view/2afec35b-5286-49ed-9b4d-f02b947d0dac>.¹ We strongly recommend consulting the link during the reading of this paper, so you can experience, try out and practice the described aspects yourself.

HISTORY AS A MIRROR TO THE PRESENT

Vittoria Di Palma is Associate Professor of Architectural History and Theory in the School of Architecture at USC. In her essay entitled ‘Radical Thought’² (2017) she points out four ways in which history can be seen as something operational, going hand in hand with architecture. (1) First, “history can be posited as a collection of objects” positioned as representative examples, as the establishment of a *canon*. Further in the text she refers to the form and content of the history courses in design-oriented education, solely presented as “wide-ranging, chronologically organized, stylistically-categorized overview of buildings and projects that the discipline has deemed worthy of attention”, treating history as dead form. This understanding of architectural history found its ground

in the modernist conflicted relationship with it, as being “cast as an impediment to innovation since its study reduced students to mere copyists”. An attitude that can be still detected with some students today, seeking to rediscover common knowledge. (2) Second, buildings – as they depend on societal conditions – can be used to understand civilization and cultural meanings. In the post-war period, the previously described conventional object-based understanding was challenged as architecture was positioned and approached in a broader sense: as part of a society, landscape, network, infrastructure etc. (3) Third, history with respect to architecture can be seen as theory-generator consisting of “abstract principles, or axioms”. This leads us to question the role of history in architectural design. Di Palma points out the elusive character between history and design; in which the trigger of history in a design-related context is dismissed the moment its contemporary relevance is not clear or specific. Yet, some inspiring exceptions are touched upon as well: Manfredo Tafuri’s *Teorie e storia dell’architettura*,³ Robert Venturi’s *Complexity and Contradiction*,⁴ and Aldo Rossi’s *L’architettura della città*,⁵ as those works are all demonstrating that robust architectural theory can grow from historical architecture in a formal, contextual, typological, political, or memorable sense. (4) Fourth, she proposes history as *a practice* as a way of architectural thinking. Di Palma speaks up to “historians, educators, and individuals involved in the design professions to position history as integral to the creative process”: don’t see history as a dead form but as a vehicle to think critically and push ideas further. The study of architectural history is like holding up a mirror to the present, unraveling endurances and variations, and therefore stimulating thinking that exceeds culture or periods. The confrontation between familiar elements (established certainties) and unfamiliar (remote) things encourages us to think outside of the box. In the last part of the text, she explains the word ‘radical’, deriving from the Latin *radix*- or “root”, referring to the origin (essence) of something, and effecting change from the political angle as “radical reform”. In this light, the potential of history lies in its power to be an “engine of change”.⁶ The previously described four aspects are the guiding principles for the development of the “thick timeline”, covered in the next chapter.

The thick timeline as response to Palma’s thoughts

The proposed timeline is a (teaching) method that attempts to present a multifaceted perspective on architectural history across space and time – meaning nations, regions, and time periods. It is a tool to develop an interactive combination of various (chosen) topics expressed in the form of different (overlapping) timelines. It allows showing simultaneously a variety of historical situations as conditions for architectural manifestations. We aimed to overcome the limits of the object-based representation of history, stimulating the discovery of connections between projects, books, ideas, historical events etc. Next to the capacity of a timeline to generate an objective consistency and help a student to clearly classify information (orientation in time and space) in a graphic manner; the implemented interactivity (showing and hiding the specific timelines), stimulates the exploration of new networks between topics. We therefore also integrate political, cultural, and social happenings that appeared simultaneously. We took it even one step further by the integration of different journal articles (written by the first author), which have been depicted via colors and lines that literally link the different elements on the timeline(s) that are addressed in a specific paper. The aim is to envisage a practical execution of Di Palma’s ideas about history as an incentive for ideas for change, critical questioning, and design interventions.

Set up and usage

The timeline is set up in the Adobe application InDesign⁷ via the tools of interactivity and animation. By means, you can export the document as an interactive PDF (only readable via the Adobe program) or publish it online via a unique URL (accessible online for everyone who has the link). This enlarges

the scope of the methodology and lowers the threshold. A tutorial was made to support students/teachers in the development of a personal timeline in which the implementation of interactivity is explained step by step. The following interactive elements were developed: going to the next/previous page, setting up a link to a document or annex via an icon, and showing or hiding different objects or texts via ‘buttons and forms’– as illustrated in Figure 1.

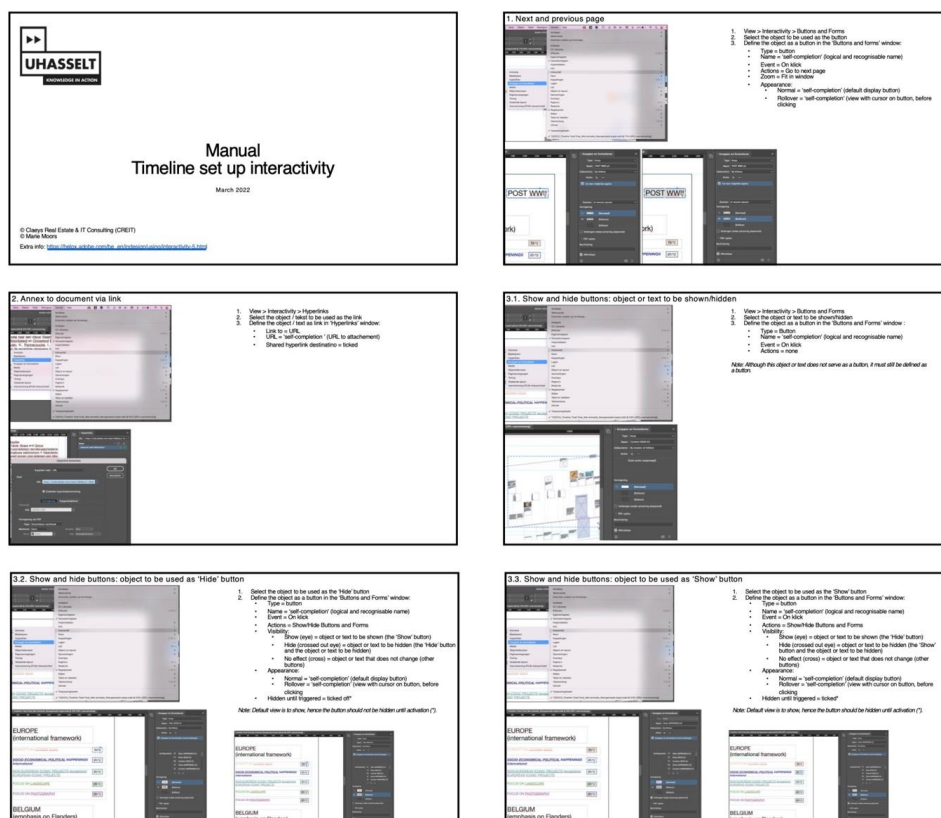


Figure 1. Extraction from the tutorial for students/teachers on how to develop and implement the interactivity within their personal timeline.

Navigation within the online document is developed as intuitively as possible. Resulting in the use of toggles that you can click to show or hide the different topics/themes/articles/papers. Furthermore, you can occasionally download extra information or an annexed PDF document via a download icon – as clarified in Figure 2. Figure 3 shows that zooming in and out or going back to the full screen happens via the toolbar at the bottom of the page. To navigate to the previous or next page, you click on the grey arrows right and left of the screen (or on the buttons shown in Figure 2).

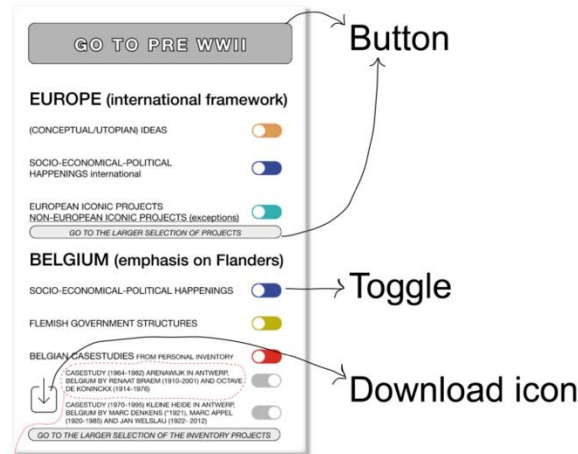


Figure 2. Navigation tools: toggle, button and download icon.

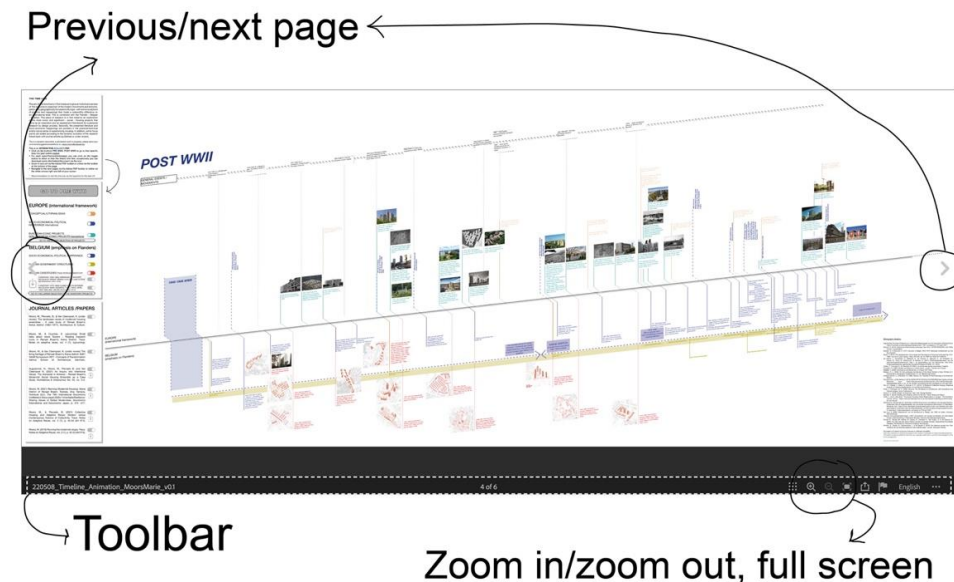


Figure 3. Navigation tools of the toolbar: zooming in and zooming out or full screen mode, and grey arrows to navigate to the previous or next page.

THE TIMELINE AS PART OF THE PHD RESEARCH

The timeline is part of the PhD research of the first author, addressing the challenges of modernist post-war housing ensembles in Flanders (BE), with a focus on the estates that were constructed according to the *Congrès Internationaux d'Architecture Moderne* (CIAM) principles. Today, they are put in a negative daylight – technical as well as social – which often leads to demolition. But the options for adaptive reuse remain often unexplored. The project looks at the potential of these sites by embracing the initial optimist ambitions and meaning of those modernist ensembles. The main objective is to develop a theoretical framework that defines a set of strategies for intervention, reacting upon the critical shift in connotation. Based on a process of research by design,⁸ precise architectural interventions for two specific case studies are developed. The overall aim is to clearly evaluate and conceptualize different scenarios and regeneration strategies so that they are applicable to a broader (inter)national range of projects dealing with similar issues.

Case study: the thick timeline about collective (modernist) housing

The timeline was partly initiated in the first phase of the Ph.D. project as a personal tool to collect and process information, such as literature and case studies. Eventually, the potential of the timeline as a research document and methodology (for other (Ph.D.) students/teachers) emerged over time. We present this timeline today as a work in progress. The first two pages of the online document are introductory texts to contextualize the role and aim of the timeline within the Ph.D. topic, of which the following part is a summary.

This research defines World War II as the specific cause for the transformation of the meaning of modernity in the light of post-war social housing. The following question is posed: “What is the meaning of modernity during post-war social housing?” We chose a chronological way of sharing the collected information. But we also agree with Theodor Adorno (1903-1969) that modernity is not a chronologic category but something qualitative (*Minima Moralia*, 1951).⁹ “Modern” is a way of thinking, not only a specific period of time in history. It is about looking for the new, so to speak developing a certain attitude in relation to the past – the traditional. This means that not one moment is an absolute value *an sich*, the value is relative and depends on the past and future aim. Modernity is like a generic cultural condition. We focus on the traces of modernist architecture on the one hand and the meaning and impact of modernity on our attitude towards architecture and society on the other hand. Modernity can also be analyzed from an etymological point of view, Hilde Heynen (2000) in *Architecture and Modernity: A Critique* (2020) identified three basic levels of meaning according to the word “modern”: the *current* (implying as the opposite of what is past), the *new* (opposed to the old, a period distinguished from previous periods) and the *transient* (the connotation of what is momentary). “Modernity is what gives the present the specific quality that makes it different from the past and points the way toward the future. (...) a break with tradition (...) typifying everything that rejects the inheritance of the past”.¹⁰

Charles Baudelaire’s (1821-1867) definition stresses this third meaning of “the momentary”: “Modernity is the transitory, the fugitive, the contingent, the half of art of which the other half is the eternal and the immutable”.¹¹ While the term ‘modernity’ stands for the typical features of modern times, the attitude toward life linked to a continuum of evolution and transformation, ‘modernism’ is the cultural tendency and artistic movement that is oriented toward the future and desires for progress. This last one can be seen as the subjective aspect of modernity, consisting of personal experiences and theoretical reflections. However, the socio-economic development represents the objective aspect of modernity. Jürgen Habermas (born in 1929) distinguishes two elements of modernity: the irreversible emergence of autonomy in the fields of science, arts, and morality – developed according to their “inner logic” – versus the “incomplete project” – the potential use for the rational organization of everyday social life. Furthermore, Jean Baudrillard (1929-2007) provokes “In the end, modernity purely and simply coincides with fashion, which at the same time means the end of modernity.”¹² This also emphasizes the complex transition between modernism and postmodernism. According to Heynen postmodernism can be seen as a new and complicated layer of the modern, by stressing its contradictory qualities.¹³

The aim of this timeline about collective housing is in the first instance to give a historical overview of “the response to response” of the modern movements and storyline, particularly geographically focussed on Europe – with some exceptions of projects and happenings that made a noteworthy difference on an international level. The following topics can be distilled from the menu bar on the left: Europe (international framework) with subtopics (conceptual/utopian) ideas, socio-economical-political happenings, European iconic projects, and non-European iconic projects (exceptions). This is combined with the Flemish/Belgian situation. For which the following topics are listed in the menu

bar: Belgium (emphasis on Flanders) with subtopics socio-economical-political happenings, Flemish Government structures, and Belgian case studies from personal inventory: case study Arenawijk (1964-1982) in Antwerp, Belgium by Renaat Braem (1910-2001) and Octave De Koninckx (1914-1976) and case study Kleine Heide (1970-1995) in Antwerp, Belgium by Marc Denkens (born in 1921), Marc Appel (1920-1985) and Jan Welslau (1922-2012) – as previously illustrated in Figure 2. This piece of research is in first instance an exploration of the most iconic and significant – social – housing projects that serve as an inspiration and an assessment framework for the personal research by design process. Secondly, the presented literature and socio-economic happenings are seen as pioneers in the practical/technical and/or social sense of experiencing housing. Lastly, “focus points” – represented by journal articles (published or under review) – are added according to the dynamic evolution of the research; named in the menu bar as journal articles/papers followed by the reference list. Figure 4 shows the default view of the Pre and Post WWII period timelines, whereas Figure 5 depicts the representation of specific papers toggled on; for which the different colors and lines, exemplify the interconnectedness between the topics on the various timelines.¹⁴ Moreover, a PDF download with all the (open-source) images that are used on the timeline is integrated in the link under the bibliography – also illustrated in Figure 5. Furthermore, some extra referrals have been implemented within the menu bar of the timeline such as a direct download link to a PDF document of the personal inventory¹⁵ consisting of the modernist housing ensembles that are the focus of the PhD research project. Besides, a reference to the larger selection of (Belgian) projects – which did not make it to the basic timelines (Figure 4) – but certainly contain interesting and representative aspects is created (Figure 5). Figure 6 shows the outline of the previous described selection.

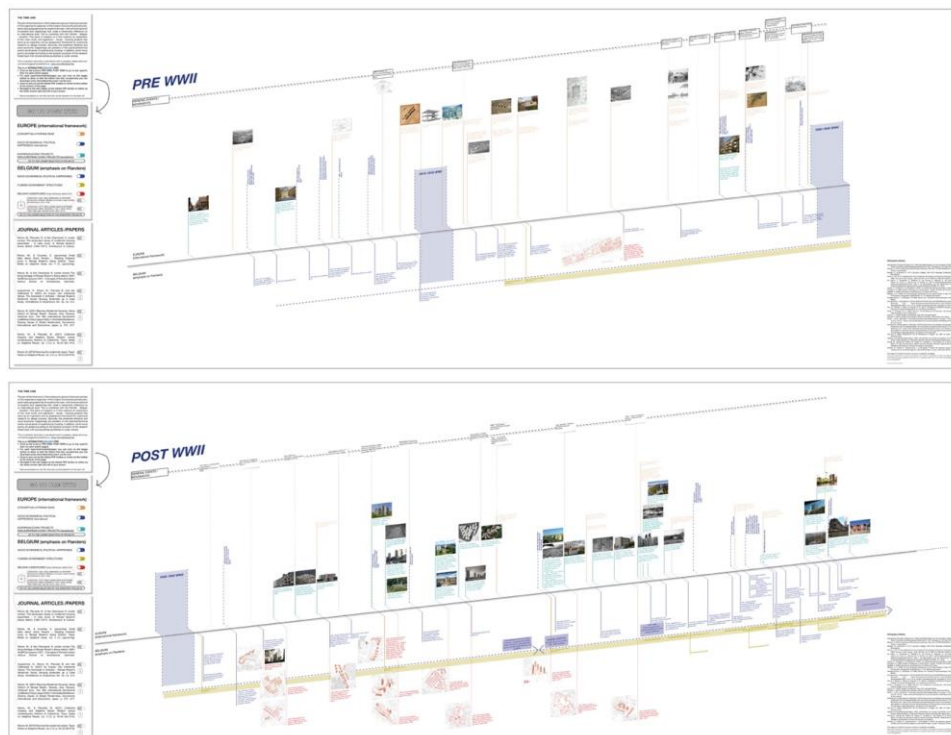


Figure 4. Default view of the timeline Pre WWII and Post WWII.

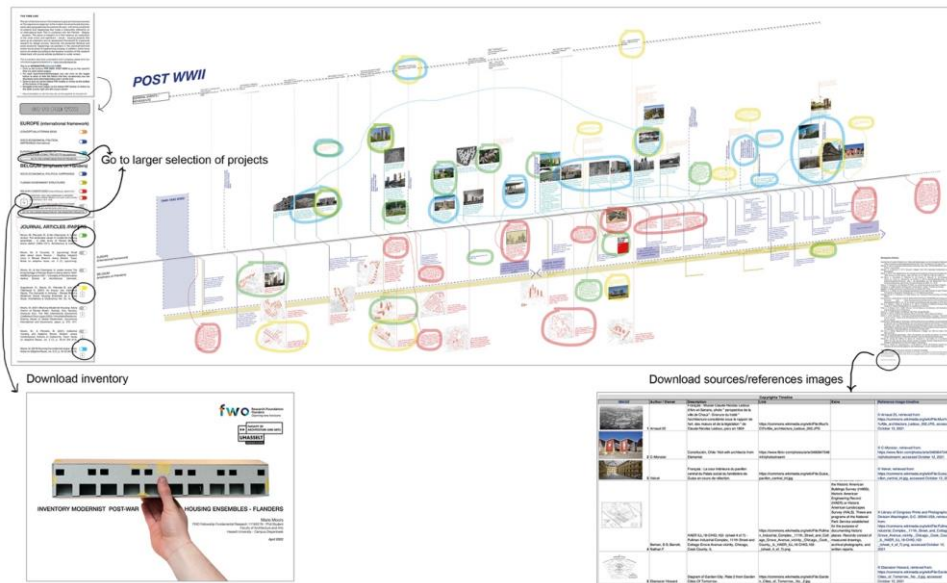


Figure 5. Three journal articles are toggled on, showing the addressed topics and interconnectedness between those topics indicated on the timeline; furthermore, the download button for the inventory and image sources is indicated as well, such as the buttons to go to the larger selection of projects.

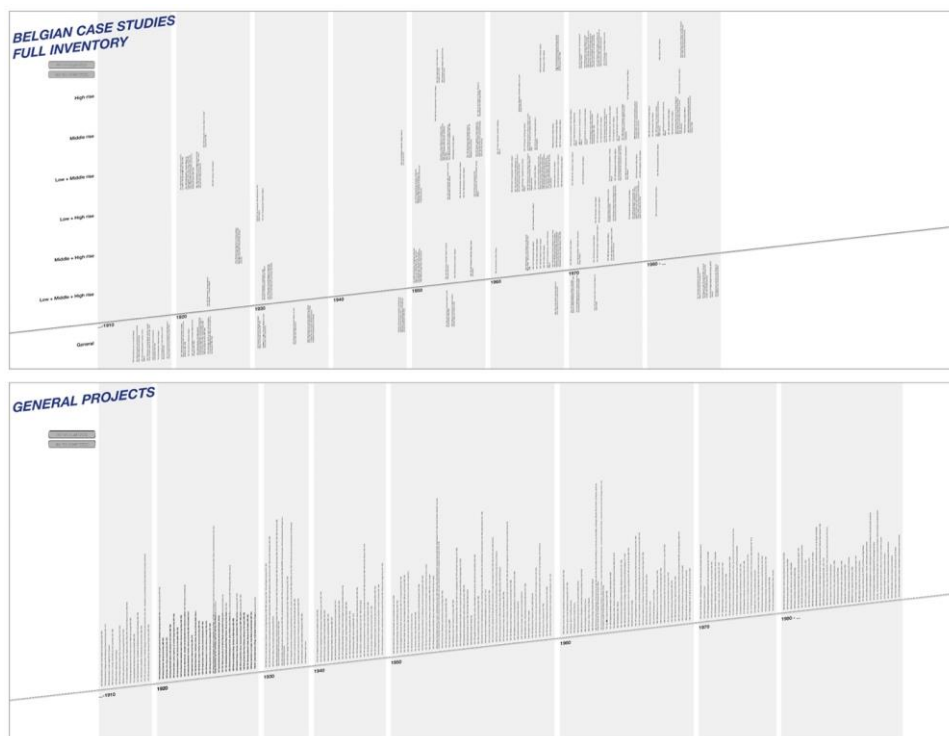


Figure 6. Timelines of the larger selection, respectively, of the Belgian case studies of the full inventory and the larger selection of the International/European general (housing) projects

CONCLUSION

We believe that the thick timeline offers many possibilities in an educational context. Teachers, as well in theoretical as practical education, can set up a timeline themselves covering the course content and use it as an interactive tool to make a specific topic more understandable, as it can be easily placed in and compared with a broader context. Resulting in a more interdisciplinary approach

towards courses in architectural education. The “response to response” aspects in architectural history – architects are always building further or reacting upon something/someone – can be covered in an easy and efficient way. The development of online and digital tools has gained importance, especially after the COVID-19 pandemic and the related lockdown. Today, *blended learning* has become a fixture within the curriculum of our universities.

Secondly, and here lies the focus of our paper, the timeline-method can help (Ph.D.) students in (the first steps of) mastering a specific subject. To come back to Di Palma’s call for turning history in a “critical engine of change” and way of “architectural thinking”, we believe that this method supports students in a structured way to capture and graphically communicate facts within various domains. But challenges them at the same time to discover interconnections between different topics or themes. In that regard, the method is based on the “framework for categorizing educational goals” entitled the Bloom’s Taxonomy¹⁶ of which a first version was developed by Benjamin Bloom in collaboration with Max Englehart, Edward Furst, Walter Hill, and David Krathwohl published in 1956. The revised version of 2001 “A Taxonomy for Teaching, Learning, and Assessment” covers six objectives which we link to the set-up of the thick timeline: *remember* (recalling facts/basic components: putting facts on the timeline(s)), *understand* (explain ideas/concepts: identify, explain the facts in a larger interdisciplinary context), *apply* (use information in a new situation: a combination of different domains in the form of different simultaneous timelines), *analyze* (draw connections among ideas: relate, question and connect the different facts/domains on the timelines), *evaluate* (justify a stand: value and critique the links/connections), and *create* (produce new work: design, assemble and develop new knowledge, re-reading of facts).

With this method, we want to concretize and exemplify the method of “research by design”, especially in architectural education; bridging practice and theory. Besides the larger accessibility and coverage of student’s work (being able to create online URLs), the thick timeline upgrades – the often as boring categorized – literature review work that is expected from students; moreover, it enforces and encourages the interdisciplinary perspective on domains, as infinite combinations of topics are possible. Another asset is the possibility for constant adjustments within the InDesign document itself, which keeps the “thinking engine” running.

Lastly, this methodology could be applied to any design or art field which attempts to explore its particular artifacts from a social history standpoint.

NOTES

¹ This is a dynamic document, a permanent work in progress, please send your comments/suggestions/additions to: marie.moors@uhasselt.be

² "Radical Thought," e-flux Architecture 2017, accessed October 10, 2022, <https://www.e-flux.com/architecture/history-theory/159243/radical-thought/>.

³ Manfredo Tafuri, *Teorie e storia dell'architettura* (Roma e Bari: Laterza, 1968).

⁴ Robert Venturi, *Complexity and Contradiction in Architecture* (New York: Museum of Modern Art, 1966).

⁵ Aldo Rossi, *L'architettura della città* (Venezia: Marsilio Editori, 1966).

⁶ Palma, "Radical Thought."

⁷ The students at Hasselt University can purchase an Adobe account with strong reduction, meaning that they have access to the different (graphical) applications such as InDesign, Photoshop, Illustrator and Acrobat.

⁸ The process of Research by Design is strongly inspired by the following sources: *The Reflective Practitioner* by Donald A. Schön (2008), *Designerly Ways of Knowing* by Nigel Cross (2006), *The Debate on Research in the Arts* by Henk Borgdorff (2006), and *Research in Art and Design* by Christopher Frayling (1993).

⁹ Theodor Adorno and E.F.N. Jephcott, *Minima Moralia: Reflections from Damaged Life* (Verso Books, 2005).

¹⁰ Hilde Heynen, *Architecture and Modernity: A Critique* (MIT Press, 2000), 9.

¹¹ Heynen, *Architecture and Modernity: A Critique*, 12.

¹² Heynen, *Architecture and Modernity: A Critique*, 12.

¹³ Heynen, *Architecture and Modernity: A Critique*.

¹⁴ Sidenote: we emphasize the importance and necessity to figure out which timeline has to be shown when toggling on one of the articles or papers. You have to make sure that the information that is part of the article/paper is shown on the timeline(s), when toggling on that specific article/paper. We set up an excel document with the different hide versus show settings for each possible scenario.

¹⁵ The following publication gives a good overview of the inventory process and method: Marie Moors, "Post-war social housing in Flanders: inventorying & research by design" (paper presented at the AI.2020 - Building the Contemporary Dwelling - New Themes and Methods of the Project, 2020).

¹⁶ "What is Bloom's Taxonomy?," 2022, accessed October 13, 2022, <https://bloomstaxonomy.net/>.

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CREATING A TRANSFORMATIVE EXPERIENCE IN THE FIRST YEAR OF STUDY FOR BEGINNING DESIGN STUDIO ONLINE

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INTRODUCTION

First-year design students at many design colleges learn fundamental design skills from first-year classes. They learn fundamental knowledge applicable to a wide variety of design disciplines, such as industrial design, interior architecture, architecture, landscape architecture, and regional community planning. Ideally, the fundamental skills acquired during the beginning design courses are transformative for their future academic and career endeavors.

During the COVID-19 pandemic in the 2020 and 2021 academic years, instructors were required to teach students in an online environment. A high level of digital proficiency is not just a tool anymore, it is an essential pedagogical tool.¹ Despite the challenges of teaching students in studio courses online, it was imperative that educators be prepared to instruct students toward a transformative learning experience in this new format of teaching. It was especially challenging for studio courses as the in-person interaction has been critical for reviewing the students' works. Additionally, not having the studio learning environment was challenging for students to learn essential design skills transformative to their following academic years.

There are identified benefits of online learning in a design studio. For instance, a previous study stated that online education offers active, flexible, and accessible learning opportunities.² It is an excellent solution for students who are unable to attend classes on campus for a variety of reasons. It can increase student enrollment and reduce potential learning delays.³ However, there are not many studies documenting the beginning design studio's online teaching experience, especially during the Covid-19 period.

The purpose of this study is to understand the experienced faculty members' online teaching experiences for the beginning design studios, with an aim to improve transformative learning in the future (see Figure 1).

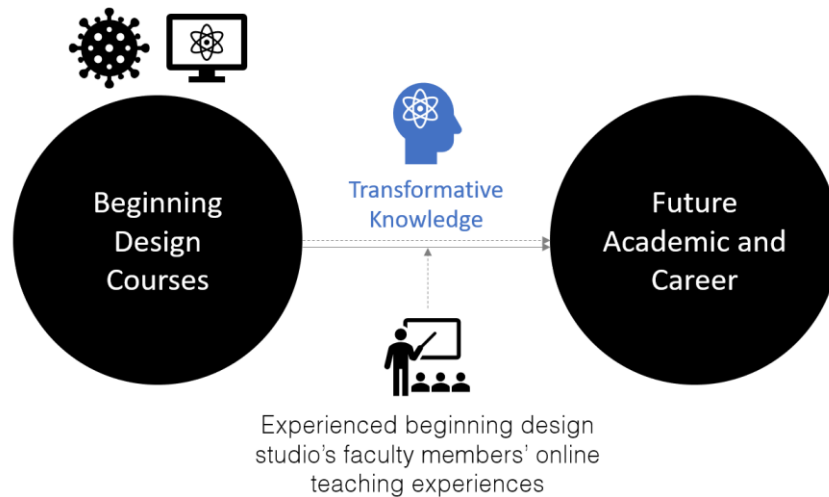


Figure 1. Purpose of the study.

METHODOLOGY

Focus group interviews were conducted in person with four instructors who had taught the beginning design studio (also known as Environmental Design Studies or ENVD) during “lockdown” at the College of Architecture, Planning, and Design (APDesign) at Kansas State University in Manhattan, Kansas, USA. These instructors had taught at least one semester online, if not two semesters. This first-year program serves 200 students in eight to eleven studio sections and support courses, feeding students into Interior Architecture and Industrial Design, Architecture, Landscape Architecture, and Regional and Community Planning disciplines in APDesign.⁴ “ENVD is a long established and well-structured” curriculum.⁵

This study was conducted using the practical focus group method as described by Kruger (2014).⁶ First, the authors arranged a date and time for the focus group that works for all participants. Prior to the interview, the authors developed a list of open-ended questions as a guide for the discussion during the focus group. The developed questions are shown below.

1. What are the fundamental design skills that are transformative to the following years of their discipline-specific study after the first year of beginning design?
2. How do we support beginning design students to develop fundamental design skills for the upcoming years while online during the COVID pandemic? Please discuss based on your online teaching experience during “lockdown” and after.
3. How do we foster the critical self-reflection needed for lifelong learning in an online setting while teaching beginning design students?
4. In a technologically fluid world, how do we keep up with changing media and practices?
5. How do educators stay ‘connected’ and be flexible with evolving student modes of learning and cultural expectations?
6. How do we support the engagement and understanding of our students with the social issues and players they will engage with once they leave? For example, how do engage students in learning and discussion of social issues and “wicked” problems encountered today?
7. In short, how are we contributing to the transformative experience of education?

After all the participants had arrived at a private space for the focus group, the interview began by introducing all the participants and explaining the purpose of the study. Also, the participants were informed the interview would be recorded to capture the discussion for later analysis and the participants’ names would not be shown in the publication or presentation. After receiving verbal

consent from the participants, the authors used the prepared questions to guide the discussion and encourage participation from all. The collected data and the recorded discussion and notes taken during the interview were reviewed to find any patterns or themes that emerge from the data. Thematic analysis was conducted to synthesize the participants' comments from transcription.⁷ Microsoft PowerPoint was used for the thematic analysis.

RESULTS

The key topics discussed from the focus group interview results are as follows: fundamental design skills, integration of technology, flexibility for student learning, and engagement of “wicked” problems.

Fundamental design skills

First, the participants actively discussed what are the fundamental design skills for beginning students necessary to succeed in the following years of their discipline-specific studies. The design skills are categorized into hard skills (design-related skills that can only be acquired through design education) and soft skills (skills related to design that can be learned outside of design school).

- Hard skills mentioned were 1) from concept to design, such as how to translate design intent to something practical and usable for users, 2) diagramming, using diagrams for iterations and communication, and 3) iteration, the ability to diagram and sketch the same ideas repeatedly with slight or big changes.
- Soft skills mentioned were 1) reflection, how to do self-evaluation after each project, reflecting “I could make that better” and 2) critical thinking, and observing that something is not right instead of merely meeting the given requirements (see Figure 2).

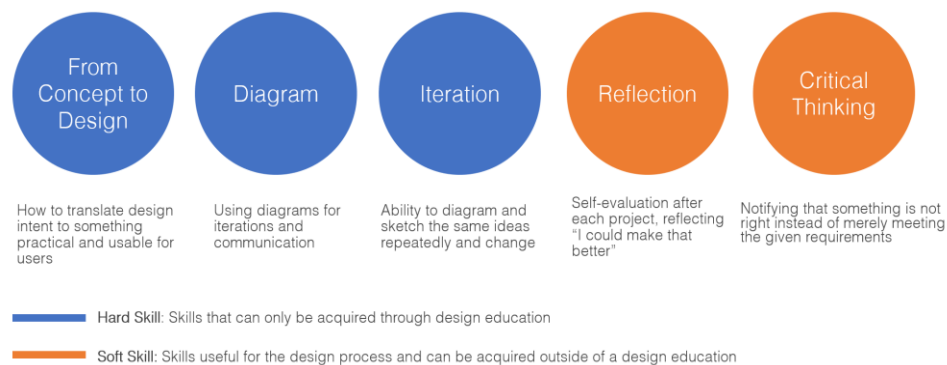


Figure 2. Fundamental design skills.

Integration of technology

After discussing the fundamental design skills, the participants discussed how to integrate cutting-edge technologies and media into beginning design education to teach these fundamental design skills online. Generally, there are two themes under this topic: 1) the difficulties instructors encountered regarding learning technologies and 2) the difficulties encountered regarding technological trends, like TikTok.

Instructors mentioned during the early phase of Covid time in 2020, it was difficult for them to integrate technologies as there was too much to learn, evaluate, and choose a certain technology in a short period of time while teaching simultaneously. Similarly, they also mentioned it is important for

instructors to keep up with the new technologies in addition to other teachings, services, and research loads.

The participants also mentioned that due to TikTok and other social media, students' attention span is around 2 minutes and it was difficult to sustain the students' attention in learning new knowledge online for a long period of time. They mentioned that it will be important to find ways to integrate different ways of increasing the duration of their focus (see Figure 3).

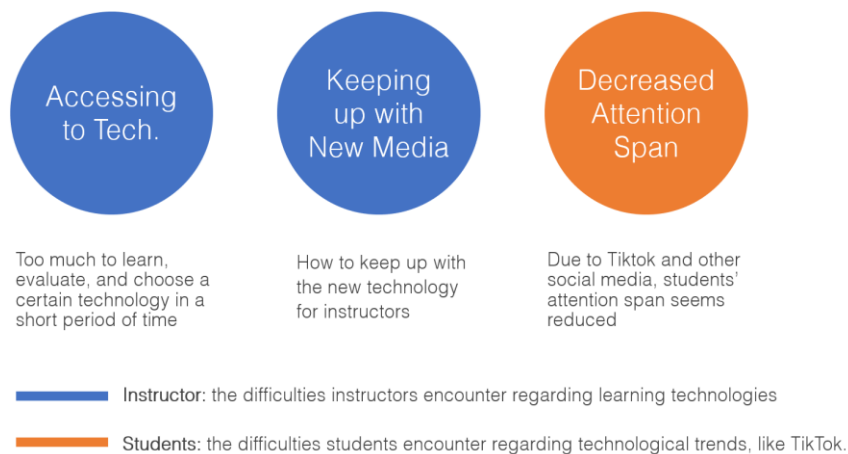


Figure 3. Integration of technology.

Flexibility for Student Learning

The participants talked about how to adapt and be flexible as student learning modes change. One of the participants mentioned that access to iPad, Zoom, and online connectivity enabled them to stay connected to their students more easily outside of class time. Also, participants mentioned it will be important to continue teaching and learning related discourses between instructors (not top-down lectures/seminars) regularly during the semester.

One of the participants mentioned the change in the dynamics between students and instructors while teaching online. The participants felt that there were blurred roles between students and instructors. While instructors needed to be flexible and open to these dynamics, as students not only learn from instructors, but between students too, it is important to understand the student's culture and their generation for better communication and build healthy student-teacher dynamics (see Figure 4).

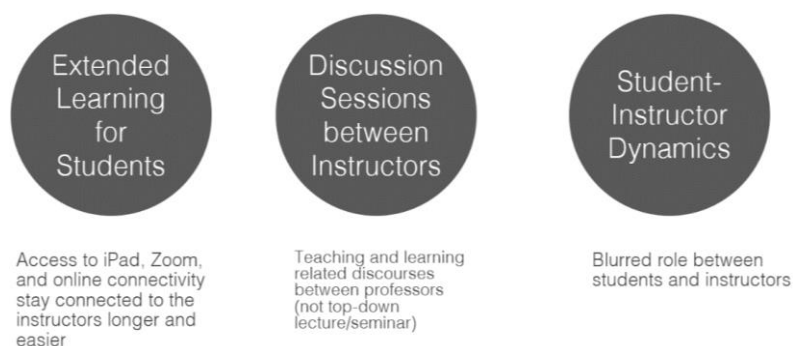


Figure 4. Flexibility for student learning

Engagement for Wicked Problems

The participants discussed how to engage students in learning and discussing social issues and “wicked” problems. One of the participants mentioned that creating a unique and safe learning environment will be the starting point to increase engagement for “wicked” problems. The participant mentioned instructors need to set a creative environment that is respectful and not personal, so students can bounce ideas off and can express themselves. Also, letting the students encounter real-world problems helped them to think about “wicked” problems, in addition to focusing on honing their fundamental design skills.

One of the participants mentioned that students are not good at discussing “hot” topics or subjects that have the potential to be conflicts. Being activists and encouraging them to discuss “wicked” problems will be a great start for students to think about the topics. It was mentioned by the participants that it is important for the student to have the opportunity to understand both sides. Having the students practice arguing both sides of a “wicked” problem and recognizing the other side also may have logical reasons is beneficial to the students in having a healthy discussion about wicked problems, as “wicked” problems are complex and are not easy to solve from only one side.

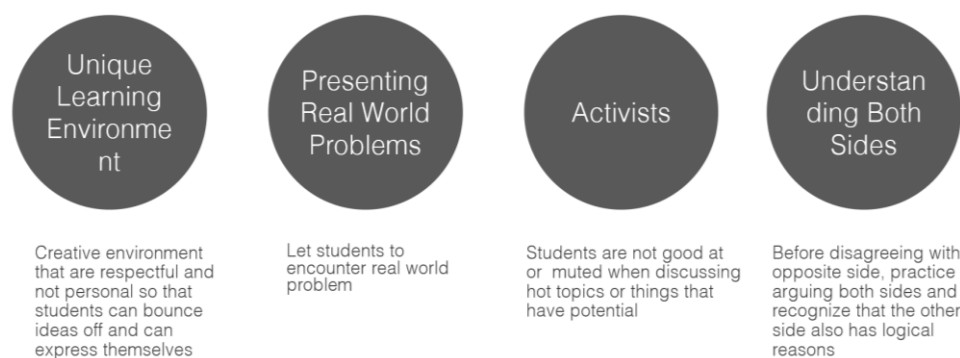


Figure 5. Engagement for Wicked Problems

DISCUSSION

Teaching fundamental design skills online

The authors have previously written their in-depth findings on hard and soft skills via the students’ perceptions while studying online by analyzing Tevals results, a survey conducted to students at the end of the semester to evaluate the course.⁸ A summary of student perceptions of learning hard and soft skills were the following:

1. Hard skills mentioned by students were technical abilities such as rendering with markers, color pencils, and watercolor, using color in their sketchbooks, and graphic skills. Also, students mentioned that understanding design concepts and processes, such as knowing terminology, diagramming ideas, and design refinement, are important hard skills.⁹
2. Key soft skills mentioned by students were communication and time management skill in becoming strong future professionals.¹⁰

By comparing the results from both this study and a previous study, the hard skills identified by both instructors and students are the same lists as essential for beginning design studio education. However, there appears to be a difference in the emphasis placed on certain soft skills between the two groups. Specifically, the instructors in this study identified soft skills related to honing cognitive ability, such as reflection and critical thinking, as key, while the students in the previous study identified practical life skills related to project management and communication as important. This

suggests a potential discrepancy in the perceived priorities of instructors and students when it comes to the development of soft skills in design education.

In terms of teaching the identified fundamental skills online, one of the participants explained the benefits of continuous connectivity outside of studio hours helps students to improve their performance. One of the recent studies also mentioned: “HyFlex model will enrich students’ learning and understanding of the fundamentals of design and ensure that technology solutions deliver significant and sustainable benefits.”¹¹ The participant's comment and the recent study both suggest that the use of online teaching methods, specifically the HyFlex model, for the identified fundamental skills may lead to a deeper understanding of the fundamentals of design. However, it will be important for instructors to find their work-life balance as this model could cause burnout.

Preparing faculty for distance teaching

Most of the participants mentioned it was too much for them to learn, evaluate, and choose a certain technology in a short period of time. A previous study pointed out that the lack of mentorship and training in e-technology operation and repair is viewed as a substantial issue by online faculty members.¹² Hence, understanding and evaluating useful online teaching tools in a studio environment and having a training session, either synchronously or asynchronously is beneficial for instructors to save time finding resources. As a previous study stated, even in a classroom of 1,000 students, an instructor can sense if students are absorbing concepts and adjust the teaching pace accordingly. Also, being in person, students can sense when they are asking too many questions and delaying the course content being delivered.¹³ Finding technologies to achieve similar in-person dynamics will be important for student engagement in distance learning. For instance, archiving the knowledge about the effective online tools and tactics that were beneficial for the online studio environment, such as ice break on the Google Jam board anonymously to increase engagement, needs to be archived for future faculty training. Also, students can be involved in evaluating and testing useful online tools. For instance, instructors can organize this search together with their students, for example by asking them to participate in a trial run of the selected tools.

Increasing Attention Span and Motivation

It is always difficult to keep students motivated and engaged for 3-4 hours in a studio in an online format. In terms of attention span, previous studies mentioned that there was a significant difference in the participants’ motivational levels when grouped according to their readiness toward online learning.¹⁴

The participants also mentioned the benefits of small group critiques in an online studio format. By doing that, students can learn from each other while waiting for instructors to review their design process.

Transforming Online to Offline

Participants have discussed the benefits of online learning, especially for beginning designers who need a flexible design studio model and lots of immediate feedback. With most universities going back to in-person teaching, the tools and techniques used during online classes could be overlooked and not considered applicable to in-person teaching. Recent case studies have found design students prefer blended design studios, which offer a balanced format of both virtual and physical educational elements.¹⁵ It will be important for the beginning design studio instructors to reflect on the lessons learned online and to combine the benefits from online, such as Jam Board icebreakers and the

application of hyper-flexible studio models, into the in-person studio to make the studio environment effective and engaging.

CONCLUSION

This study was conducted to understand faculty members' online teaching experiences for the beginning design studios, with the aim of improving transformative learning in the future. Fundamental design skills, integration of technology, flexibility for student learning, and engagement with “wicked” problems were the key themes that emerged from the focus group interviews.

One of the key findings of this study was the identification of the fundamental design skills that are necessary for beginning students to succeed in their discipline-specific studies. Hard skills such as translating design intent into something practical and usable, using diagrams for iterations and communication, and the ability to iterate design ideas were identified. Soft skills such as reflection and critical thinking were also highlighted. These skills are important to teach students for them to develop a strong foundation in design education.

From the discussion of how to teach the identified hard/soft skills by integrating technologies online, the participants highlighted the difficulties they encountered in keeping up with the latest technologies, evaluating them, and choosing the best ones to use in their teaching. They also identified the challenge of sustaining students' attention in online learning environments, particularly with the prevalence of social media platforms, such as TikTok. Instructors need to be aware of the changing technological landscape and adapt their teaching strategies accordingly to effectively engage students and foster transformative learning.

Flexibility for student learning was another theme that emerged from the focus group interviews. The participants highlighted the importance of staying connected with students outside of class time using technologies such as Zoom and iPads.

Engagement with “wicked” problems was identified as an important aspect of beginning design education. Participants discussed the need to engage students in learning and discussion of social issues and “wicked” problems encountered in today's world. By doing so, students can develop a critical awareness of the social context of their work and be better prepared to address these issues in their future careers.

Creating a flexible learning environment that incorporates wicked problems into design education requires a certain level of adaptability from instructors. Instructors must be willing to embrace new teaching methodologies and be comfortable with uncertainty and ambiguity. This means letting go of the traditional notions of the “expert” teacher, who has all the answers and instead becoming a facilitator of learning. Instructors must be willing to engage in dialogue with their students and ask questions.

The results of this study have important implications for future research in design education. Future studies could examine the effectiveness of different teaching strategies for developing fundamental design skills and investigate the use of emerging technologies in teaching design. Additionally, future research could explore how to effectively engage students in the discussion of social issues and “wicked” problems and examine the impact of such engagement on students' learning outcomes in a flexible learning environment.

In conclusion, this study provides valuable insights into the challenges and opportunities of online teaching in beginning design education. By addressing these challenges, instructors can create more effective learning environments that promote transformative learning and prepare students for the demands of their future careers. While the outcomes of this study do not provide a complete list of

guidelines, it will be important for design educators to continuously discuss and document the solutions to better teach transformative design knowledge effectively and efficiently.

NOTES

- ¹ Margarita Núñez-Canal, M^a de las Mercedes de Obesso, and Carlos Alberto Pérez-Rivero, "New challenges in higher education: A study of the digital competence of educators in Covid times," *Technological Forecasting and Social Change* 174 (2022).
- ² Abeer Alawad, "Evaluating online learning practice in the interior design studio," *International Journal of Art & Design Education* 40, no. 3 (2021): 526.
- ³ Alawad, "Evaluating online learning practice," 526.
- ⁴ Katrina Lewis et al., "Staging Innovation in First Year Design Pedagogy: the K-State Experience," paper presented at the *National Conference on the Beginning Design Student*, Salt Lake City, Utah, March 9-11, 2017.
- ⁵ Lewis et al., "Staging Innovation in First Year Design Pedagogy," 55.
- ⁶ Richard A. Krueger, *Focus groups: A practical guide for applied research* (Thousand Oaks, CA: Sage publications, 2014), 19-162.
- ⁷ Johnny Saldana, *The coding manual for qualitative researchers*, 3rd ed. (Thousand Oaks, CA: Sage publications, 2021), 1-440.
- ⁸ Katrina Lewis and Byungsoo Kim, "First-Year Design Students' Readiness to be in Different Disciplines: An Investigation of the Skill Readiness and Preparedness for the Coming Years of Study," paper presented at the *National Conference on the Beginning Design Student*, Muncie, Indiana, April 1-2, 2022, 256-257.
- ⁹ Lewis and Kim, "First-Year Design Students' Readiness," 256.
- ¹⁰ Lewis, "First-Year Design Students' Readiness," 256-257.
- ¹¹ Duaa Al Maani, Saba Alnusairat, and Amer Al-Jokhadar, "Transforming learning for architecture: online design studio as the new norm for crises adaptation under COVID-19," *Open House International* 46, no. 2 (2021): 348.
- ¹² Vijay Govindarajan and Anup Srivastava, "What the shift to virtual learning could mean for the future of higher ed," *Harvard Business Review*, accessed May 6, 2023, <https://hbr.org/2020/03/what-the-shift-to-virtual-learning-could-mean-for-the-future-of-higher-ed>.
- ¹³ Govindarajan and Srivastava, "What the shift to virtual learning could mean," 3.
- ¹⁴ Manar Nabolsi et al., "Nursing faculty experience with online distance education during COVID-19 crisis: a qualitative study," *Journal of Professional Nursing* 37, no. 6 (2021): 828; Govindarajan and Srivastava, "What virtual learning could mean," 3; Elżbieta Komarżyńska-Świeściak, Britt Adams, and Laura Thomas, "Transition from Physical Design Studio to Emergency Virtual Design Studio. Available Teaching and Learning Methods and Tools—A Case Study," *Buildings* 11, no. 7 (2021): 312.
- ¹⁵ Komarżyńska-Świeściak et al., "Transition from Physical to Virtual Design Studio," 312.

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BETA MODE: AN INTERDISCIPLINARY PEDAGOGICAL MODEL FOR THE TWENTY-FIRST CENTURY

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INTRODUCTION

This paper presents the new hybrid BA (Hons) Art and Design with Creative Technologies course at Birmingham City University (BCU), UK. The course challenges traditional disciplinary silos within Higher Education to create a cutting-edge, polymathic programme that explores the intersection between art and design, with the implementation of new creative digital technologies. Informed by PhD research, and co-created with leading industry partners, educators, researchers and students, the course responds to the rapidly evolving creative industries. This is a Beta Mode course, a constant work in progress, that focuses on rapid learning and experimentation, and its interdisciplinary pedagogical approach aims to enable graduates to think in ways that are more holistic, fluid and radical, to better face the challenges of the twenty-first century.

THE STARTING POINT

The design of the course has been partly informed by the author's PhD thesis, *Beyond Discipline: Positioning Design Practice and Education for the Twenty-first Century*,¹ which examines interdisciplinary practice and pedagogy. This study looks at a perceived disconnection between evolving interdisciplinary practice and the disciplinary structure within Higher Education in the UK. Design is now characterised by 'fluid, evolving patterns of practice that regularly traverse disciplinary boundaries,'² yet 'universities are extremely siloed organisations...this way of organising the university is no longer adequate for a world whose problems do not respect such disciplinary boundaries.'³ The study highlights a significant shift within the fields of art and design, with the dissolving of disciplinary boundaries. Ground-breaking studios are reconfiguring the design landscape, yet undergraduate design education is still dominated by a uni-disciplinary, siloed mindset and structure. This situation poses critical questions for design learning and teaching in higher education and the study concludes that universities must now take risks to address this disconnection.

Initial Report

An initial report concludes that for design to be taught well 'education should look to current practice and alternative educational models to better understand the processes and skills young designers will need to meet the challenges of the twenty-first century.'⁴ Therefore, the first phase of the PhD looks at alternative pedagogical models. What is clear is that the 20th century witnessed an explosion of radical, interdisciplinary pedagogical models, including the Bauhaus⁵ and the New Bauhaus.⁶ These

courses reacted against the industrial model, responding to rapid developments in technology, and shared a quest for a universal design pedagogy. Yet Higher Education courses in the UK tend to follow a uni-disciplinary structure, especially at undergraduate level, and are resistant to interdisciplinarity due to rigid systems and an industrial model of education.

The second phase of the PhD looks to current practice, with an in-depth study of five leading studios that cross art, design and architecture and do not define themselves by discipline. These studios are: Ron Arad Associates; Heatherwick Studio; Jason Bruges Studio; Punchdrunk; and, Assemble. Cross-case analysis is used to identify commonalities between the studios.

Commonalities in process

Key components common to the processes of all five studios are:

Making: Prototyping, testing, making, being designer-makers

Questioning: Rigorous questioning, pushing boundaries

Eliminating: Celebrating failure, taking risks

Innovating: Embracing innovation and new technologies

Communicating: Including both verbal and visual communication

Commonalities in process also include: emergence; iteration; and, being human-centred. The studios use emergent logic, meaning the process is non-linear and unique each time. The process is also extreme, messy and time consuming, and people placed at the centre of each project. This combined approach is interpreted in an emergent process model (Figure 1). As each project grows, ideas are gradually refined through messy, iterative loops. At the core of the model is the work itself, and the nucleus within this core consists of the people who live and drive emergence.

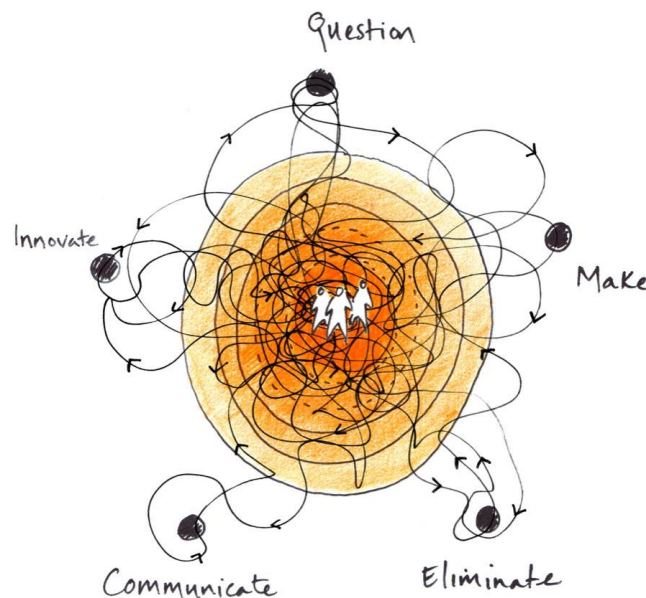


Figure 1. Emergent process model – plan view (Source: Author, 2020)

Commonalities in capabilities

Commonalities in core skills and capabilities (highlighted as essential for graduates going into the creative industries) include: social skills and the ability to collaborate; a universal hybrid outlook towards the creative industries; confidence and can-do attitude; curiosity; a commitment to quality; an

audience/user focus; and, strong verbal and visual communication skills. All of these skills and capabilities are highly transferable and can support students to develop a range of knowledge, skills, behaviours, attributes, and attitudes which will enable them to be successful not just in employment but in life.

Commonalities in pedagogy

Finally, commonalities in pedagogy (and what Higher Education should be providing) include: fluidity across traditional disciplines and breadth of study; celebrate learning from constructive failure; encourage risk taking; re-define design and disciplinary classifications; provide appropriate space to make; enable collaboration between students; and, establish greater connections with industry.

THE PROCESS OF CREATING THE COURSE

The course design embeds the PhD findings and commonalities highlighted above, and has been co-created with leading industry partners, educators, researchers and students in a process highly collaborative, interdisciplinary, emergent and iterative process. A core interdisciplinary team was established within BCU, as well as a wider team of academic and industry advisors and partners. The first steps were to define the vision, address issues with terminology, identify who the course is for, and embed employability, while being guided by an advisory team.

Vision

The vision for the course is to challenge the traditional disciplinary silos within Higher Education to create a cutting-edge, polymathic programme that explores the fundamental principles of interdisciplinary design. The emphasis is to support students to become thinkers, makers and technologists.

Terminology

Within the creative industries today, there is little distinction between the terms Art and Design. As studio collective Troika explains: *‘It is time to acknowledge that the classical distinction between art and design is simply outdated. What is more interesting in both art and design is when the outcome communicates or materialises a clear world view.’*⁷ Simplicity is needed to de-mystify terminology, and for this course the terms art and design are viewed as two ends of the same spectrum. How art and design are explored and brought together will be driven by the students, through project-based learning and a personalised curriculum. What will connect them is innovation. As creativity expert Robert Root-Bernstein states: *‘The future of innovation will reside, as it has always resided, in the minds of multi-talented people who transcend disciplinary boundaries and methods.’*⁸ Therefore, for the purposes of this course, we define Art as probing problems, dealing with ambiguities and creative speculation, usually without a known client (the critical end of design), and Design as finding opportunities and producing solutions, dealing with clear purposes, usually with a known client (the commercial end of design). The course explores the intersection between Art and Design, with the implementation of new creative digital technologies.

There are two course titles, Art and Design and Art and Design with Creative Technologies. Art and Design with Creative Technologies is a pathway route through the Art and Design course. Students cover the same curriculum, but opt for technology-based outcomes. Work may still embrace a sense of physicality but the focus should retain an element of creative technologies. All students are introduced to the fundamentals of interdisciplinary design practice. Some are attracted to a more

generalist route, while others may wish to take the more specific creative technology pathway route (with the option to recognise this in their main exit award).

Target audience

The course is designed for a wide pool of potential applicants. A student might have previously studied art and/or design, but has not yet identified a pathway to industry and wants to explore multiple options. Alternatively, a student might have previously studied art and/or design and is already making wider creative connections by incorporating music, maths, coding, or other digital technologies in their work. The course has also been designed for a student who has not previously studied art or design, but is interested in science, maths or creative technology, and wants the opportunity to explore design methodologies.

Employability

The course seeks to respond to the rapidly evolving creative industries, to enable graduates to not only be ready for immediate employment, but also for future evolutions within the industries, by providing them with long-term skills and employability. The course reflects a global rise in pioneering practices like Jason Bruges Studio, that cross art, design, and cybernetics, and define themselves as ‘creative technologists.’⁹ During a PhD interview, Jason Bruges states that the key to design education is ‘not only that it teaches the technical skills of design, it also teaches process and thinking’ and recommends that private enterprise must support the university system ‘if we’re to ensure graduates are fit for purpose for the jobs available to them. More studios should collaborate and partner with universities to give back to the education system. It’s an ecosystem that benefits everyone involved.’¹⁰ Bruges is now an industry advisor and advocate for the course, taking part in a series of curriculum development workshops with the course team and providing feedback on module design. He is now Visiting Professor in Design Studio Practice, offering master classes and live briefs. Therefore, this course offers strong employability potential for students.

Advisory feedback

The creation of the course has been supported by a wide range of advisors. Bruges supports the approach to cross-disciplinary teaching, using art, design and digital technology to explore design methodologies and praises the strong emphasis on collaboration, experience and preparing students for future employability. Educational advisory voices describe course as a game changer for education, and that it is both necessary and timely. Student advisor, alumnus Thomas McElroy, describes the course as Beta Mode, a constant work in progress, and that the developers are the students themselves.

COURSE STRUCTURE

The first year, Level 4, takes students from ‘I to Us’ to harness their self-awareness as part of how they learn and collaborate with others. Students navigate through ‘Labs’ that represent the fundamentals of the interdisciplinary design process. The three primary Labs are: the Thought Lab; the Materials Lab; and the Digital Lab (Figure 2). These are both physical spaces within the studio environment and the first three modules of the year. In the Thought Lab (module 1) students build self-awareness and self-confidence, and question prior learning. Students develop learning strategies, and apply design thinking, verbal and visual communication tools, to assess and enhance their understanding of evolving design practice. In the Materials Lab (module 2) students apply design thinking to 3D making. Students explore the connectivity of materials, and collaboratively test,

experiment and prototype, by exploring: fusion; confusions; knotting; welding; embedding; joints; and breaking things (celebrating failure). In the Digital Lab (module 3) students apply their design thinking to 4D making. Students collaboratively experiment, test and embrace new technologies, by exploring: coding; digital modelling; digital drawing; projection; filming; editing; VR/AR; sound; and, light.

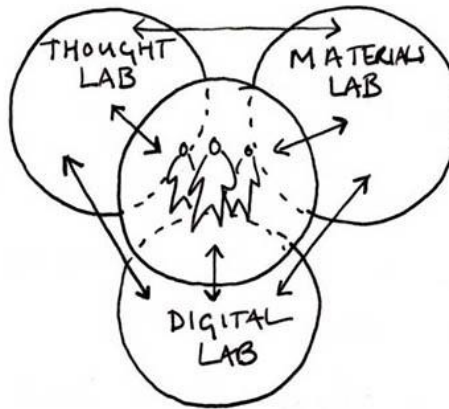


Figure 2. Labs diagram (Source: Author, 2020)

Additional Labs are introduced once the fundamentals of the design process have been established. These new Labs are: the Nature Lab; the Performance Lab; and, the Speculative Lab. The Nature Lab (module 4) enables students to collaboratively apply thinking through making using found materials in the natural environment. The Performance Lab (module 5) enables students to collaboratively apply their thinking to the making of narrative and storytelling. The Speculative Lab (module 6) is a round-up of the year, revisiting and building on what has been done to date, using all the Labs (Figure 3). Students self-organise to collaboratively identify, develop and design speculative proposals.

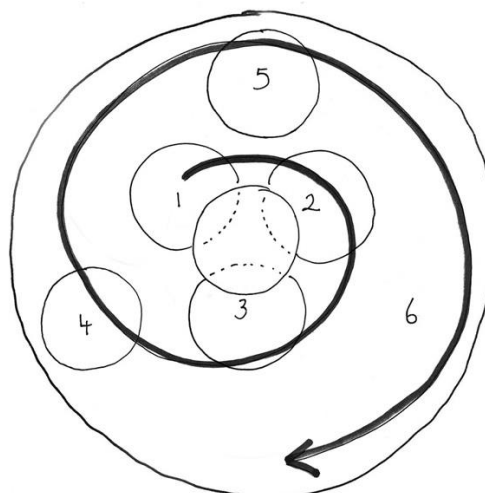


Figure 3. Level 4 curriculum model (Source: Author, 2020)

The second year, Level 5, uses the emergent process developed in Level 4 to move students from ‘Us to We’, from working with each other to working as a unit with external clients. Students focus on community-centred problem-solving through live briefs and work placements, whether that

community is local, national or global. The focus on live briefs keeps the course relevant and the relationship with external clients will continue to support and inform employability.

The third year, Level 6, encourages students to diverge to follow their own pathways, individually or collaboratively, navigating their own way through the Labs. Some may focus on one Lab, or a combination of Labs, or create new Labs of their own.

Relational learning, teaching and self-assessment model

Key to making all of the above work is the relational learning, teaching and self-assessment model developed by Prof. John Wood.¹¹ The framework allows students to assess themselves across a matrix of four key ‘players’: The Learner; the Project; the Context; and the Client/Collaborator (Figure 4). This method encourages students to think in ethical, self-inclusive and entrepreneurial ways, and is more reflective of industry practice. It also allows staff to easily assess collaboration, which is something that many universities appear reluctant to do. The model not only supports collaboration, but also develops self-awareness, and puts societal and environmental needs at the heart of each module.

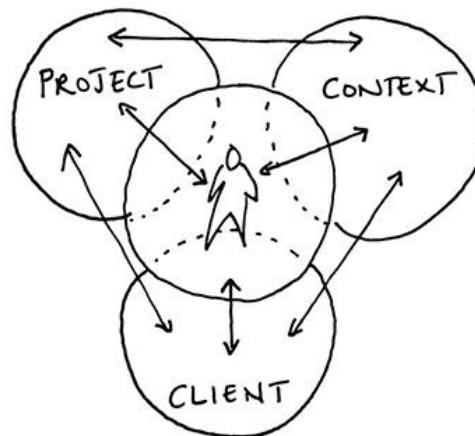


Figure 4. Relational learning, teaching and self-assessment model (Source: Author, 2020)

Real-world challenges

The relational learning, teaching and self-assessment model helps to support another key aspect of the course, which is ensuring that students engage in real-world challenges while they question, explore, experiment, make, play and create together. Considering climate change is critical as ‘climate change will have a significant impact on our students’ lives. They know that this an urgent issue that will affect almost everything, including...sustainability.’¹² The relational model enables students to demonstrate a sense of social responsibility and makes ethical aspects of practice more visible and assessable. In relation to the wider context of every module, students are asked to consider a range of questions including:

- How well did I show that I understood the wider context of my project from an ethical, sustainable, and cultural point of view?
- How well did I consider the wider implications of the materials I used from a sustainable point of view?

Sustainability is a global issue that requires new ways of thinking. As Niehoff states:

‘Sustainability is all about future innovation. Students who tackle these challenges will be our leaders – business, political and cultural – of the future.’¹³

STUDIO SPACE DESIGN

The course is housed in a laboratory studio environment that has been specifically designed to meaningfully support interdisciplinary learning. It is situated within the School of Art at Birmingham City University, which is the oldest art school in the UK, built in 1885 (Figure 5). An art school, rather than a design school, is possibly the better location for an interdisciplinary design course, as it is freer from disciplinary restrictions and avoids the binary division between art and design.



Figure 5. School of Art exterior (Source: Author, 2022)

Figure 6. Studio interior prior to fit out (Source: Author, 2022)

The design process is now collaborative, emergent, iterative, playful, messy and human centred. Therefore, the methodological approach of the course is to enable students to question, explore, experiment, make, play and create together. Central to this methodology is the physical space, which will visually represent the philosophy of the course, by providing one environment that brings together the exploration of art, design and creative digital technologies to allow for the necessary collision and serendipity that innovative ideas creation now requires.

During a PhD interview, Thomas Heatherwick explained: ‘I went to Gothenburg on exchange when I was at the RCA, and they were re-doing the art college. They had to move everyone out into a giant shipyard hanger on the harbour. There was this gigantic space which had everybody in the whole Art and Design School. There was this raised walkway that you could see sparks of someone welding over there next to drawing tables. It spoke of one world and one way of thinking about the world around us. And that’s my ideal art college.’¹⁴ This is exactly how Heatherwick went on to design his studio. Welding happens right next to designers drawing on computers, and this fluid, open plan type of space enables the studio to do the breadth of work that they do.

Taking inspiration from the layout and design of leading innovative creative studios like Heatherwick Studio, the course studio space is a laboratory, a place of doing, to enable agility and iteration. The Thought Lab area brings students together to share, discuss and critique. The Materials Lab area is a messier space for making, and the Digital Lab area is a cleaner space to work with technologies and has a black-out structure to control light (Figure 7). This is an inclusive physical studio environment. The layout is flexible and open plan, an incubator space with making at its heart, and with every physical element of the studio on castors, students can reshape their learning environment to meet the needs of each module.

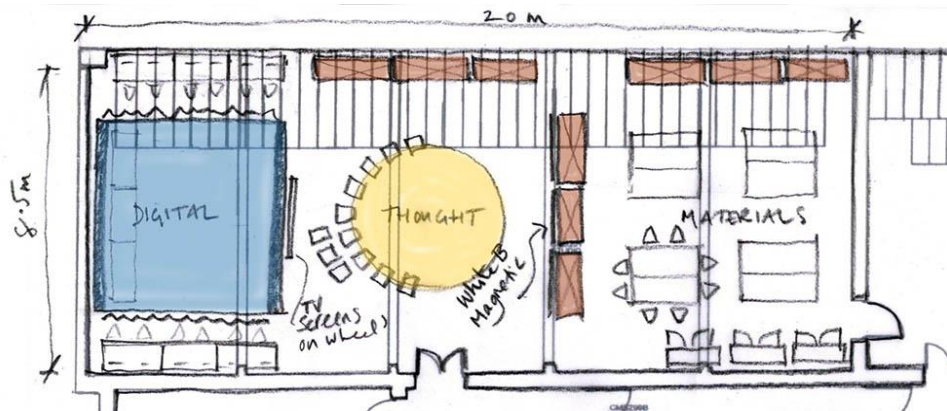


Figure 7. Studio design plan (Source: Author, 2023)



Figure 8. Completed studio (Source: Author, 2023)

CONCLUSION

There is currently a disconnection between design practice and education, which poses critical questions for the immediate future of design learning and teaching in higher education. Universities must now take risks to address this disconnection. This interdisciplinary pedagogical model attempts to address this disconnection by enabling graduates to think in ways that are more holistic, fluid and radical. As a Beta Mode course, the focus on live briefs and rapid learning and experimentation will keep course relevant. Graduates will leave this course not only ready for immediate employment, but also for future evolutions within the creative industries, and with long-term skills to better face the challenges of the twenty-first century as thinkers, makers and technologists.

NOTES

- ¹ Lara Furniss, *Beyond Discipline: Positioning Design Practice and Education for the Twenty-First Century* (Birmingham City University, 2020).
<http://www.open-access.bcu.ac.uk/12307/>
- ² Craig Bremner and Paul Rodgers, "Design without discipline," *Design Issues* 29(3) (2013): 8.
- ³ Tan Eng Chye, "It's time to rebuild the university on a foundation of interdisciplinarity." *Times Higher Education*, January 4, 2023.
<https://www.timeshighereducation.com/blog/its-time-rebuild-university-foundation-interdisciplinarity>
- ⁴ Lara Furniss, *Beyond Discipline: Design Practice and Design Education in the 21st Century* (Strategic Creativity Research Lab, 2015), 35 http://files.cargocollective.com/649648/BeyondDiscipline_web.pdf
- ⁵ Fern Lerner, "Foundations for Design Education: Continuing the Bauhaus Vorkurs Vision," *Studies in Art Education* 46, no. 3 (2005).
- ⁶ Alain Findeli, "Rethinking Design Education for the 21st Century: Theoretical, Methodological, and Ethical Discussion," *Design Issues* 17, no. 1 (2001).
- ⁷ Gareth Williams, *21 Twenty-One: 21 Designers for Twenty-First Century Britain*. (London: V&A Publishing, 2012), 106.
- ⁸ R.S. Root-Bernstein, "The art of innovation: Polymaths and the universality of the creative process," in *International Handbook of Innovation*, (Elsevier Science Ltd, Oxford, 2003), 276.
- ⁹ "Jason Bruges," One Minute Wonder, accessed January 11, 2017, <http://oneminutewonder.tv/episodes/jason-bruges/> [].
- ¹⁰ Furniss, *Beyond Discipline: Positioning Design Practice and Education for the Twenty-First Century*, 233.
- ¹¹ John Wood, "Creative Quartets: Re-inventing invention," in *Metadesigning Designing in the Anthropocene*, edited by John Wood, (Routledge, 2022).
- ¹² "7 Real-World Issues That Can Allow Students To Tackle Big Challenges," Michael Niehoff, accessed January 4, 2023,
<https://www.gettingsmart.com/2018/03/22/7-real-world-projects-that-allow-students-to-tackle-big-problems/>
- ¹³ Niehoff
- ¹⁴ Furniss, *Beyond Discipline: Positioning Design Practice and Education for the Twenty-First Century*, 121.

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DEWEY DECIMAL DOWSING PROJECT: MEANING INSIDE THE EVENT

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INTRODUCTION

Upon being encouraged to fully reveal the workings of the Dewey Decimal Dowsing project, by colleagues intrigued by its overt strangeness, an idea of the question why did you start this came to mind? The project began as a way to make the library more engaging and accessible to new art students and also bring practice and research closer. It draws upon a kind of ritual audience participation used in my performance art, before doctoral research had led me to frame this within affect theory and a performative mode of understanding. In retrospect I was trying to facilitate an idea of learning as personally specific and contingent. The idea to use numerology and dowsing in the library chimes with my sense as an artist and musician, of meaning-making as something extra-embodied and relational. The project is a temporary experiment in what Whitehead describes, in *Adventures in Ideas*¹, as the *percipient* perceiving the *region* with themselves as part of it. The accidental² has become a rich means of understanding the methodology of my identity in an art-pop performance group. A feel for exploring art history and theory in a collective of fellow students, learned from sitting in my father's lectures at sixth-form college, is also enfolded into the project's wilfully outré methodology (as is his fascination with extra-sensory perception). My point in speculative digression, is decisions in research and learning are experiential and relational in their dynamic. This project doesn't reject finer modes of understanding but repositions them in an animated tapestry of a transformative emerging encounter.

The processional dowsing technique:

- Students change their name into a numerological value.
- The first 6 numbers are used as a Dewey Decimal library code
- Students stand before the shelf housing this code and acclimatize
- Using a self-created dowser chose three books
- Each book is tapped three times on the spine, opened and read
- A clay effigy is created to process the encountered knowledge
- A simple scientific report (Title, Apparatus, Method, results, Conclusion) is written.

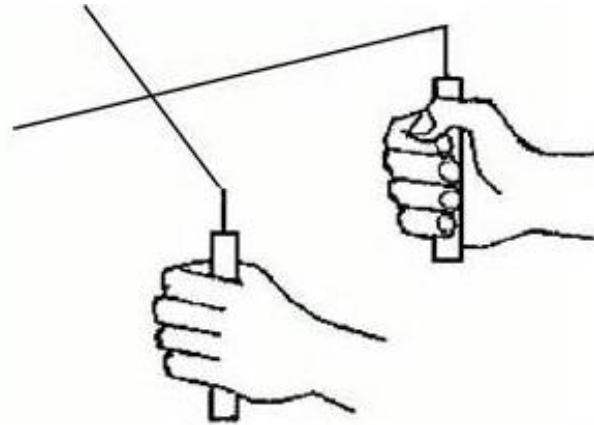


Figure 1. Trance ritual dowsing in research

Attunement

My keynote speeches and meditations delivered as the made-up Konfessor Kimey Peckpo, are an experiment in transmitting affect within a temporary region of ritual as an intra-relational *part of*. Research with vibrant matter by Jane Bennet³ and agential realism by Karen Barad⁴ have contextualised an intuitive desire to help students expand personal agency via an experiential encounter using apparatus (books, dowsers and most recently photographic enlargers) and specific region (library, studio and the dark room). The above whimsically processional method of interacting in the library suggests that an attunement to non-linguistic frequencies of vibrant matter is fundamental to intuitive agency. I have borrowed this phrase *attunement* from Jane Bennet but there is added traction in the un-academic flavour of a phrase being aligned to alternative medicine and spiritual energy. The aim is not to promote spirituality specifically but that the ritual becomes an entanglement in research as a form of what Karen Barad calls “Onto-epistem-ology” in meeting the Universe Halfway.⁵ Bennet and Barad have helped to define my idea that dowsing and methods of divination can be a practical method for augmenting intuition and a student’s feeling of imaginative agency.

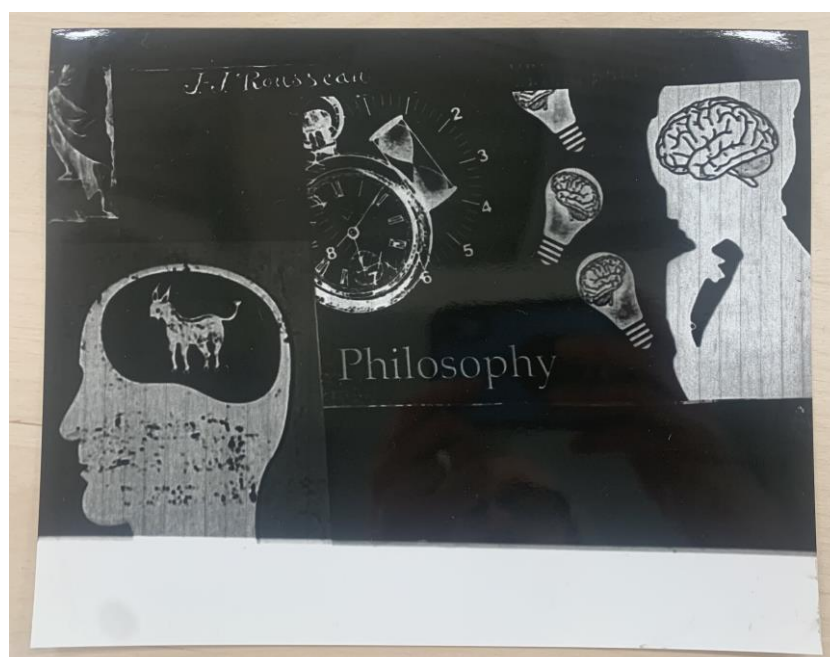


Figure 2. Student photogram assembling three books encountered 2022

The project is framed as a neutral exercise and before dowsing the process is foregrounded with a video of Guy Hudson,⁶ who has academic background in physics and engineering, talking about his work as a professional water dowser. Hudson encourages the dowser feel the atmosphere of the area being investigated. The Dewey Decimal project was perhaps about making this atmospheric experience of the library a *part of*. Inside the ritual we find an intuitive pleasure in becoming a *part of*. A position that some may find impossible to entertain within the archival structure of the library itself is that the cosmos knows itself through its expressions. The experimental framework of the project as art research allows us to try-out, with conviction, Deleuze and Guattari's⁷ shift from communication to expressivity in processual meaning making,

*We—Gilles Deleuze and I—did our utmost, over hundreds of pages, to underline that we refuse the primacy of signifying semiology [la sémiologie signifiante], but considered the traits of matters of expression of other components significant: plastic, spatial or musical materials have their own lines of composition.*⁸

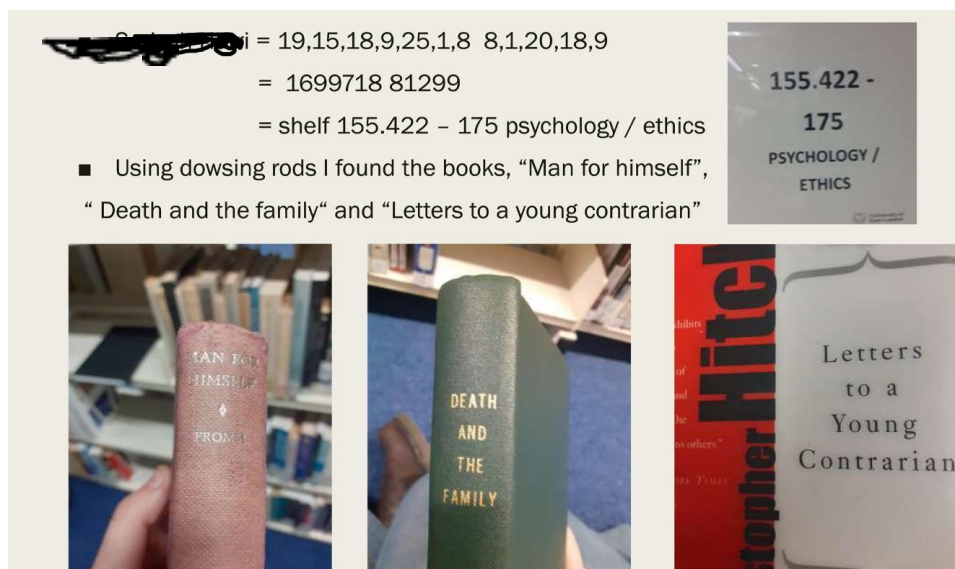


Figure 3. Student presentation of numerological process and books encountered in dowsing 2022

Matter for Expression

The project posits that a library is a ritual experience of temporal substance. Part of its matter for expression is an idea that libraries are potential subversion, asking that we forget knowing what we are looking for and venture into McLuhan's *forest of symbols*.⁹ In a digital age beyond the realm McLuhan was addressing, a process of numerological library dowsing for paper books seems anachronistic but it opens into the backwards causality of the lyric voice. In my experience song-writing works by folding temporal substance through embodied meaning rather than a linear causality of linguistic intention. The time-obsessed artist John Latham famously sent students of St Martins to the library to chew pages of Greenberg's revered book *Art and Culture* and place vestiges in glass phials – at UEL students dowsed for numerological encounters with precognitive understanding. This act contains an absurd humour when seen from the realm of classical epistemology but in what Affect theorist Greg Seigworth,¹⁰ referred to as my *derangements*, is a desire to facilitate a feeling of being a part of research as an encounter with meaning. The humour of the project's process of disrupting

gridded thought habits via extra-sensory perception, cannot be denied but as Claire Colebrook suggests in Deleuze and Irony,

humour is not always the reversal of cause and effect but the abandonment of the 'before and after' relations—the very line of time—that allow us to think in terms of causes and intentions, of grounds and consequents.¹¹

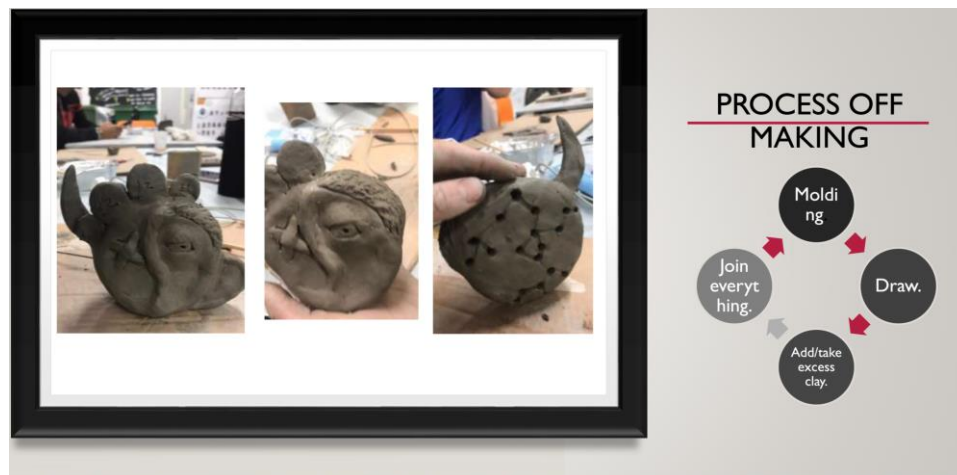


Figure 4. Student presentation of clay effigy making process 2017

INCLUDING EXCESS

Since the introducing of the project to the Art and Design Foundation at UEL, student presentations have made me aware of how the process allows the expression of ideas in excess of research in a secular institution, allowing students to express something being left out. This left out-ness or excess is the percepts and affect of felt understanding. Personal subjective experience is not always a good fit with the universalising forces of information delivery. Perhaps the unacknowledged ritual of the university lecture room, with its acrylic carpets and veneer desks, can allow us to securely encounter collective learning inside the project's ritual space. Sometimes this approach creates unexpectedly resonant experiences. In a break from Lockdown my extended family gathered in a hospital to guide my father in his passing after a short and tragic battle with interstitial lung disease. That same week during the Dewey Decimal Dowsing presentations, a student whose painful shyness gave me concern for their ability to feel *part of*, spoke confidently to the group about The Puritan Way of Death by Davide Stannard. I took profound comfort not only in the student's growth in confidence through an emancipated learning but also the relevance of his research to my life as he explained,

The dying institution changed drastically, where the process leaves with feelings of loneliness, irrelevance and absence of awareness, the dying process is more non-social, often avoided by family and friends.¹²

The student has not become a theorist but their sense of personal agency strengthened and they continue to use ambitious 3d making in their illustration practice. I remain skeptical about the relationship between these moving synchronicities and what might be my cognitive bias discounting numerous examples when students present prosaic results. As a professional lecturer, I value the stability of structure and yet creative agency needs a personal experience in order to emerge. The staple of academic critical theory, Walter Benjamin, called for a philosophy that includes the reading of coffee grounds, which is not far from William Blake's powerful sense that creative potential needs a way of allowing otherness to find its way in,

*If it were not for the Poetic or Prophetic character the Philosophic & Experimental would soon be at the ratio of all things, & stand still unable to do other than repeat the same dull round over again.*¹³

Like the universe of William Blake's practice, the sheer volume of student research and the ideas it opens onto would take a life time to unpack. It remains beyond my powers of systematic analysis and in order to express how the process functions via honouring derangements, I shall continue with a narrative detour:

DETOUR:

Driving an aqua-blue Skoda Fabia to university, he feels a need for the security of academic frameworks based on pre-given goals of imparting concepts. This year, he tells himself, there need not be synchronicities, only a practical exercise in intuitive research and an acquaintance with the idea of experience as learning. Driving past the undulating hills of the country's largest landfill, fooling the eye into a sense of bucolic serenity, he hopes that he is not late. Arriving on time he will later leap in surprise as there on the screen, in two student presentations, is Process Reality and the face of Alfred North Whitehead. This book has helped maintain what he fears is a fanaticism for an *Aesthetic Ontology*,¹⁴ or a cosmos with feeling as its most fundamental characteristic. He would not have brought this book into the foundation studio because it is baffling even to many doctoral students despite it exploring a simple of thing – the felt understanding of the percipient perceiving the region with themselves as part of it. After acknowledging the intensity of his surprise, he will take his cue to explain how Whitehead wrote this book because a model of the cosmos based on logic, Principia Mathematica, had omitted the contingent experience of *things*.

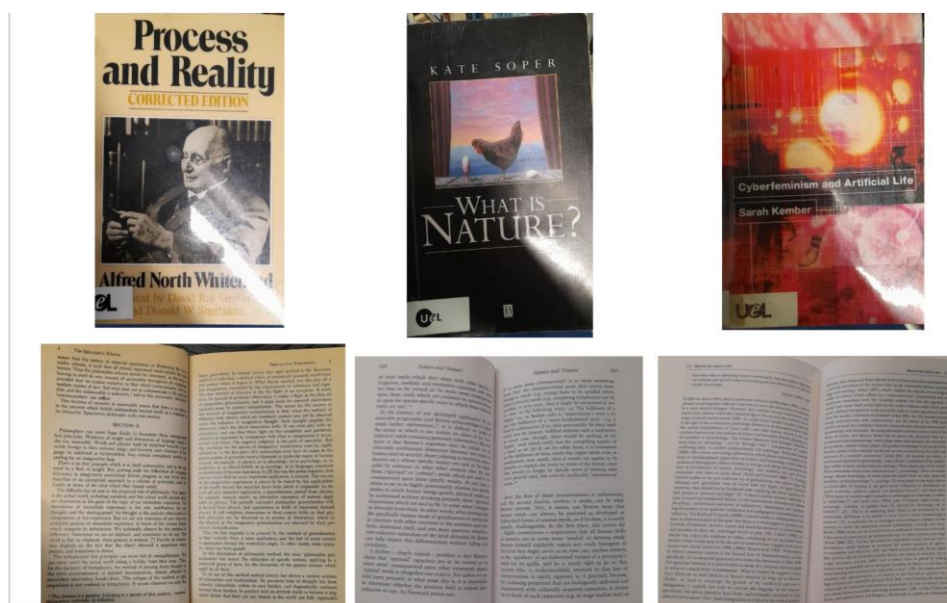


Figure 4. Student presentation of books encountered in dowsing ritual 2022

The *projectecy*, as he secretly calls academic divining, has always sought to bring the familiarity of structural documentation to the freeform encounters suggested by the ritual methodology. Quite early in its emergence a particularly self-motivated student reduced the research into an aphoristic distillation of three words. In his desire to give the next year's students a strong example of how to approach the project or in other words demonstrate that it had validity from previous iterations, he shared the student's presentation called The Brazilian Lemonade Script. When the projectecy is adhered to with a systematic neutrality the emergence of potential new insights presents itself and he,

just as he hopes the students will, must have the patience to value how these resonances can vibrate through a continuum of learning to learn. Looking back at the Brazilian Lemonade Script the previous evening, he finds that the three books discovered through the numerological dowsing ritual, related to Latin American literature and he is struck by the concern with bringing the lyric voice into research or meaning making. Had he in his desire to create a target learning process trusted simplicity too much? Indeed, he thinks Whitehead himself pithily remarked “seek simplicity but do not trust it”. The aesthetic lure of the title, Brazilian Lemonade Script, alone had convinced him that this simple synthesis of three words would help other students access the felt intensities of an intuitive or extra-embodied and performative passage through the library. Thanks to the digital archival structures of academia, he was able to return to the document and there he found that the word Lemonade (a word so redolent of an innocent and direct pleasure) is taken from a book about Helene Cixous and makes specific reference to her *Ecriture Feminine*. There is a pleasurable irony that the word *Script* derives from the next book *Heretical Empiricism* concerning Pier Paolo Pasolini’s semiotics of cinema. How could he have missed the personal resonance of the South American voice to a female student of South American heritage, seeking her own means of expression? Cixous’s concerns chime with those of Blake, deeply concerned with liberating the feminine aspect in Ololon. This requires that we acknowledge the relational feeling of experience as part of meaning itself rather than insisting that knowledge can be conveniently extracted and distributed out of context. Finding himself drawn in by the opening in learning before him on the University laptop, Cixous’s *Ecriture Feminine* speaks of all his hopes for the trance ritual encounter of the projectecy,

*Believed to originate from the mother in the stage of the mother-child relation before the child acquires the male-centred verbal language, this pre-linguistic and unconscious potentiality manifests itself in those literary texts which, abolishing all repressions, undermine and subvert all significations, the logic and the closure of the phallogentric language, and opens into a joyous freeplay of meanings.*¹⁵

BRAZILIAN LEMONADE SCRIPT.



Figure 5. The Brazilian Lemonade Script student research, clay effigy 2014

Stuck in traffic as the A13 passes Eastbury Manor, he thinks how a demand to grade and quantify within a grided interface might have acted as an enteric coating preventing the knowledge from dissolving in his gut so that he feels its intensities now, over five years later. Edging towards the exit, he considers how the slow movement of learning through a personal and experiential coming to

understand is something that he, as an academic, feels as a of longing or even potential madness as was the case of Pirsig's Phaedrus. The students delivering their findings often seem somehow newly wise to him and the entanglement of learning akin to ideas proposed by Rancière, whereby the learner is emancipated from the enforced stultification of an explicator who,

*having thrown a veil of ignorance over everything that is to be learned, appoints himself to the task of lifting it. Only by concealing knowledge from the student is the explicator able to teach it.*¹⁶

Considering his possibly misguided choice to deliver the paper in a dislocated fictional voice he considers how Rancière himself wrote the Ignorant School Master as a story, a methodology Kristen Ross explains the very act of storytelling is, "an act that presumes in its interlocutor an equality of intelligence rather than an inequality of knowledge, posits equality, just as the act of explication posits inequality"¹⁷

The senior lecturer must arrive on time. Dual delivery is receding in the rear-view mirror and having experienced the intensity of the virtual learning experience, he briefly ponders the irony of how emphasis on making objects endangered the processual understanding because students, coming from school were inclined to focus on designing a cohesive outcome? His intention had been to illicit something from the clay that they themselves needed to encounter with other learners in order to experience a collective sense of understanding. The use of processual making as part of research had been given momentum by his reading of Making is Connecting¹⁸ by David Gauntlett but often students would make objects of a pregiven symbolic value. Over time he has taken the position that symbolic and nature are woven together in the experience of the nonbifurcated¹⁹ ritual process. His concern that an overtly symbolic making can occlude transformative learning is tempered by Whitehead's reconciliation of symbol and experience,

*We all know Aesop's fable of the dog who dropped a piece of meat to grasp at its reflection in the water. We must not, however, judge too severely of error. In the initial stages of mental progress, error in symbolic reference is the discipline which promotes imaginative freedom. Aesop's dog lost his meat, but he gained a step on the road towards a free imagination.*²⁰

The challenge, he thinks, is to somehow allow the delivery of the projectecy to flex and adapt to the specific event of the region students find themselves in and to retain the sense of emergence that drove its inception. This was a desire to create a framework or more accurately a ritual that opens the library into a space for an intuitive experiential encounter. As adult artist-researchers we embody the pleasure of expressing in order to create a machine for collective understanding by rediscovering a tool kit we had perhaps forgotten we had access to. Does it matter that so many of the students' discoveries interweave with the aims of the projectecy to make precognitive awareness a part of collective learning? He should perhaps not be surprised at all that precognitive intuition is demonstrably a real thing. He had always been keen to make feeling a fundamental characteristic of the experiment and yet resist a convenient shorthand of synchronicity and coincidence because this might maintain the idea that the radical experience of the extra-textual is a supernatural phenomenon and not, as Aldous Huxley explained in a recorded interview, entirely natural.

CONCLUSION

Considering research as *trance-ritual*, even for a self-contained project is becoming a harder sell. The senior lecturer may have abandoned seeking a performative mode of understanding in an academic experience, were it not for their recent encounter with the ideas of Karen Barad. She posits an ethico-onto-epistemology, placing understanding back inside a lived experience and this is how he has once again found congruence in the process of facilitating a specific personal encounter inside the event of research. After all this, coincidentally, is exactly what John Dewey, the principal champion of the

radical experience, sought to bring to collective learning. Even Dewey's framing of the speculative methodology as something temporary chimes with the experimental and contingent nature of the projectecy's aims to enfold the digressionary and accidental parts of ordinary life into research. The senior lecturer often reminds students of the speculative nature of their endeavours in order to open up an enclosed nomadic freedom. What strikes him clearly as he turns into the University carpark (he must renew his permit) is the safety of experimenting within a contained, temporary ceremonial realm. Much later, when he gathers his thoughts in a report of the projectecy and being *part of*, he will quote John Dewey, a theorist he only vaguely knew at the time of designing the procedure of numerological library dowsing,

*If one is willing to grant this position, even if only by way of temporary experiment, he will see that there follows a conclusion at first sight surprising. In order to understand the meaning of artistic products, we have to forget them for a time, to turn aside from them and have recourse to the ordinary forces and conditions of experience that we do not usually regard as aesthetic. We must arrive at the theory of art by means of a detour.*²¹

NOTES

- ¹ Alfred North Whitehead, *Adventures in Ideas* (1948).
- ² "The percipient may be an occasion within the region and may yet grasp the region as one including the percipient itself as a member, of it."
- ³ Catherine Malabou, "Jane Bennett. Vibrant Matter: A Political Ecology of Things. Durham: Duke University Press, 2010." (2012)
- ⁴ Karen Barad, *Meeting the Universe Halfway*. Duke University Press 2007
- ⁵ Barad, p.185
- ⁶ Guy Hudson, "How to Dowse for Water (Woodlands TV 2014)". Accessed online: <https://youtu.be/042N05bmlL4>
- ⁷ Eric Alliez, and Andrew Goffey, eds. *The Guattari Effect*. Continuum, 2011
- ⁸ Eric Alliez et al., p.47
- ⁹ Marshall McLuhan, "Media Cold and Hot." *Understanding Media: The Extensions of Man*, Routledge (2001)
- ¹⁰ Melissa Gregg, Gregory J. Seigworth eds, *The Affect Theory Reader*. Duke University Press 2010
- ¹¹ Claire Colebrook. "Introduction: Deleuze and history." *Deleuze and History* (2009): 24.
- ¹² David E Stannard. *The Puritan Way of Death, A Study in Religion, Culture and Social Change*, Galaxy 1979, p.87
- ¹³ John Sampson. Ed, *The Poetical Works of William Blake*, Oxford University Press 1925, p.94
- ¹⁴ Alfred North Whitehead. *Process and Reality*, Free Press 1979
- ¹⁵ Susan Sellers, Ed, *The Hélène Cixous Reader*, Routledge, 1994, p. 108.
- ¹⁶ Jacques Rancière, *The Ignorant Schoolmaster: Five Lessons in Intellectual Emancipation*, Stanford University, 1991, p.48
- ¹⁷ Kristin Ross, *Phil Watts, Reader of Rancière!* Romanic Review, 2014, p. 27.
- ¹⁸ David Gauntlet, *Making is Connecting, the Social Meaning of Making*. Polity Books, 2011.
- ¹⁹ Alfred North Whitehead. *Symbolism: Its Meaning and Effect*, Fordham University Press 1985.
- ²⁰ Alfred North Whitehead, p. 47.
- ²¹ Dewey, John. *The Later Works of John Dewey, 1925 - 1953: Art as Experience*, Southern Illinois University, 2010, p. 134.

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TRANSFORMATIVE TEACHING ONLINE: AN EXAMINATION OF REMOTE TEACHING AND LEARNING DURING THE COVID-19 PANDEMIC

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INTRODUCTION

The Covid-19 pandemic, which forced the closure of in-person learning across Post-Secondary institutions in Canada from the Spring of 2020 to the early Winter semester of 2022, created a natural experiment in shifting university courses and students into remote learning, both synchronous and asynchronous. This provides an opportunity to assess how students who may not normally choose this method of delivery experienced the process. I developed and administered a qualitative online voluntary survey for students in selected undergraduate sociology classes, in order to gauge the challenges and benefits to online learning for students from their own perspectives. Among other things, the study examines how student interaction with the course content, course instructor, and peers, has been affected by the transition to online learning, as well as which innovations worked, and which innovations were seen as not working. Findings demonstrate effects among a number of themes, including self-regulation, self-efficacy, self-discipline, motivation, flexibility, interaction and mental well-being. This study provides educators with strategies for modifying online learning in a way that enhances student learning outcomes.

APPROACHES TO REMOTE LEARNING

The literature on the success and failures of students in online learning suggests that students in online courses assume greater responsibility for their learning.¹ Thus, successful online learners need higher levels of self-regulation, self-discipline, and a related set of metacognitive skills.² Online learners also require more personal responsibility and motivation, as well as greater time management skills, and research shows that students who are more likely to pursue online course work seem to have higher levels of academic ability and motivation³. Research by Allen and Seaman, points out that “students need more discipline to succeed in an online course than in face-to-face course”.⁴ Barbour et al., in their literature review of virtual schools, echo this sentiment by stating that the “vast majority of virtual school students tended to be a select group of academically capable, motivated, independent learners”.⁵ Internet self-efficacy is also key component in terms of overall success in online learning.⁶ For students who do not possess these critical self-directed learning skills will need greater support from instructors to succeed.

A number of theoretical perspectives are relevant to this study. Transactional Distance Theory (TDT) refers to the effects of interaction on learning.⁷ TDT as a “pedagogical phenomenon [involves] the procedures [methods] taken by teachers, learners, and organizations to overcome the geographic

distance”.⁸ According to Michael G. Moore, distance-based educators need to be cognizant of the distinction between three types of interaction: learner-content interaction, learner-instructor interaction, and learner-learner interaction.⁹ All three modes of interaction must be considered when developing online course syllabi and assessments.¹⁰ Online educators need to be mindful of developing courses which incorporate authentic learner interaction while taking into account course content as well as diverse student learning modalities.

Developed by Mezirow in 1991, Transformative learning theory (TLT)¹¹ is focused on “how learners construct, validate, and reformulate the meaning of their experience”, and the empowerment of the individual.¹² The theory is grounded in three constructs: centrality of experience, critical reflection, and rational discourse.¹³ Mezirow argues for putting TLT at the center of adult education.¹⁴ Existing literature on the roles and competencies of online teachers conclude that it is important to consider how students learn and how teachers can encourage these learning experiences with the use of online technologies. Online teachers need to critically engage in pedagogical inquiry in which they reflect on the intimate connections between technologies, pedagogies, and content in their online teaching.¹⁵ Hawkins et al. examined the relationship between teacher-student interaction and academic performance in online learning,¹⁶ concluding that “interaction matters in terms of both the quality and frequency of interaction.”¹⁷

METHODOLOGY

The study reported on in this article used a qualitative approach in assessing student experiences with the shift to learning during the Covid Pandemic. The voluntary online survey was made available to McMaster University students in select sociology courses in Winter 2021, Fall 2021 and Winter 2022. Both likert-scale questions and open-ended questions were employed in the survey. A total of 242 students completed the survey with 119 Partial completions and 124 Full completions. The majority of respondents were between the ages of 18-23, enrolled in their undergraduate degrees majoring in sociology or related fields in the social sciences.

Students were asked to reflect on their overall experiences with all their online courses since the start of the Pandemic. There were three broad sections to the survey related to Course satisfaction, Internet Efficacy and Demographics respectively. Questions focused on course satisfaction with synchronous and asynchronous learning; students were asked about their experiences with both formats and examples of what elements were satisfactory or unsatisfactory to their learning. Students were asked about their confidence with internet learning and overall internet efficacy in order to gauge their overall outcomes with online learning. The survey closed with general demographic questions.

FINDINGS FROM THE RESEARCH

Because the pandemic-induced lockdowns led to a wholesale shift to remote delivery, this meant students with less online savvy and/or a less reliable home internet connection were also forced into online learning. Internet self-efficacy is a necessary prerequisite to online learning.¹⁸ While students may vary significantly in terms of how they have experienced online courses, studies show that learners with low levels of Internet self-efficacy will be less likely to participate in online learning. Studies reveal that students who have higher levels of internet self-efficacy have increased levels of motivation, enjoyment¹⁹ and higher overall learning outcomes.²⁰ Although the majority (68 percent) of students responded that they were moderately to highly savvy in their knowledge of the internet, and had a moderately or very strong internet connection (68.6 percent), reliability was slightly less common (Table 1).

	Not at all/none	Somewhat	Neutral	Moderate	Very/Excellent
Would you describe yourself as internet savvy?	4.8	10.5	16.9	33.9	33.9
How strong is your internet connection?	0	8.1	23.4	37.1	31.5
How reliable is your internet connection?	3.2	14.4	29.6	28.0	24.8
How confident are you with online learning?	5.6	20.0	29.6	26.4	18.4
How confident are you with online textbook interactive activities and tools?	11.4	9.8	25.2	31.7	22.0

Table 1: Internet Efficacy - Connection/Reliability/Savvy/Confidence

Source: Author's Covid-19 online learning survey. Questions are posed using a 5-Point Likert Scale

Scholars point out that online learning requires that students be confident in using internet technology and be “willing and able to self-manage their learning process”.²¹ Students were less confident about online learning than their responses to questions about their internet efficacy might suggest, with a plurality (30 percent) responding ‘neutral’ on this question, and just over a quarter (25.6 percent) saying they were only somewhat or not at all confident. Saying this, a majority of students reported moderate to high confidence in the online textbook (53.7 percent).

Overall Experience with Online Learning During the Pandemic

Research by Yu-Chun Kuo et. al. found that isolation and limited interaction, which is a common characteristic of online learning, may reduce overall student course satisfaction and overall performance.²² The Covid-19 pandemic lockdowns provide a particularly stark test of this relationship. Based on responses to questions that used a 5 point Likert scale, it is clear students faced many challenges to their learning as a result of the shift to remote delivery during the Covid-19 pandemic (Table 2). What is notable is that students reported that issues of isolation, lack of exercise and stimulation, and worries about money and/or friends and family, were generally more challenging than the specifics of the online course delivery.

	Very Challenging	Somewhat Challenging	Neutral	Somewhat Easier	Easier to Deal With
Online Course Delivery Method:					
Problems w/ internet connectivity/ online resources	9.4	34.6	18.1	15.0	22.8
Assignment deadlines/ getting tasks done on time	21.1	20.3	26.6	25.0	7.0
Understanding the concepts/material	22.0	37.8	19.7	15.0	5.5
Effect of Lockdowns & Individualization of Learning:					
Inability to work/earn money/ worries about finances/rent	27.9	23.0	18.9	13.1	17.2
Worries about family members and friends	29.8	33.1	19.4	9.7	8.1
Lack of exercise and/or intellectual stimulation	44.5	21.9	13.3	12.5	7.8
Isolation and inability to connect with other students	49.2	25.8	10.2	7.0	7.8

Table 2: Learning Challenges Created by the Pandemic for Undergraduate Students

Source: Author's Covid-19 online learning survey. Questions are posed using a 5-Point Likert Scale

Problems with internet connectivity/reliability, time management, and especially understanding of course material featured strongly among students, with 60 percent of students saying the latter issue (understanding) was somewhat or very challenging. Meanwhile, between 60 and 76 percent of

students said the stress from worry, lack of exercise and stimulation, and especially isolation and lack of interaction, were somewhat or very challenging to their learning. This suggests that external non-course-based factors had the greatest negative impact on experience.

These challenges are reflected in student comments. While not all students preferred in-person interaction, for many students the shift to remote learning compounded feelings of isolation, reduced their motivation for learning, and made their overall experience far more difficult:

“my mental health took a large blow, I have never felt more depressed and anxious and that causes me to fall behind in course work—unable to fully comprehend concepts—unable to ask for clarification—no relationships being built.”

The findings from this survey confirm how important it is that students be given opportunities in their online courses to not only meet with other students/participants, but as well with their instructors in meaningful and relatively frequent interactions. This supports the importance of human interaction (learner-learner, and learner-instructor) as well as engagement (learner-content) at the heart of TDT, and shows how isolation can be disempowering for students as per TLT.

Students were also asked to reflect on their specific experiences with Synchronous and Asynchronous methods of learning. Students had varying experiences with their synchronous and asynchronous courses. Notably asynchronous courses were more common with students. Figure 1 shows that more students took 1 or 2 Synchronous courses, but took 10 or more Asynchronous courses.

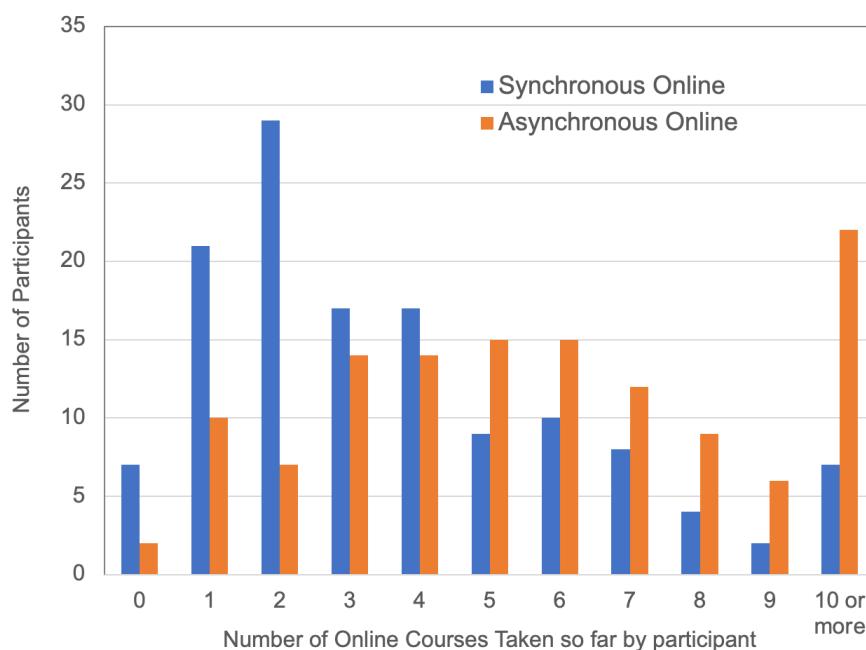


Figure 1: Participant Experience with Synchronous and Asynchronous Online Courses
Source: Author's Covid-19 online learning survey

Experiences with Synchronous Learning

Responses with synchronous learning were mixed. Students appreciated having some structure to their day by having a formally scheduled lecture to attend on a specific day, allowing them to set up a study schedule. Many said this gave them some sense of being in university.

“It helped add a little structure to my life. The entirety of my university experience up until my second semester of second year has been sitting in my room all day on my laptop watching pre-recorded lectures. It was

quite depressing and so having a synchronous course thrown in every once in a while was a nice change of pace. It actually required me to wake up and do something when everything else felt the same.”

However, students were also critical of the lack of meaningful engagement with both the course instructor and their fellow peers. Many reported that the synchronous method did not sufficiently promote engagement with the material above what they experienced in asynchronous courses, and in turn this added to their sense of isolation and disconnection with their fellow students:

“I did not like that even with synchronous online course delivery, you could not fully engage with the professor or your classmates very much, so the lecture still felt like you were doing an asynchronous online course delivery, but at a specific scheduled time, continuously. Synchronous online course delivery also did not allow to go at your own pace very much, so if you fell a bit behind, you would be way behind your other classmates.”

Experiences with Asynchronous Learning

Students were generally more positive about their experience with asynchronous online learning. Students appreciated the flexibility that was offered, as this allowed them to manage their learning on their own time and attend pre-recorded lectures when it fit their schedule.

“I liked that asynchronous can be done at convenient times, allowing for some flexibility. I also liked that asynchronous allowed for students who had accessibility issues to be able to take their time rather than having to complete all the notes during one sitting.”

“Flexibility” appeared in 78% of student responses when speaking positively about online learning. For many students who had commitments to paid work or family care, having the flexibility to schedule their online course commitments around their family and work obligations was positive. Students who had the self-discipline to manage their time and commitments were more successful in their online courses. That is, as per TLT, students reported that the flexibility of asynchronous delivery was somewhat empowering.

Negative experiences of asynchronous delivery, meanwhile, are reflected in students’ need for greater engagement both with the material as well as interaction with the instructor and peers. For many the asynchronous method required too much self-discipline, which did not suit the learning styles of many students. Students spoke of an increasing disengagement with the material, the course instructor, and other students, as the term proceeded. Students who responded negatively reported a lack of motivation and this compromised their overall learning of the course material.

“No chance to ask clarifying question—no relationships built with profs or Tas—no fellow classmates to reach out to—no interaction with anyone—feeling out of place, not feeling like a student, isolation and polarization, wanting to drop out, feeling like I don’t belong, not knowing if I’m feeling similar to others in the course, lack of assistance, etc.”

This echoes the findings of Kuo et al. who found that learners who are not motivated and able to self-regulate their learning will experience decreased satisfaction and overall less engagement with their online course.²³ It also helps confirm the importance of various forms of interaction, as per TDT, which remains the core challenge with asynchronous delivery.

Strategies for success in online learning

Finally, Respondents were also asked to reflect on strategies for success in online learning and some students spoke of the need for a “blended online course format”:

“a blended online course format would have been best. Recorded/asynchronous lectures for content heavy courses; synchronous for discussion based courses—interactive and engaging lectures regardless of how it is delivered. Open and easy access to one-on-one office hours with the professor and TA--offer multiple resources/ways to learn.”

In this way instructors are encouraged to bring in positive aspects of both synchronous and asynchronous learning. The role of the instructor was mentioned by many students as a key factor, confirming the centrality of learner-instructor interaction, as per TDT. For instance, this comment about the need for:

“A professor that understands the struggles of online course and keeps in contact with students.”

While there are a number of factors which contribute to success in online learning such as motivation, interaction, self-efficacy, learning strategies, teacher knowledge, facilitation and feedback²⁴, respondents in this research focused on the role of the instructor in making sure their active presence in the course was maintained. This supports existing research²⁵ on teacher-student interaction, which speaks to the importance of online educators maintaining authentic, continuous interaction with students.

In sum, the findings of this study support some important strategies for success in online learning environments, as uncovered by prior research and suggested by TDT and TLT:²⁶

1. Role of the instructor; ensuring that the professor is present and available for student consultation and guidance throughout the course.
2. Design of the course; using a combination of asynchronous and synchronous design elements.
3. Creating opportunities for content discussion; ensuring that students have some opportunity to meet with one another.
4. Creating tasks with meaningful feedback from instructors.
5. Ensuring there are support systems for both students and faculty. Part of this is also ensuring that courses are embedded within user-friendly learning management systems.

CONCLUSION

The results of this survey will help guide educators as to what is lacking in recent online learning platforms and methods of delivery and what changes and supports need to be provided to enhance lesson planning and content delivery. The results support key findings of existing scholarly research,²⁷ which examines student satisfaction with online courses as being “multidimensional”. While student satisfaction includes learner-instructor interaction, learner-learner interaction, learner-content interaction (referencing Moore and TDT)²⁸, it also includes variables such as instructor support, course organization, technical support, and individual student comfort and motivation with online modes of learning and overall internet efficacy.

The shift to online learning for both educators and students was sudden, but in the end, the student, educator and institutions were able to adapt and provide quality education. While there were severe challenges, particularly early on during the pandemic as students and institutions had to make accommodation for internet connectivity issues, over time, it appears that some of the technical issues around online learning had been solved. While for the most part students did not mind the online

delivery of content and felt somewhat empowered by the flexibility that online learning offers (especially via asynchronous deliver), what they found most challenging was the isolation and lack of interaction and engagement that students felt to the course content, their fellow learners, and instructors. It will be important to address these issues in future online course design and lesson planning in order to promote greater interaction while simultaneously engaging different student learning modalities.

NOTES

- ¹ Di Xu et al. "Performance Gaps Between Online and Face-to-Face Courses: Differences Across Types of Students and Academic Subject Areas." *The Journal of Higher Education* 85, no. 5 (2014): 634.
- ² Di Xu et al, 634.
- ³ Di Xu et al, 634.
- ⁴ Di Xu et al, 634.
- ⁵ Michael K. Barbour et al. *The Reality of Virtual Schools: A Review of the Literature.* *Computers and Education* 52, (2009): 402
- ⁶ Jyh-Chong Liang et al. "Internet Self-Efficacy and Preferences Toward Constructivist Internet-Based Learning Environments: A Study of Pre-School Teachers in Taiwan." *Educational Technology and Society* 11, no. 1 (2008): 226.
- ⁷ Michael G. Moore, "Three Types of Interaction," *American Journal of Distance Education* 3, no. 2 (1989): 1-7.
- ⁸ Yu-Chun Kuo et al. ""Interaction, Internet Self-Efficacy, and Self-Regulated Learning as Predictors of Student Satisfaction in Online Education Courses." *Internet and Higher Education* 20 (2014): 36.
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- ¹⁰ Moore, Michael G, 1-7.
- ¹¹ Evrim Baran et al. ""Transforming Online Teaching Practice: Critical Analysis of the Literature on the Roles and Competencies of Online Teachers." *Distance Education* 32, no. 3 (2011): 424.
- ¹² Evrim Baran et al., 424.
- ¹³ Evrim Baran et al., 424.
- ¹⁴ Evrim Baran et al., 425
- ¹⁵ Evrim Baran et al., 433
- ¹⁶ Abigail Hawkins et al. "Academic Performance, Course Completion Rates, and Student Perception of the Quality and Frequency of Interaction in a Virtual High School." *Distance Education* 34, no. 1 (2013): 79
- ¹⁷ Abigail Hawkins et al., 79
- ¹⁸ Jyh-Chong Liang et al. "Internet Self-Efficacy and Preferences Toward Constructivist Internet-Based Learning Environments: A Study of Pre-School Teachers in Taiwan." *Educational Technology and Society* 11, no. 1 (2008): 226.
- ¹⁹ Abdulhameed R. Alenezi et al. "An Empirical Investigation into the Role of Enjoyment, Computer Anxiety, Computer Self-Efficacy and Internet Experience in Influencing the Students' Intention to Use E-Learning: A Case Study from Saudi Arabian Governmental Universities." *The Turkish Online Journal of Educational Technology* 9, no. 4 (2010): 22-34.
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- ²² Yu-Chun Kuo et al., 35.
- ²³ Yu-Chun Kuo et al., 35.
- ²⁴ Yining Zhang et al. "Student Interaction and the Role of the Teacher in a State Virtual High School: What Predicts Online Learning Satisfaction?" *Technology, Pedagogy and Education* 29, no. 1 (2020): 58.
- ²⁵ Abigail Hawkins et al. "Academic Performance, Course Completion Rates, and Student Perception of the Quality and Frequency of Interaction in a Virtual High School." *Distance Education* 34, no. 1 (2013): 79.
- ²⁶ Ibid., Hawkins et al.; Zhang et al.; Baran et al.; Moore.
- ²⁷ Michael C. Rodriguez et al. "Students' Perceptions of Online-learning Quality Given Comfort, Motivation, Satisfaction, and Experience." *Journal of Interactive Online Learning* 7, no. 2 (2008): 106.
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THE EFFECT OF DIGITAL EXPLORATION IN THE MIMETICS OF THE DESIGN PROCESS – A NEW CURRICULA?

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INTRODUCTION

The extent digital methods are becoming used in the design process is increasing exponentially. As students move through their studies they learn not only about architectural design but also how to navigate their design process, the methods to be used and when to use them. In this study we present the initial findings of a detailed study focusing on the effect of digital exploration in the design process of masters in architecture students. The study evaluates the use of CAD and BIM in the design stages and focuses on exploration of design projects undertaken in the studio setting for architecture students. For this study the term ‘digital, or digital methods’ will be considered to include both CAD and BIM in the design process.

The learning process is guided by the exploration and detection of a design idea in both form and function, with the virtual environment providing a dynamic environment.¹ This is further reflected in the constructivist theory where the learning processes use conceptual models, which are used to create incremental stages that become the platform to attain the next design iteration.² The use of CAD and BIM within the design process allows students to visually explore the architectural forms they are creating in greater depth when compared to analogue sketching and negates the issue of drawing skills when using digital methods.

AIM

The primary intention of this study was to understand the effect of CAD and BIM within the design process of Architecture students, in parallel with analogue methods. The full design processes of 16 students were analysed and assessed for all activities (CAD and analogue) used during a 9-month design project. From these 16 students the patterns of CAD activities, in parallel within analogue activities, were mapped to create design process timelines for each individual student, indicating ‘when’ CAD and analogue activities took place on a month-by-month basis, and during ‘what’ stages of the design process. Associated interviews with each student undertaken throughout the design process were assessed using Nvivo to identify theme of ‘when’ to consider such methods were used. The resulting individual design process timelines and thematic analysis were then collated and assessed to gain unique and novel insight into the effect of digital exploration within the architectural design process of master architecture students. Prior to this research, the review of existing literature indicated that no studies have been undertaken that mapped and analysed the design process through

the assessment of both analogue and digital methods, considering a more holistic analysis that considers when and why digital methods are used, during what stages of their design enquiry, in parallel with current analogue methods, and how students move between these methods throughout the design process. Furthermore, extant literature highlights a lack of guidance around how to teach digital methods effectively throughout the design process, limiting both an educator's and students' knowledge on how digital methods could be used across the design process. To address this gap in knowledge this study collected data from 16 architecture master students over a period of 9-month design project and undertaken to gain key insights relating to a more holistic understanding of the effect of CAD on the design process within architectural education.

METHODOLOGY

To address the aim of this study to understand the effect of digital methods on the design process of master's in architecture students, the previous chapter presented the collected data from the 9-month design project, including observation field notes, interview transcripts and design process artifacts such as sketchbooks, drawings, digital renders, physical and digital models. Through collation and analysis of these materials the researcher was able to reach an overall understanding of the data for each individual student and in doing so map the students design process timeline to highlight when digital and analogue methods were used during what stages of design process and from a thematic analysis of interviews, gain an understanding of why methods were used. A detailed cross-analysis of the timelines and thematic results and analyse of the sample as a whole was undertaken to gain a complete understanding of the data. To support this cross-analysis the findings are now explored through the 'lens' of 'when' digital and analogue methods are used, but also considering during 'what' stages of the design process these methods are used. The 'when' and the 'what' are explored through the analysis of the established timelines, while the themes of digital and analogue use established through the thematic analysis of the interviews. While lenses and methods (digital and analogue) are initially analysed individually, the data and findings are triangulated to complete the cross-analysis of the data and to gain holistic insight into the effect of digital on the design process, in parallel within analogue methods.

RE-ABSTRACTION AND RE-ALIGNMENT: THE NEW CONVENTION FOR DESIGN PROCESS

Recent academic papers that have continued the exploration and study of creativity in the architectural academic arena, "Improving Architecture Students' Design Skills: A Studio Experience."³; 'The Effect of Manual Sketching on Architectural Design Process In Digital Era,⁴ and Effect of Computer Learning on performance in early Architecture Education.⁵ The precursor to research into creativity and the creative process were the studies concluded by Finke, Ward and Smith⁶ who posited the hypothesis that 'the creative process is one of a multiple stranded series of processes that together evolve towards a combined phase of creative insight and discovery'. Intriguingly these multiple occurrences converge only having moved through a distinct phase termed 'pre-inventive' where the 'structures' of the artefact are brought together from mental representations of the prior creative occurrences.

Interestingly Cross and Dorst,⁷ concluded that the creative journey is also a series elements termed activities that also occur in succession and result in a 'novel event'. This novel event could be aligned with the notion of 'creative leap' or eureka moment, when the processes that have occurred prior to that moment allow an alignment or focus to the thought processes that enable the production of the 'artifact' or design solution. However, Cross⁸ and Dorst⁹ do not suggest that the processes or stages to

arrive at the artefact have to be part of a cognitive model in order to materialise. In fact, they concluded that such events can be random in nature, or 'non-routine' and the occurrence of the artefact is merely one activity that is different to all others due to the emergence of a 'considerable or unanticipated' happening. This study uses the hypothesis of Visser¹⁰ (2004) who proposes that design activity is comprised of a series of procedural stages that conclude in the production of what he calls the 'creative artefact'. The use of digital exploration can allow for enhanced reflection of their designs and the ability to create iterative steps that employ progressional advances of multiple layers that are fully implicit and part of the students learning journey.

ANALOGUE AND DIGITAL METHOD USED IN THE DESIGN PROCESS

The findings for 'when' CAD and analogue is used is brought together and the findings are initially assessed in terms of resulting subgroups '(DIGITAL)WN' (for when digital methods are used) before the same approach is taken for analogue methods. The subgroups depict reoccurring approaches that are shared by the overall student group in terms of 'when' digital methods and analogue are used in their design processes. Secondly, the findings from the cross-analysis of digital and analogue methods are brought together for the overall student group to explore levels of correlations. From this analysis a greater understanding of the phenomenon is achieved. The resulting timelines depicting 'when' digital and analogue methods and consider what stages of the design process is shown in Figure 1 for analogue exploration and Figure 2 for CAD/ BIM exploration in the design process.

FINDINGS: SWITCHING MODES OF EXPLORATION: HOW CAD AND ANALOGUE IS USED IN THE DESIGN PROCESS

This study examined 'when' digital and analogue methods are used where considered against the five key stages within the design process shared between established Design Process models of Maver,¹¹ Lawson,¹² Hillier,¹³ Oxman¹⁴ and Gelernter¹⁵.

These stages are:

1. Understanding
2. Definition
3. Synthesis
4. Analysis and Evaluation
5. Presentation

The study considered what activities were undertaken by each student within these design process stage and at what point in their design project (from month 1 to 9) the stages of the students' design process and presented similarities in the data based on the established design process timelines for each student. However, this study also examined overarching behaviour in the group and their approaches, and techniques which it is considered by the author to be of particular importance in understanding the connection between the design process, the act itself, and the learning that comes from this process.

From the analysis described 10 key findings have been established, these findings are depicted in Figure 3 'Use of Analogue for Similarities in 'when' Analogue is used for', Figure 4 'Use of CAD/ Digital for Design Stage – Correlation of Design stages and occurrence'.

These findings are as follows:

1. All students undertook analogue methods from month 1, with the majority (15 of the 16 students) using analogue for understanding.

- 2.All students within the sample engaged with digital methods at some point during the design process. With the majority (12 out of 16) of students engaging with digital methods by month 4 (midway) in the 9-month design process.
- 3.Students who adopted digital methods the earliest, did so to support their understanding stage of the design process, with understanding being the most preferred design process stage when digital methods were initially adopted.
- 4.Students who adopt digital methods initially towards the midpoint of the design process, in months 3 – 6, largely do so for definition and synthesis, reflecting the analogue design process stages that typically take place during this phase of the design process.
- 5.Students who adopt digital methods towards the end of the design process month 7+, did so largely for presentation, but in doing so, results indicate that to use digital methods for presentation, there is a need for some initial digital work (design stage) to take place.
6. The majority of students (13 out of 16) eventually used digital methods for presentation.
- 7.Students who adopted digital methods later in the design process (4FB, 6KJ, 16JO and 7GP) were found to be the most reluctant to use CAD due to skill level, and a feeling that digital methods would restrict their design. However, their adoption of digital methods appears to stem from an acknowledgment that they couldn't resolve or refine some design issues using analogue methods.
- 8.Beyond initial use, the majority of students (13 of the 16) in the study group all used digital methods sequentially for synthesis, analysis & evaluation, and presentation stages of the design process
- 9.All but one student progressed through monthly stages for both analogue and digital methods in a linear fashion. With the majority of students (13 of the 16) undertaking a linear process of understanding, definition, synthesis, analysis and evaluation, and presentation. Furthermore, 9 out of 16 of the sample were found to have a strong similarity to this common analogue process within their design stages, with digital stages either mirroring the analogue process or missing one stage.
- 10.When digital methods is adopted, the majority of the students (12 out of 16) adopted a similar digital sequence of stages, to their analogue sequence of stages, indicating that as students' progress through their design stages, once digital methods were adopted, they are applying both digital and analogue methods in parallel to address the objectives of the design stage they are in.

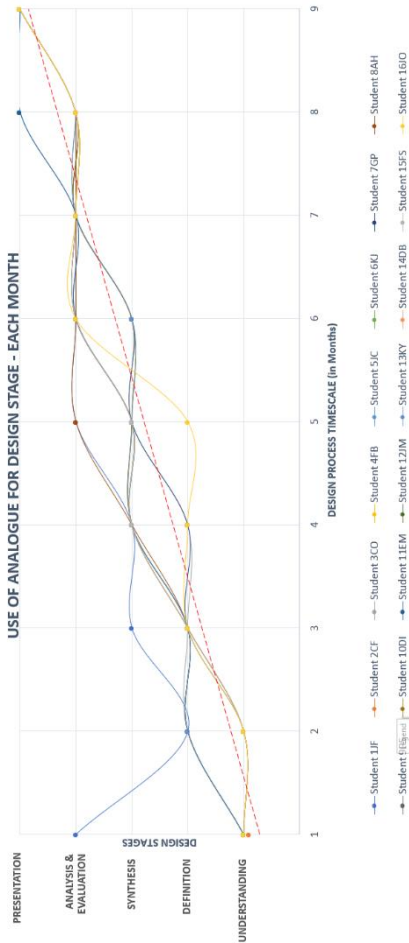


Figure. 1. Use of Analogue for Design Stage – Each Month

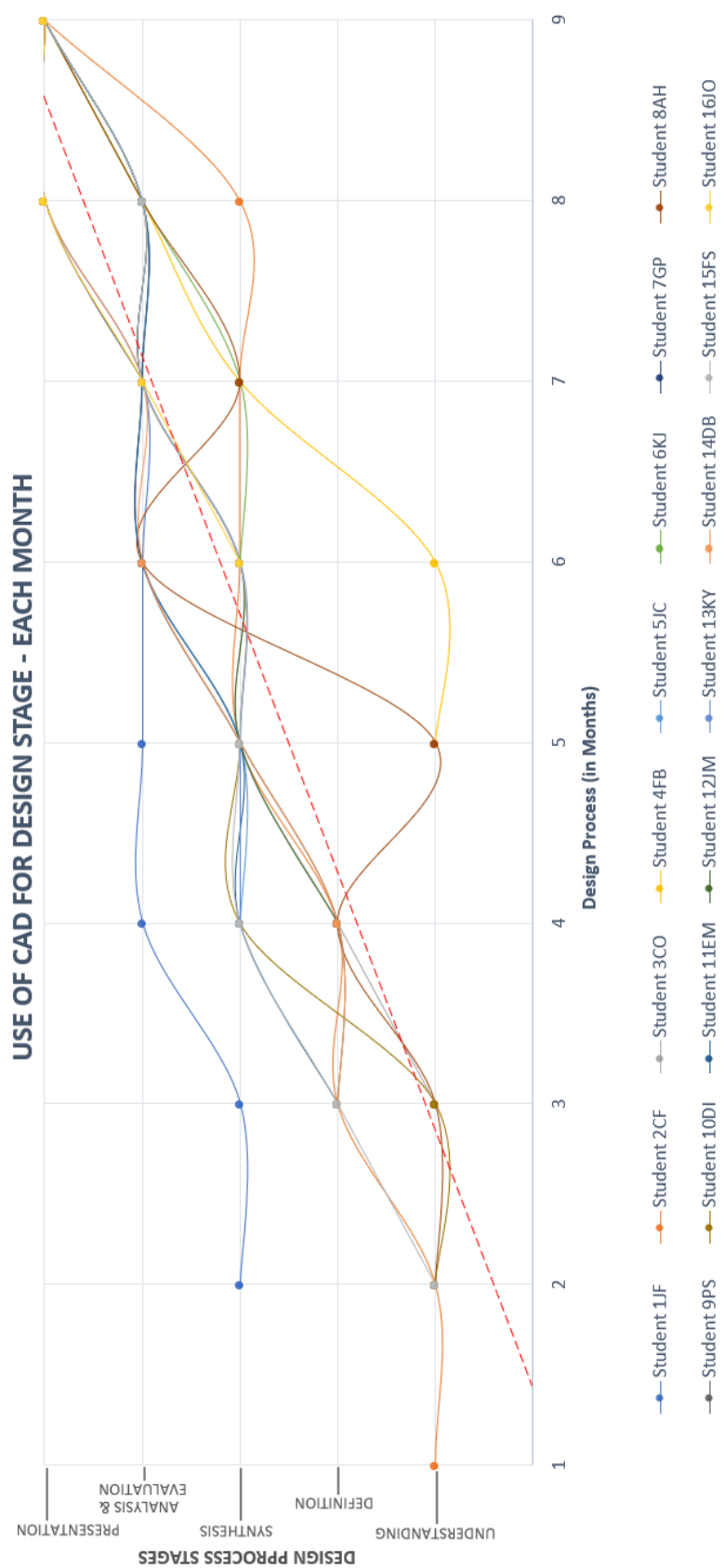


Figure.2. Use of CAD/ Digital for Design Stage – Each Month



Figure.3. Use of Analogue for Similarities in 'when' Analogue is used

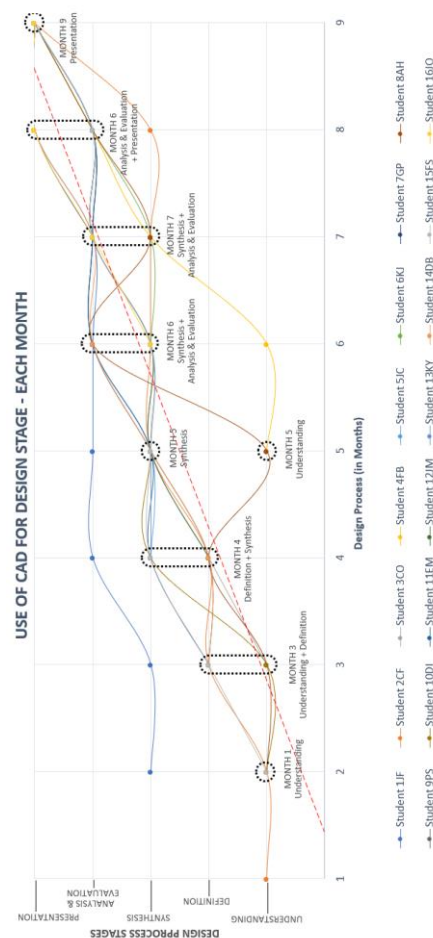


Figure.4. Use of CAD/ Digital for Design Stage – Correlation of Design stages and occurrence

OBSERVATIONS

While the previous sections have drawn findings more directly from the analysis presented, throughout the author has aimed to provide additional insight into these findings by highlighted related contextual observations. In considering the overall approach of digital and analogue methods across the 9-month study, through the undertaken observations this study considered the overarching behaviour in the group, and their approaches and techniques, and the outcomes of these decisions and behaviours on their design process. The resulting insights are considered by the author to be of particular importance in understanding the connection between ‘when’ and ‘why’ students used digital and analogue activities, during ‘what’ stage of the design process, act itself, and the learning that comes from this process and the outcome of these actions. From this analysis 12 key findings can be proposed.

OBSERVATIONS

1. During the study it was observed that all of the students used both analogue and CAD activities at some point in their design process, with the majority of students undertaking CAD and analogue processes in parallel for most of the design process.
2. The students studied would change activity type in order to remove their ‘designers block’. This would establish a ‘dialogue’ for the student to test or amend these design outcomes in order to

problem solve. To re-cast a design problem allowed the student to see the problem in a different way allowing resolution of the problem visually.

3. It was observed in the study that the retaining of analogue activities throughout the majority design process, once CAD was adopted, helped the students to retain an abstract understanding of their proposed scheme. This was most noticeable in students who retained the use of conceptual drawings and models to consider a design problem.

4. Students who predominately focused on CAD activities did not, in the main, produce abstract material and lacked the ‘conceptualising thought process’ required to problem solve, Zeisel (2006)m inhibiting their design process.

5. It was observed in the study that a combination of activities were used by students in their design process during the production period. This was to overcome any lack of intrinsic artistic ability, or CAD skills thereby lessening the learning difficulties faced by students beginning with less inherent talent for visualising their scheme using CAD.

6. Early use of CAD was evident in the findings of this study, as a positive influence on a student’s confidence in design.

7. Students within the study who were observed to efficiently use analogue and CAD activities once they had ‘cast’ their design, used increasing CAD activities to gain a more intricate understanding of their design proposal. The CAD model providing accurate visualisation in two-dimensions and three-dimensions in parallel, effectively becoming ‘talk back’, Oxman (2002).

8. The prompt for the student’s choosing CAD was the ability to visualise a design problem allowing for conceptual understanding and design resolution. The three-dimensional environment of CAD together with the rapid ability to amend a virtual model was recognised as a considerable benefit to clarifying a design solution accurately. The use of CAD for visualisation of their CAD was an incentive for students who struggled with a lack of artistic ability.

9. Students engaged with CAD activities to gain a more intricate understanding of their design proposal. The use of CAD would also reveal unexpected consequences, concepts or features of a design problem that would otherwise may not have been achievable by analogue methods.

10 Students commenced the use of CAD to allow for integrated and immersive opportunities in their design resolution, allowing them to ‘experience’ their design iteration rather than it be merely illustrated, providing a more efficient and informative approach for testing design solutions.

FINAL THOUGHTS: DIGITAL METHODS OF EXPLORATION IN THE ACADEMIC STUDIO

It is now understood in academia that the pace of technology is impacting on the differentiation between digital physicality and physical digitality. These previously separate domains are now becoming increasing integrated and the clear lines between the two are now blurred. There is concern amongst many in architectural studios within academia that this integration will bring with them a new era of exploration within studio design, that of synchronic exploration of building form using both traditional and increasingly digital methods.

What was once a design process that stemmed from pen to paper to thought and back to pen, in an ordered and responsive learning and design journey. The students within today’s architectural studio utilise the integrated and immersive approaches of Building Information Modelling (BIM) and digital exploration. The student still ‘models’ their building, its form and spatial expression, however via digital modelling, an immersive exploration can be experienced, when opting for a digitally created model. This digital model allows the embedded data and information about space, structure and materials to be synchronically manipulated in a blended and deeper learning journey. The digital models that are created during the design process allow for the synergy of both physical and digital

modelling with design exploration occurring seamlessly. This readily accessible and seamless environment allows for a greater accuracy and finer levels of manipulation to be achieved.

There is a new pedagogic classification occurring when using digital modelling in architectural teaching... that of depth of learning. When using the digital model, the cohort were able to explore more 'what if's' in rapid succession which enriched the final learning journey and its pedagogic outcomes. Using the digital model the learning was deeper still; the connection with the model was far more immediate, seeing the model in a real world setting seemed to enhance communication between student to student or student to tutor dialogue. Both perception and interpretations of the models studied were richer in detail and created a new critique dynamic.

Modelling is a key tool in architectural studio teaching, using them allows higher order cognitive skills to be used by the cohort, such as spatial, planning and relationship of form. Using AR to explore the model(s) allows for a critical synthesis of these cognitive skills, where interactions with the model create immediate design iterations that move the student forward through their design journey.

NOTES

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CONTRIBUTIONS OF MULTIMODAL NARRATIVES FOR THE CONSTRUCTION OF INCLUSIVE TEACHING IDENTITIES

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INTRODUCTION

Students need to understand the socio-political dynamics in which schools are immersed in unequal and multicultural societies. We must concentrate and emphasise the construction of teaching identities committed to the principles of equity and social justice in order to guarantee the right to education for all students. If pre-service teachers do not build a clear understanding of the situations of exclusion and inequality that certain groups suffer, it is easy for them to reproduce exclusionary practices and insensitive and tolerant actions towards children whose families are experiencing difficulties in their professional future.¹ An alternative to promote this knowledge is to offer teachers in their initial training learning experiences that place them in the current socio-political and cultural context. Teacher training from a transformative project has to offer a clear knowledge of the current socio-economic and cultural conditions of schooling, and their implications for their professional performance. This knowledge is key to the construction of a school defined by transformative and equitable actions.

This requires thinking about new teaching proposals in initial teacher training that, on the one hand, are inspired by training experiences that value diversity² and, at the same time, take the form of tasks and content that favour autonomous learning and a commitment to inequality, whatever its origin.³

The initial training period is a key moment in the construction of a teacher identity committed to equity and social justice, since the experience of becoming a teacher provides knowledge and connects students with individual and collective images of the profession. Specifically, the procedures and work strategies that are carried out in university classrooms are a fundamental aspect, due to the influence that the methodologies and learning experiences they experience have on future teachers.⁴

Our students, in most cases, enter university classrooms with beliefs and visions of professional performance defined by exclusionary patterns of intervention, due to the experiences they had as students before entering university.⁵ These experiences contribute to the construction of professional identities that contain beliefs about diversity as a deficit; an aspect that needs to be compensated from expert knowledge in university classrooms.

Teaching identity is conceived as a socially situated process, conditioned by the contexts and relationships that teachers experience. Social and school contexts influence how they see themselves individually and collectively, the views held by others -identity for others- with those assumed by the

teacher -identity for him/herself.⁶ These experiences play a key role in the decisions teachers make about their teaching practices, the content they teach and the type of relationships they maintain with their students and other professionals.

In this vein, Rodgers and Scott provide an explanatory model of how teacher identity is constructed impacted by the following issues:

1. The contextual conditions that shape teacher identity as an interaction between social, cultural and political referents that are often subject to historical inertia;
2. it is shaped in interaction with others, and is nourished by the emotions experienced in educational processes and social contexts;
3. it is therefore changeable, unstable and multiple; and sometimes contradictory;
4. it involves a construction and reconstruction of meanings over time.⁷

These approaches place the construction of teachers' professional identity at the centre of initial teacher education, as their time at university should provide a framework for students to consciously construct how to be, how to act and how to understand their work and their place in society.⁸

The complexity of the dynamics in which the school is embedded requires teacher educators to design demanding and intellectually stimulating project work. Scientific knowledge must be translated into heuristic tools to operate in reality from actions of reflection and contrast between theory and practice. To offer them learning experiences through which they can build an individual and collective image as sensitive, vigilant and active professionals in order to respond consciously to all of this.

From these previous considerations, we are committed to training proposals mediated by the use of multimodal photographic narratives, with a clear purpose: to provide them with learning experiences that allow them to build a teaching identity that recognises the ethical, political and social implications of the profession, highlighting two main aims:

1. To bring students closer to knowledge and work procedures in line with a professional identity that is sensitive to human social needs, whose practical action is guided by moral and ethical criteria.
2. To help students to problematise the conceptualisation of diversity and inequality beyond a relativistic or ethnocentric vision. In this way, they can understand how their value and belief systems do or do not reflect the values of the dominant culture, which sometimes legitimise practices that perpetuate inequality and exclusion.

In order to respond to these aims, we have explored the value of visual narratives in initial training, through different teaching innovation projects that we have been developing in recent academic years. Below we present the main points of reference of these projects. Firstly, the relevance of narrative enquiry as a process of professional development, and for the personal learning that comes with the reflective and shared nature of the construction of stories that reveal situations, experiences, beliefs, etc. that make up the identity of each trainee teacher. Below, we explain the value of visual narrative enquiry as a set of proposals aimed at getting future teachers to construct their own visual narratives supported by photographs. Proposals whose principles of action are oriented towards the reconstruction of their identity in a conscious and shared way. We end with a discussion of the basic lines of the work projects that we have been developing in different Education degrees.

NARRATIVE ENQUIRY AND TEACHER IDENTITY

The questions outlined above give a privileged place to narrative enquiry in order to access the experiential and subjective component of teacher identity. This is lived experience and can therefore be considered as a story that can be narrated. Understanding who teachers are, how they feel and experience their personal and professional lives, involves getting closer to their discourses, experiences and particular ways of seeing themselves in school contexts. The different aspects that

make up professional identity can emerge in the construction of narratives. For this reason, biographical-narrative methods have become particularly relevant in the literature on professional identity as a pathway to professional development.⁹ The retrospective view of teachers on their personal and professional life is investigated, from which identity will emerge in the dimensions that constitute it: subjective, social and cultural.

Different pedagogical tools such as reflective writing, auto-ethnography and collaborative reflection¹⁰ have been used to understand how personal experiences, relationships with others and the emotions experienced in the contexts in which they operate have an impact on teacher identity.¹¹ Other work focuses on understanding how experience and interaction with the environment shape beliefs related to the profession through the use of interviews.¹²

Huber et al. note that narrative enquiry in classrooms unfolds accounts of who we are, what we do and how we feel. Narrated life stories that, when shared, unfold counter-narratives and mobilise new ideas and actions as well as the emergence of counter-narratives.

the emergence of counter-narratives that reject dominant social, cultural, linguistic, familial and institutional narratives, those that today define, often in narrow and technical ways, that what matters most in classrooms, schools and universities are not lives in formation but submission, silence and assessment results. These dominant narratives stifle the lives and dreams of children and young people, as well as the lives and dreams of teachers and families. Thinking narratively creates possibilities for imagining counter-narratives: narratives that hold enormous potential for creating educational resonances in lives inside and outside schools.¹³

Telling stories about moments or situations experienced allows the past to be evoked in a conscious way, and in that consciousness the experience is reconstructed because it is analysed and projected into the future in a different way. To narrate is to enter into the analysis, problematisation and questioning of lived situations from the visions of others, who re-signify them and give rise to new stories. This dimension of personal and social change of narrative enquiry is the essence of extraordinary pedagogy whose premise is clear: if we want a different future, we must tell and live different stories.

CONTRIBUTIONS OF VISUAL STORYTELLING TO THE RECONSTRUCTION OF INCLUSIVE TEACHER IDENTITIES

The conjunction of narratives and teaching identities opens up new training and professional development possibilities for teachers that break with the academicist tradition in initial training¹⁴. There is no doubt that the construction of these inclusive identities requires more than the mere acquisition of academic content. Learning theoretical content, even if it has been significantly assimilated, does not guarantee that future teachers will reconstruct the professional identity with which they enter university. It requires putting students through a process of estrangement that allows them to identify how they see themselves as teaching professionals, and particularly how they conceive their role in the face of diversity and inequality. They have to experience a learning process that allows them to reconstruct their ways of looking at diversity, to clearly identify situations of exclusion and discourses that blame and stigmatise certain groups.

From these considerations, and situated in the binomial of narrative enquiry and the construction of inclusive identities, it is worth asking: what does visual narrative enquiry contribute to the construction of a story based on an image or set of images?

A photograph captured in the first person is a singular and personal act of meaning-making. It condenses a system of meaning-producing representation, ideas, thoughts and emotions, which will enrich the story from a multiplicity of elements that would not emerge if only oral language and/or

written language, or photographs captured by people outside the storytelling group, were used.¹⁴ These issues have been recognised in works such as that of McKay,¹⁵ using this procedure to recall students' lived experiences, which favour reflection on their teaching identity on a personal and professional level. Holzbrecher highlights its potential for transitioning to contextual and critical thinking.¹⁶ Fernández-Díaz et al. use visual narrative so that teacher educators can reconstruct their biography and become aware of the meaning of their practice in order to face the challenges of social justice in initial training. Thus, visual narrative is a process of becoming aware of students' professional beliefs that contrast with academic knowledge.¹⁷

Other work highlights the value of visual storytelling for learning values and deep intellectual processes. The construction of visual narratives enables prospective teachers to identify situations of inequality and understand how these are socially constructed,¹⁸ for example, through the construction of anti-racist counter-narratives.¹⁹ Also, visual storytelling provides access to students' beliefs about social and educational treatment of diversity, facilitating awareness of the dominant conceptions underlying them.²⁰ They engage students in the analysis of their own stories, leading to a conversation about the beliefs they consciously and unconsciously hold about the profession, and how differences affect their choices and learning.²¹

All this research shows a common denominator, the formative role played by the image in shaping a narrative or story from the projection of the same or a set of images.²² But with a clear pedagogical orientation, that students in training become aware of the beliefs and visions about diversity and how this is installed in social and educational contexts.²³

From these references, we use narrative enquiry based on photography as a prior act of critical observation,²⁴ which leads us to ask ourselves: what value does photographic narration add to the reconstruction and enrichment of inclusive teaching identities? How can we materialise these formative situations in teaching and learning processes in university classrooms?

PHOTOGRAPHING AND NARRATING: PROPOSALS FOR THE CONSTRUCTION OF AN INCLUSIVE TEACHING IDENTITY

In the proposals we are developing, photo-elicitation and photographic narration are integrated through different training strategies developed in subjects such as Didactics for Attention to Diversity, Didactics and Curricular Innovation or Educational Technology. We adopted a spatio-temporal organisation structured in three phases:

Phase 1. Individual action where the author expresses the reasons why he/she took the photograph.

The students photograph/document by photographing an event they have experienced in relation to the diversity and inequality they observe in their daily contexts. Subsequently, they project the photographs in the classroom, and the students explain the meanings they attribute to them in relation to these two realities under analysis. For Bautista, this is where the formative value of this procedure lies, as their answers will reveal the lived experience (dilemmas experienced, concerns or questions) that will bring to the surface their beliefs, visions and values.²⁵

Phase 2. In teams, the students ask questions and challenge the author of the photograph. This phase gives rise to a dialogue that generates deliberative processes and the reassignment of rich and motivating meanings.²⁶ When visual production is shared, deep exchanges between group members are fostered, such as understanding other points of view, questioning one's own or transforming beliefs.

Phase 3. Construction of a group visual narrative that gives rise to a multimodal representation around a topic or theme that is the backbone of the subject. These processes of analysis and reflection are materialised in a creative communicative product. Photography makes it possible to construct stories

whose concreteness can be defined through intertextual relations with other systems of representation, giving rise to multimodal learning products. In our case, we have elaborated stories with mural-collages on different themes, such as: inequality as a socio-cultural construction, the city as a fragmented centre-periphery territory or diversity as inequality in different spaces and manifestations. A process that involves different levels of reflection and construction of meanings that materialise in a creative and unique production. In this process, the students pay attention to the two levels of content of the images: the denotative, what can be described initially, an object, action or situation. And the connotative, what it symbolically represents, in terms of ideas, knowledge and feelings that the author attributes to the photograph. The aim is to move from the denotative to the connotative level, so that the photo-elicitation situations help students to visualise and interpret the world around them, and to engage in deliberations and a conscious reconstruction of diversity and inequality. The oral story that provides the student's interpretative referents becomes a shared story²⁷ that is based on visual enquiry.²⁸ This shared oral account becomes a process of anchoring or categorising experience that allows students to make more abstract associations, and to relate them to constructs and ideas in the academic texts of the subject in question.²⁹ Inequality and diversity emerge as freely and consciously constructed narratives.

These semiotic construction processes nurture and inform a third level of reflection in the making of a photo-textual narrative. They have to organise, sequence and assemble the collection of images they have previously worked with into a mural. They approach the multimodal construction of their story through photographs and written text, which they can combine with other artistic systems of representation. The students experience complex meta-signification processes by ordering and sequencing each photograph in order to seek a globalising sense of the whole in a more complex narrative structure, which includes processes of reflection.³⁰ At this point in the process, narrative enquiry also introduces an exponential element of meaning-interaction, which is a complex knowledge-building exercise. This task introduces participants to a communication process in which to deploy their creativity and experience multimodality as a path of individual and collective growth, which offers them conceptual references and transgressive action alternatives for their future professional practice.

CONCLUSION

The references presented have led us to use multimodal photographic storytelling as a learning strategy in initial teacher training. We have questioned how to create training experiences that contribute to the enrichment of inclusive teaching identities committed to fair treatment of diversity. Teacher identity, understood from the complexity and dynamism of its construction, which is clearly experiential, can be captured and analysed as a story. A formative process that can be enriched through visual narrative enquiry.

In these years, we have seen how photography is a device that generates different levels of semiotic construction, which situate future teachers as creators of stories, while at the same time making them aware of new analyses and interpretations of the social, political and educational contexts that surround them. Situating them as attentive observers in and about the contexts they inhabit in the first person allows them to construct narratives that they relate to academic content, and place students in front of professional dilemmas and personal and ethical questioning.

If we want to train teachers who assume their future professional work inspired by inclusive values, we need to transform academic spaces into places for the transformation of ways of looking at diversity and inequality. A gaze that can be worked on with procedures such as photo-elicitation and

visual storytelling. From there, their own narratives become intertwined with the academic texts, complex and specialised texts that come to life.

Through visual storytelling supported by photo-elicitation processes, students find a formative space in which to express themselves in order to share their thoughts and feelings, show their identity, question it and become aware of how it is transforming. In short, it is an alternative for future teachers to develop analytical, reflective and ethical competences through which they can learn to know and recognise the other, and which will enable them to progressively build an inclusive school.

NOTES

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- ²⁴ Laura Rayón et al. "Foto-elicitación y Narración Fotográfica para la Transformación de Prácticas Docentes hacia la Inclusión," in *Innovación e Investigación para la Inclusión en Distintos Contextos Formativos*, edited by Carlos Monge et al. (Madrid: Pirámide, 2022), 282.
- ²⁵ Antonio Bautista, *Photographic Elicitation and Narration in Teachers Education and Development* (Springer Cham, 2023), 10, doi: 10.1007/978-3-031-20164-6.
- ²⁶ Tiffany Fairey et al. "Photography as Dialogue," *Photography and Culture* 12, no. 3 (2019): 299-305, doi: 10.1080/17514517.2019.1669992.
- ²⁷ Hedy Bach, "Composing a Visual Narrative Inquiry," in *Handbook of Narrative Inquiry. Mapping a Methodology*, ed. D. Jean Clandinin, (London: Sage, 2007), 291, doi: 10.4135/9781452226552.n11.
- ²⁸ Narelle Lemon, "Using Visual Narratives for Reflection" (paper presented at the Annual AARE Conference, Adelaide, Australia, 2006).
- ²⁹ Dawn Mannay, *Métodos Visuales, Narrativos y Creativos en Investigación Cualitativa* (Madrid: Narcea, 2017), 79-80.
- ³⁰ Javier Mariscal, "A brief Story About Stories," in *Photographic Elicitation and Narration in Teachers Education and Development*, ed. Antonio Bautista (Springer Cham, 2023), 146, doi: 10.1007/978-3-031-20164-6.

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DISCIPLINED CREATIVITY: DESIGN, BION and the EMOTIONAL PSYCHOLOGY OF THE FINALS PROJECT

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INTRODUCTION

The very definition and necessity of the final project rise every few months in many design and architecture departments throughout the world. Albeit various drawbacks, and difficulties for both mentors and students alike, this old concept is still with us. In this paper, we wish to base our innovative approach on a combination of design theory and Bionian psychology. Conversely, we wish to decipher the final project, as a key professional rite of passage, based on two key Psychoanalytic concepts vis-a-vis design theories. First, separation/individuation signifies a transition between a dependent self and a sense of independence and a balanced belonging to a larger social group. As in the classic Eriksonian sense,¹ the adolescent child learns to distinguish between themselves and their friends, thus turning to exterior artefacts to profess their individuality. In the same manner, design students learn the same programs, apply the same methodologies and turn to the same sites for inspiration. Second, this process is augmented by the concept of ‘disciplined float’, a concept we offer to describe different elements of a mental position discussed in length by Bion, whereas the individual feels safe, and is focused and productive, when he is able to think freely, while not completely being free. This constructed freedom or defined limited choice actually is meant to lower students’ stress and anxiety and focus the students more sufficiently, since they are not suspended in an open-ended sea of potential choices. Based on these theories, we wish to situate our research in a key phase in the final project - exploration and ideation - which mirrors the search for a defined design concept. Psychologically, this phase resonates with the Bionian identification between the pre-awareness and awareness thinking that result in associative reasoning, which is crucial for design practitioners. This gap will allow for intricate and flexible thinking modes and the identification of opportunities throughout the creative process.

Background - a bit of history

The final project which defines the students’ accumulated knowledge and skills is hardly new. More than 100 years ago, Walter Gropius, the Bauhaus’ influential headmaster presented the School’s curriculum, offering structure to a field that was previously led in an almost medieval manner along the lines of apprenticeship. In the Bauhaus, however, studies were based on a growing amount of freedom on one hand and on the student’s skills and creativity on the other. Thus, the first year was

constructed of compulsory preliminary courses meant for acquiring basic knowledge, such as theories of colour, form, composition, drawing and visual analysis. Afterward, students continued to specialise in workshops focusing on ceramics, weaving, carpentry, printing, metal, or stage design. This part echoes Gropius' romantic perception of the Medieval guilds in newly minted garb. The final stage - building - was where the finalised objects appeared, however, architecture was introduced to the Bauhaus only in 1927. The Bauhaus raison-d'être was encapsulated in this last stage, bringing to fruition the student's ability to design a complete space, including the structure (bau) and all the utensils and designed products within it.²

Interestingly, following WWII and the deep cultural wounds stemming from German nationality, the New Bauhaus (later called HfG Ulm) was founded as a functionalist, industry-targeted resurrection of the Bauhaus, minus its ideological value system and left-wing roots. While it fitted the School's first headmaster - Bauhaus graduate Max Bill - it triggered a new critical and socially-conscious curriculum by its second headmaster - Argentinian Tomas Maldonado. In an innovative effort, Maldonado introduced theoretical and critical studies within the curriculum, creating a deeply rooted link between theory and practice, yet the classical approach towards a product representing the culmination of the student's skills remained, albeit in a somewhat different manner.³

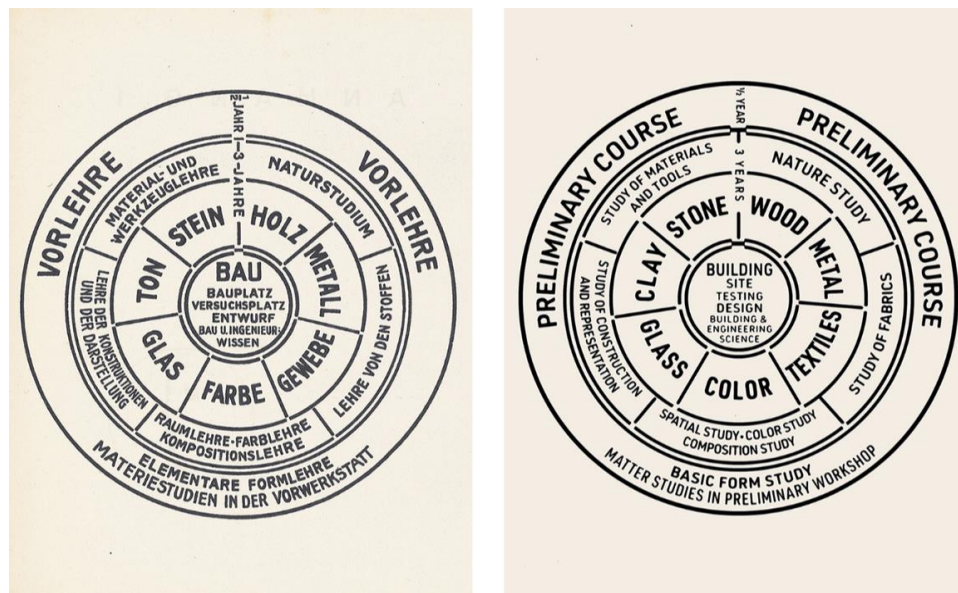


Figure 6. The Bauhaus curriculum

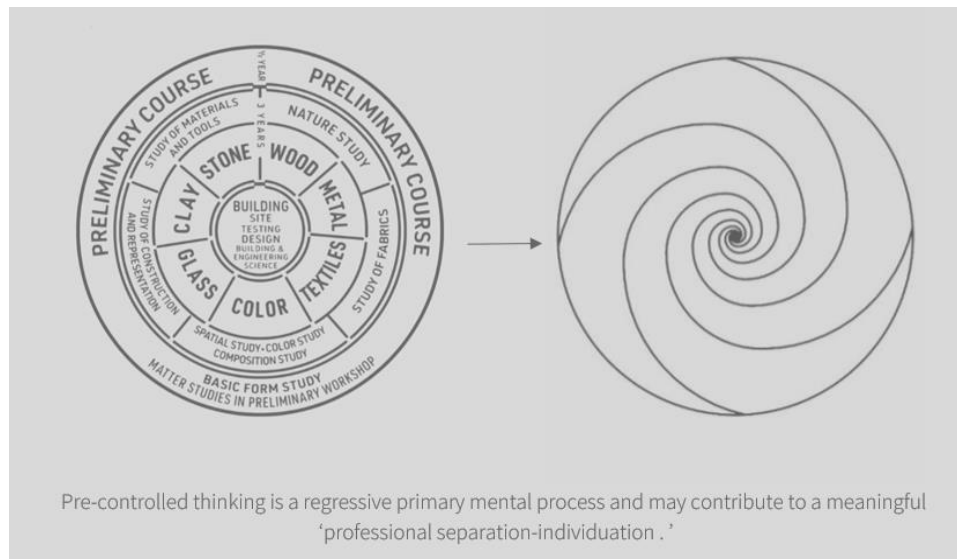


Figure 7. Our version of the Bauhaus curriculum through the lens of Bionian theory

THE FIELD - FINAL PROJECT IN ISRAEL (NOT AN EXCEPTION)

The final project is the climax for every design student, filling them with excitement, dread, and anxiety alike. During this stage, students must function as independent designers, generate innovative ideas, and take responsibility for their choices. Failing at this point means adding another year to their 4-year long degree or even annulling it altogether. As a professional rite of passage, this lengthy process surfaces an array of psychological issues and strains, positioning obstacles in the student's path to becoming fully pledged designers.

In Israel, the final project is typically built of three stages (with minor exceptions): in-depth theoretical and empirical research, ideating a valid and innovative concept, and developing a functional structural/compositional product (2D, 3D, or virtual, depending on the design venue of each department). This structure was developed in the second half of the 19th century and throughout the 20th century as design served the industry's needs or 'real-world problems' as it is termed in some venues⁴. In addition, the final project holds other ambitions: to showcase the student's design and styling abilities, prior to starting work at a design studio, generating innovative knowledge befitting an academic institute, and offering a personal and ideological personal view vis-a-vis current societal local or global issues. Understandably, these mammoth demands add significant pressure on the shoulders of young design students. This stress is added to the juxtaposition between the image of the designer students have in their early years - a magical appearance of creativity and prestigious showcases around the world - and their actual job - long hours facing imaging or visualising programs in a lengthy process to perfect functional and not always "sexy" products.

Amidst this tumultuous and lengthy process, we wish to describe the final project as disciplined creativity. Similar to the essence of the design brief, allowing designers to use their imagination to create new venues of design through the restricting ethos of the brief (depicting a target price, audience, timeline, etc.), this process is heavily structured and guided by instructors, yet it is the culmination of the degrees' 4-year period in which the students are expected to be creative and shock and awe their teachers. To this, we might add another layer of stress, since most if not all projects in this stage are supposed to be a 'first off' (a product we never saw to answer a question that was not previously asked), rather than another step in a clearly-defined evolution (another chair or tablet, for example). Furthermore, the final project enables the students a process of developing and affirming a

personal professional identity. As such, it follows a process, albeit in most cases unidentified as such, of the classic separation-individuation process, namely the process of moving towards less dependence on others and towards having more of an individual identity.

In this process, we wish to follow our notion of ‘safe professional separation-individuation’ as an innovative approach to help instructors and students alike not only survive but flourish through the complex process of the final project. The key to this feat lies in a key part of Bion’s theory of ‘dream-thinking’, which describes a creative situation of disciplined mental flow.

BION AS A PSYCHOLOGICAL FRAMEWORK

Wilfred R. Bion (1897-1979) was one of the greatest psychologists of all time. At the centre of his framework, Bion developed an original psychoanalytic theory of thinking and learning, a theory we wish to utilise, for the first time, as a theoretical framework for understanding and improving the emotional, social, personal and professional process of the design final project.

Bion claimed that dreaming is not merely a mental situation limited to sleeping but rather a mental process necessary for meaningful and creative thinking, mainly when one is awake. “*Freud says Aristotle states that a dream is a way the mind works in sleep: I say it is the way it works when awake*”.⁵ While the importance of critical, conceptual, and systematic thinking is well acknowledged for scientific work in general and for the final project in particular, the possible contributions of dream-thinking are less discussed academically and less emphasised practically. Bion described dream-thinking as a free-floating mental process of pre-verbal representations. These pre-verbal representations, Bion named Alpha elements, are needed for one who seeks to think beyond the constraints of his verbal, critical, and conceptual thinking and paradigms. Interestingly, Bion’s description of the importance of dream-thinking correlates with Gaston Bachelard’s⁶ description of daydreaming as a necessary active process that transfers us from the mundane to infinite, enabling us to think, create and produce among other things poetry, art, and design. Therefore free floating dream-thinking is necessary for forming innovative ideas that can be justified not merely through the merit of critical thinking but also through aesthetic, intuitive, and emotional thinking processes. This is extremely important when we talk about the design process.

Even though associative thinking is also a form of a floating mental process, there is an essential difference between associative thinking and Bion’s dream-thinking. Whilst associative thinking can operate as a totally free-floating mental process, dream-thinking is a more disciplined floating mental process since it is limited to elaborating on a certain object or phenomena one’s attention is continually focused on. Thus, when one is focused on a specific problem or challenge and enables his disciplined floating dream-thinking to contribute to his thinking process, these thinking processes could significantly contribute to his understanding and to the chances of him experiencing moments of creative and innovative gestalten insights.

Furthermore, dream-thinking as pre-verbal and pre-controlled thinking is a regressive primary mental process and as such, may contribute to a meaningful and successful ‘professional separation-individuation’ process of graduate students. While Mahler described an early ‘separation-individuation’ process that occurs during the first two early years of life,⁷ Blos⁸ argued that during adolescence accrues a ‘second separation-individuation’ process and others suggested that ‘separation-individuation’ processes actually occur throughout our entire life.⁹ But while these scholars emphasised the ‘separation-individuation’ process that occurs between one’s close family relationships, we would like to suggest that professional development could as well be conceptualised as containing ‘separation-individuation’ process and therefore suggest seeing the graduate final project as an important professional ‘separation-individuation’ process. Blos added that while

adolescence is a developmental stage that essentially moves forward the ‘separation-individuation’ progress, it is also an age in which there are noticeable mental and emotional regressions. For Blos, these regressions are actually normative and healthy regressions since they enable the adolescent to form, in the long run, a mature individual identity, which is less dependent on, and influenced by, their parents. Following Bion’s creative and regressive dream-thinking processes and Blos’s insights into healthy regression processes during ‘separation-individuation’ stages, we would like to suggest that disciplined-floating dream-thinking could contribute not only to the students’ innovative and creative thinking during their final project but also to their professional ‘separation-individuation’ process and their professional identity formation as young independent designers.

How do we propose to implement this concept?

We believe we can integrate Bion’s concept through what we term ‘disciplined creativity’, encapsulating the dual nature of design - it is a creative endeavour, yet it is encased in a set of constraints deriving from the functional and industrial nature of the discipline. In other words, these constraints enable a certain necessary freedom, yet this duality triggers various emotional, psychological, and intra-personal frictions that typically go unanswered for various reasons. We decided to focus on the final year project as it is a project that involves a need for innovation and creative thinking, whilst functioning as a major professional separation-individuation milestone. While focusing primarily on the final project, our framework will also cater to other projects that are liminal (professional workshops for new workers in a firm, for example), creative (not only art or design), and long-term, as these trigger together a complex reaction among individuals. The integration of our toolkit will benefit individuals and organisations in a threefold manner - the quality of completing the mission (creativity, innovation etc.), the experience of the individual vis-a-vis the mission parameters (if they felt satisfaction and even joy, for example) and the professional development of the individual (for example, did it help further develop their professional identity).

For this to happen, we start by identifying the exact stage of intervention, which in our case is the second stage of the final year project. Following the first stage of research (theoretical and empirical), the students move to the second stage which focuses on identifying and articulating their concept, which is the first stage in which they face a vast schism of uncertainty. This uncertainty stems from various reasons - a key one would be that following three years in which students tend to follow instructions and feel safe, they need to show independence and innovation - and influences their self-esteem, and proficiency perception and may result in depression, an instinct of apathy and more. We propose as a first stage to acknowledge this liminal stage and offer the students a stage of stasis in which they stay in a state of dreamlike ‘disciplined creativity’ meant to allow them a safe space of indecisiveness.

Moving Forward

After acknowledging the importance of the separation/individuation stage to the development of the student’s professional identity, we wish to outline and identify the parameters of this stage. This understanding will help design educators to identify and design a different pedagogical approach to create a better environment for knowledge assimilation and better professional dialogue between students and instructors during the complex process of the final year project.

Before they shift into their separation stage, students need to return to the safe environment of their individuation stage. During this stage, each one needs to identify the length of time necessary for building up their professional identity, as well as their amount of freedom, vis-à-vis the interpersonal relationship with their instructor. Included in this stage will be a giving up of the designer’s ego in

favour of a childlike stasis in a dreamlike space, in which strengthening of the individuation will occur, as a precursor for the separation and integration in a design team.

This preliminary stage of dreamlike ‘disciplined float’ space is crucial for the designer’s shaping of their professional identity. In this space, the designer can access their creative spirit and face the strain of professional practice. The instructor will urge the student to stay in this space without passion or memory, as Bion would phrase it. This freeing experience will allow the student to start creating a professional identity, separate from historically important star designers, whose work floats in the classroom, triggering more pressure and lowering self-esteem. While being in this ‘disciplined float’ the student is then urged to correlate the broader subject of interest with their real life and start with reconnecting to the free creative spirit they encountered during their first year of studies. Among other things, this would be achieved through using various types of briefs, creativity assignments, and ‘re-educating’ instructors about their desired feedback, both in content and in tone.

For example, an instructor telling a student they are petulant and capricious, while not providing any practical insight, also disrupts the link between the student and their free flow dreamlike abilities, thus establishing their image as a child. This endangers the healthy process of both separation and individuation since it continues to portray the student as a child dependent on their parent figure, i.e., the instructor. What we aim for, contrarily, is preliminary feedback, through what Bion would term an object-person relationship and the feelings it triggers. We aim at allowing the student to share their feelings about staying in this suspended float and not rushing to solve real problems or issues. As we build the yearly schedule for the final year project, we aim to keep the first month free to flood their senses and just try to wake their inner child in a dreamlike manner. In this stage, the instructors will urge students to try, experience and share, while following in a somewhat broad yet controlled direction. Instructors will share feedback in 4 layers – professional, emotional, functional, and societal. The toolkit offered for instructors will urge them to ask for many variations of an idea, not go for a binary ‘correct/false’ reaction, but rather ‘that’s interesting, give me 5 more variations of this idea’. Then, the instructor can highlight gaps, and relationships between the variations allowing an iterative and positive approach. In addition, we need to broaden and expand the use of various sketches in this preliminary month focusing on ‘unprecise’ techniques, such as watercolours, gathering of organic materials (leaves for example), vying for a more broad and abstract result that will encourage a dreamlike ideating phase. These will also harness the body in its reaction to the dreamlike phase of controlled float, a concept crucial to Bionian theory. Through these preliminary products, the instructor will be able to assess the position of the student on the individuation-separation sequence till the end of the first month during which a concept will be presented by the student. This early stage is crucial for the student to reach individuation prior to the separation stage which will allow productive teamwork. This entails a process of separation from conventions and unhealthy references – check this or that designer or studio (unfruitful feedback that will not create innovative ideas, but rather enhance stress) – in favour of a better relationship with instructors, as well as a fruitful ideation phase. The following two months will be dedicated to a more analytical research phase focusing on theoretical background and empirical in-depth research.

NOTES

- ¹ Erik Erikson, *Childhood and Society* (New York: W. W. Norton & Co, 1950).
- ² Magdalena Droste, *Bauhaus 1919-1933* (New York: Taschen, 2002); Walter Gropius, *The new architecture and the Bauhaus* (Cambridge MA: MIT Press, 1965); Frank Whitford, *Bauhaus* (London: Thames and Hudson, 1991).
- ³ Paul Betts, *The Authority of Everyday Objects: A Cultural History of West German Industrial Design* (Berkeley CA: University of California Press, 2007); Jonathan Ventura and Gideon Dotan, "Reframing the Situation: Design for Life—Thinking beyond Inclusive Design," *The International Journal of Design in Society* 12, 3 (2018): 1-27.
- ⁴ Michelle Gal and Jonathan Ventura, *Introduction to Design Theory* (Abingdon: Routledge, 2023).
- ⁵ Wilfred Bion, *Cogitations* New Extended ed. (London: Karnac, 2005), 43.
- ⁶ Gaston Bachelard, *The Poetics of Space* (London: Penguin, 2014).
- ⁷ Margaret Mahler, *The Psychological Birth of the Human Infant Symbiosis and Individuation* (New York: Basic Books, 1977).
- ⁸ Peter Blos, *The Adolescent Passage: Developmental Issues* (New York: International Universities Press, 1979).
- ⁹ Moshe Smilansky, *The Challenge of Adolescence* (Tel-Aviv: Ramot [in Hebrew], 1989).

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CREATING MATERIALS FOR TRANSFORMATIVE LANGUAGE DEVELOPMENT IN THE FIELD OF ARCHITECTURE

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INTRODUCTION

Multimodal presentations are central to the teaching and learning process in the fields of architecture¹, planning, building, design and engineering², and help to enculture students into their discipline and profession. However, language and communication skills are still not a visible part of academic study in many disciplines.³ In our experience as Academic Language and Learning lecturers, architecture students often struggle with the linguistic demands of their multimodal presentations, especially those with additional language needs. In 2021, we embarked on an action research (AR) project with the research question “How can we best support architecture students with identified language needs to develop their oral presentation skills?” This paper outlines our AR project and shares some of our findings.

The architecture “crit”

In the field of architecture, “studio” subjects are often integral to degree programs. These subjects involve project-based group and individual work that leads to the design of models and drawings in response to a design brief. Students orally describe, defend, justify, and reflect on their designs in various formats throughout the semester, such as in weekly informal “desk crits”⁴ with their tutors. Architecture students also present their project work more formally two or three times per semester in what is called a “critique”, “crit” or “review”, in front of a panel or jury that consists of the subject tutors, invited professionals and student peers. This form of assessment is authentic because architects need to present and defend their designs frequently in the workplace, but it also invokes considerable stress among students.⁵

Language for architecture communication

Despite the centrality of oral presentations in architecture, communication skills are often perceived as unimportant by academics and professionals alike.⁶ This oversight is reflected in the small but emerging field of research into language for architecture communication, which so far includes exploration of the crit genre and culture⁷ as well as vocabulary.⁸ There is a need to develop the field of language for architecture communication, in particular to explore the use of practical language-based tools that can be taught at university and later applied as architect professionals.⁹

There are few published studies that explore practical strategies for how language and communication skills can be developed in the architecture discipline. In one study¹⁰, the researchers interviewed 39 Master of Architecture students, both domestic and international, at four Australian universities to understand and find solutions to the linguistic and cultural barriers they faced. A key theme emerging from their study was that many students find the language of architecture to be a barrier. The students saw language as central to design work and were aware that “while drawings are used in architectural education to communicate ideas, there is often a need to verbally explain the ideas they represent.”¹¹ The study also found that the frequent use of presentations as assessments in architecture and design was a major source of student anxiety, and some students did not feel they had the skills or confidence to perform well. The students reported that they were not taught strategies for giving multimodal presentations or given the chance to practice their presentations, but that such training would be gladly welcomed.¹²

Two small-scale studies have reported on and evaluated teaching interventions designed to improve undergraduate architecture students’ language skills: one used architectural drawings to improve students’ vocabulary in Indonesia,¹³ and the other embedded materials into a first year core subject to support the development of students’ writing skills in Australia.¹⁴ More such studies are now needed, and covering other communication skills, in order to expand our understanding of how to best support architecture students.

CONTEXT: ACADEMIC LANGUAGE DEVELOPMENT PROGRAM

This AR study is part of a larger university-wide initiative to embed academic language at a university in Australia. The university-wide initiative is known as the Academic Language Development (ALD) program¹⁵, and screens all commencing undergraduate and postgraduate coursework students for language using a modified version of the Academic English Screening Task (AEST), developed by the University of Melbourne. Following the screening process, students identified as needing additional language support attend compulsory language development tutorials (LDTs) alongside a core discipline subject. In architecture, typically 10-15% of the cohort are identified by the screening task and required to attend the LDTs, with many but not all of these students being international students. The LDTs run for 1.5 hours weekly from the third to the final week of semester – 10 weeks in total. There are usually 10-15 students allocated to each LDT, to ensure a friendly and supportive environment with plenty of opportunities for communication practice. Both authors of this paper were involved in designing and teaching the LDTs in the architecture discipline.

RESEARCH APPROACH

The authors (henceforth “we”) used an established AR approach in this study, which can be defined as “taking a self-reflective, critical and systematic approach to exploring your own teaching contexts”¹⁶ through a combination of action (teaching interventions) and research (observing and reflecting to evaluate the interventions). AR has also been described as “a small-scale intervention”¹⁷, since it is employed at the local scale of an individual classroom or classrooms and responds to a local need identified by the teacher and/or students within the local context. While there are different models of AR, we found Kemmis and McTaggart’s AR spiral to be a useful guiding process: it consists of cycles that each include the processes of planning, action, observation, and reflection.¹⁸

Table 1 summarizes the three cycles of AR we report on in this paper. The initial cycle was exploratory, meaning that rather than developing new teaching activities or techniques, the LDT tutor (Emily) focused on understanding the students and how best to support them through recording ideas in a reflective journal. Subsequently, in Cycles 1 and 2 we worked together to design, implement and

evaluate new teaching techniques and materials to support students with their oral presentation skills. Our main data collection methods were student surveys, which we invited students to complete in the middle and at the end of each semester, and focus groups, which students could attend if they chose to after completing each survey. Tutors also recorded their reflections through either a journal or discussions in tutor meetings. The students were a mix of undergraduate and postgraduate students in the disciplines of architecture, landscape architecture and interior architecture. After each instance of data collection, we collated the survey responses and grouped the focus group comments and tutor reflections according to themes that emerged.

Semester	AR cycle	Data collection methods	Participants in the data
February to June 2021	Exploratory cycle	Tutor's reflective journal	Tutor (Emily)
August to October 2021	Cycle 1	Student surveys Student focus groups Tutor reflections	33 students Approx. 16 students (4 groups) Tutors (Emily, Aurora, and others)
February to June 2022	Cycle 2	Student surveys Student focus groups Tutor reflections	12 students Approx. 8 students (2 groups) Tutors (Emily and Aurora)

Table 1. AR cycles

TEACHING MATERIALS DEVELOPED

Concept sheets

We decided that LDTs should focus on key communication concepts rather than follow the ideas covered in students' subject lectures, tutorials and studio sessions. This is mainly because each LDT was attended by students from different areas of architecture, including landscape and interior architecture, and in some cases by both undergraduate and postgraduate students. Due to the priority placed on crits within their study programs, it seemed important to focus on crits as a key area for developing materials. Emily's teaching journal in the exploratory cycle noted that: "When I asked how the [first] crit presentations went, they [the students] [...] admitted they hadn't prepared much – just stood up and talked through their designs." Although the students initially felt relaxed about preparing for their crits, after these first presentations they quickly realized that they needed more understanding of how to describe their designs. The main areas we identified as necessary were supporting students to set the scene when introducing their crits and, as Emily reflected, the "need to explain three key concepts – the ideas behind the work, rather than just the work itself."

In planning for Cycles 1 and 2, we created simple, visually appealing "concept sheets" around key communication concepts, summarizing the main ideas or strategies students needed to implement. In this paper we focus on two concept sheets that we developed for the crit. The concept sheet shown in Figure 1 helps students prepare for their crits, and they can write notes directly onto the second page. Since the opportunity to rehearse a crit presentation is an important step, we included several sessions in the LDTs where all students had the chance to practice part of or their whole presentation.

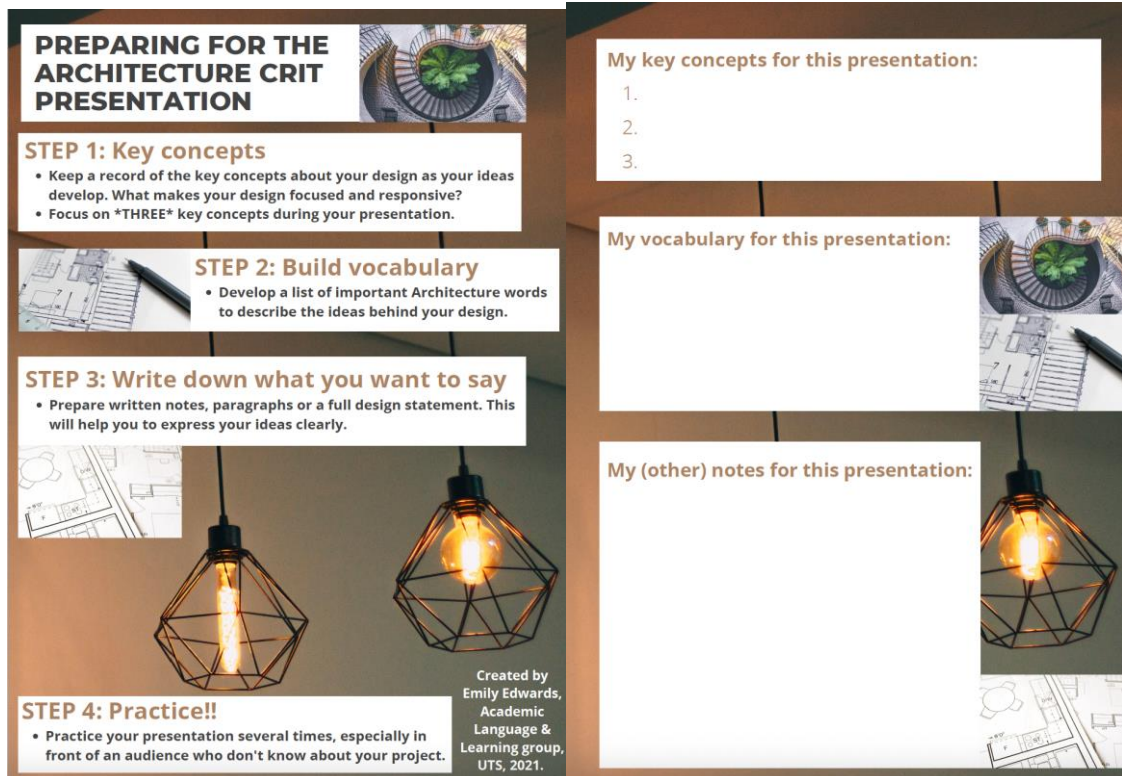


Figure 1. "Preparing for the architecture crit presentation" concept sheet

Figure 2 shows a second concept sheet which helps students verbally introduce their design. It is designed to be used in conjunction with the first concept sheet, and it helps students to prepare a clear introduction.

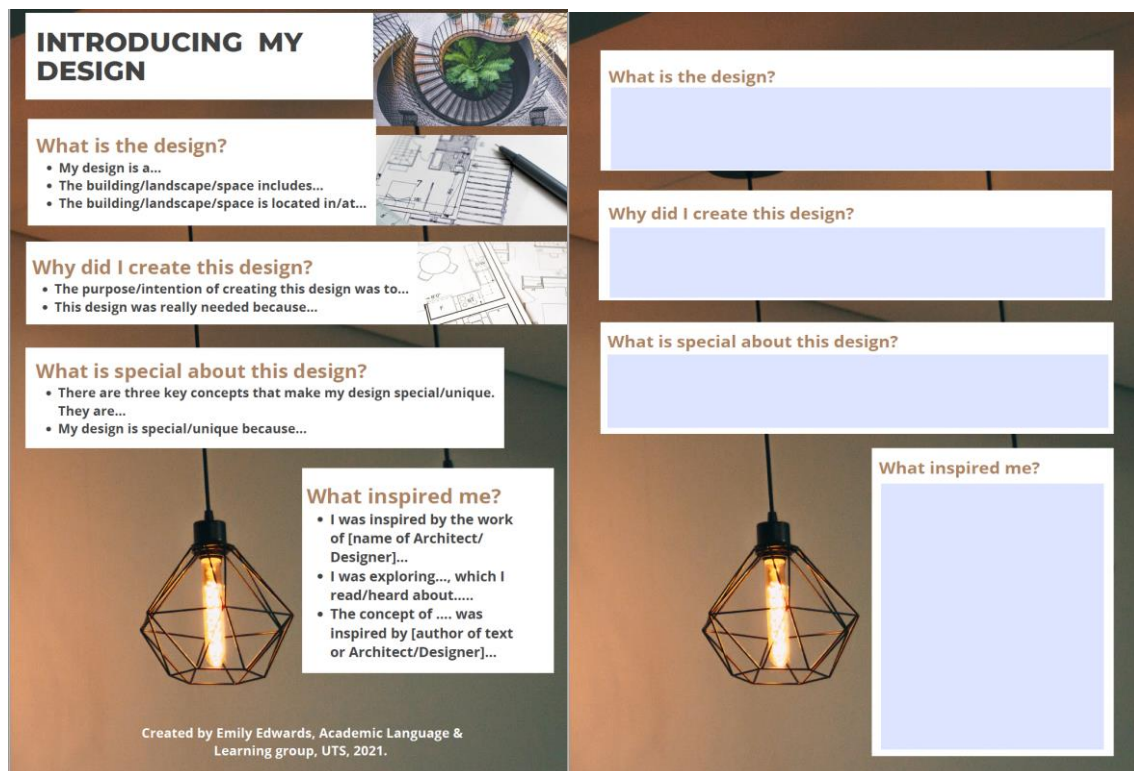


Figure 2. "Introducing my design" concept sheet

Criteria for a crit presentation

We also developed the activity shown in Table 2 to encourage students to give feedback to each other when they completed practice crit presentations in our LDTs. The six criteria listed in Table 2 were developed not from subject assessment criteria, but from our experience working with the students and observing many formal crit presentations. We noticed that students struggled to use tutors' feedback from their formal crits to enhance their subsequent crits, and so this activity was intended as an opportunity to practice giving and incorporating feedback. After introducing students to the six criteria, students worked in small groups to complete the table by selecting 'yes', 'somewhat' or 'no' for each criterion after each student's practice crit presentation. They then presented the feedback to each other.

Criteria	Yes	Somewhat	No
1. Introduced WHAT the design is.	X		
2. Explained WHY the design is needed.			X
3. Explained what is special, unique or responsive about the design (key concepts).	X		
4. Showed/pointed out parts of the design (drawing or model) clearly.		X	
5. Used a strong and clear voice.	X		
6. Used a wide range of Architecture vocabulary.			X

Table 2. Activity based on criteria for a crit presentation

FINDINGS

Speaking skill challenges

Firstly, data collected from the students confirmed that they experienced multiple difficulties with speaking skills as part of their architecture studies. In the Cycle 1 surveys, we asked the open-ended question "What is the most difficult aspect of communicating in architecture subjects?" and 33% of comments related to speaking skills, including challenges in articulating their designs, doing presentations, and communicating with academic staff and students. Some students alluded to a general difficulty with expressing themselves in English ("It is difficult to express my own thoughts accurately") while others specifically mentioned the challenge of explaining their design concepts and models, for instance: "The hardest part is explaining your design concept explanation and hidden logic." Alongside these challenges, students also realized the importance of verbal communication skills and mentioned things like to "communicate with others is the most important part of architecture."

Speaking skill improvements

The focus group data from Cycles 1 and 2 showed that the LDT materials we had developed were helping students to improve their speaking skills. Informal speaking activities helped students to gain confidence and fluency in their everyday speech, with one student saying that LDTs help "me to communicate because we always have to go into breakout rooms and communicate with other students. I like it." Over the course of each semester in Cycle 1 and Cycle 2, we noticed that for most

students, as long as they participated in the class activities and embraced the chance to practice talking in the friendly group environment, their speaking skills and confidence gradually improved.

This confidence in their speaking skills carried over to giving crit presentations. When we asked “What is the most useful thing you have learnt in the LDTs?” in both the surveys and focus groups, students said they valued the improvement in their speaking and presentation skills. The students reported that they had improved their “presentation skills”, “presentation structure”, “speaking skills” and that LDTs “dare[d] me to speak more.” When elaborating on these remarks, one student explained that: “I learnt how to present my design, what you should start [with] in the presentation.” These comments reflect how students used the concept sheets to organize their thinking and structure the crits to follow the often opaque norms of architectural language. It points to the idea that learning how to structure a presentation is a simple technique that can support students, which is also suggested by other recent research.¹⁹

Concept sheets useful for crits

All students found the concept sheets useful to varying degrees. In Cycles 1 and 2 we asked students in the surveys how useful the crit concept sheets were on a 3-point scale of “not useful” to “very useful”. In each survey, 50% or more of the students selected “very useful - I have directly used this strategy outside of the LDT” and the remaining students (50% or fewer) selected “quite useful - I am interested in this strategy but haven’t used it yet outside of the LDT.”

In the focus groups, students were able to expand on reasons for the usefulness of the concept sheets. The main reason was that the concept sheets helped them to order their thoughts for their crit presentations. Without this guidance, students believed that their crits tended to be meandering and potentially not cover the essential components as anticipated by their architecture tutors, as indicated by this comment: “One of the [LDT] classes was about the format of the presentation and introducing your design, how to make it clear...I think that was very helpful, because in my presentations it can be chaotic, I want to talk a lot but without logic.” Other students referred to “crit preparation steps” that “help you to manage your thinking and manage your time.” In terms of how they had used the concept sheets, students reported having downloaded them and then either saving them as photos on their computer screen as reminders, or as working documents to add notations.

Criteria activity as consolidation

The criteria review and practice activity allowed students to consolidate what they had learnt from the LDTs generally, and from the crit presentation concept sheets in particular. It allowed for each student to practice their presentation and receive useful feedback, while simultaneously allowing the rest of the class to deepen their learning through giving feedback. Following on from the rating task, students also recorded comments for each other to explain what was especially good about each peer’s presentation, and what each presenter could improve. They were able to give very specific feedback, such as “The presentation was well organized and clearly explained the furniture used from [place]”, “You could practice more to make your presentation more fluent” and “Sorry if I didn’t hear, but did your design follow any key concepts?”

Positive experiences of crits

In the Cycle 2 surveys, we also asked students about their crit presentation experiences, both in the middle of semester after their first crits, and at the end of semester when they were preparing for, or had recently done, their final crit. Table 3 shows the students’ comments.

How was your first crit experience this semester?	How do you feel about your final crit that you have done or will do soon?
I was very happy with my document which I used whatever I learnt in LDT	I can speak with more confidence and I can prepare structured speeches with a purpose before I speak
I felt very motivative and want to improve more	Stressed but excited to show my work
Feels good, the crit was short so I need to organize my words very well and I finished my presentation on time	Exciting! and stressful
Nervous, worried about not saying it right, with a little tremor in his [my] voice	Very confident
Good but still need to improve in speaking skills	

Table 3. Student comments about their crits

Overall, the students' experiences were positive and their comments show how motivating crit presentations can be, as well as how they benefited from their LDT support (through references to "my document", "organize my words very well" and "prepare structure speeches with a purpose"). Only two of the comments about the first crit indicated anxiety or a need to improve and by the end of semester all the comments indicated confidence and excitement. We ensured that all students practiced their crit presentations at least once in front of the other LDT students, which greatly assisted with confidence, as students commented in the focus groups: "Especially for the first crit I was really nervous, so I did a practice here in front of everyone and it was really, like really helpful."

CONCLUSION

The findings from our AR study have informed the development of new presentation preparation materials that aim for transformative, discipline-specific language development for the architecture students who attend the LDTs. Through learning how to structure and organize their crit presentations as well as rehearsing them and receiving peer and tutor feedback, our students developed confidence in their speaking and presentation abilities, which translated into positive experiences of their final crits.

While the teaching materials developed in this study were only used with the students required to attend the LDTs (10-15% of the architecture student cohort), they could potentially be used with the whole cohort and integrated into studio subject workshops in order to make the often opaque language requirements more explicit. Finally, it is important to note that crit presentation skills are only one of several key communication skills that architecture students need to develop. Our LDTs also focused on listening skills, reading complex and historical texts, writing essays and design statements, as well as architecture vocabulary development. We encourage future studies to explore and evaluate materials and strategies for a range of architecture communication skills so that architecture students can develop the practical language-based tools they will require as professionals.

NOTES

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CREATIVE PARAMETERS: REIMAGINING FILM PRACTICE

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INTRODUCTION

How should film education relate to the film industry? How do we encourage students to become reflective practitioners? How can film's practices be assessed? Unpacking these questions is key to understanding film education and how it might develop. In this paper we will offer some observations and suggest some answers that are born of our experience, teaching on MA Film Practice, Arts University Bournemouth.

These questions directly arose when re-designing AUB's MA Film Production in 2018.¹ This re-drafting aimed to make the course more level appropriate and critically aware, which led to changing its title from Film Production to Film Practice, which sign-posted a shift to a more authorial practice-based research model, this also emphasized that practicing (thinking in and through the medium) is an essential part of the partitioner's process.

The Master's course recognises individuals and their aspirations, and celebrates ideas, making, and creative risk-taking. Our guiding principle is to offer distinctive, exciting and challenging opportunities for you to engage in your respective subject disciplines in order to critically engage with, and redefine, your particular approaches to your practices and position them within your chosen external, creative, economic, and cultural environment.

'Programme Specification,' Film Practice MA, Arts University Bournemouth²

The course's first year coincided with the Coronavirus pandemic and its accompanying lockdown, which forced learning delivery to be rethought, but also offered an opportunity to explore different ways of teaching. The MA Film Practice's adoption of a reflexive methodology meant we were able to adapt to remote learning without fundamentally altering our aims and objectives. For instance, we instigated Sense of Place, a project in which students, in their respective home countries, were asked to explore their own locked-down environments. The students worked in pairs, and the final piece, one minute in duration, was a coming together of both points-of-view. These works were hosted on a designated webpage, so the work could be discussed (via Zoom) and this also ensured that the project's legacy was captured.

The pandemic emphasized that conditions change, that there is a need to be flexible, therefore 'soft' and 'transferable' skills³ are key learning objectives that have transferable cross-disciplinary application. For instance, this was confirmed by the conclusions of Google's Project Oxygen:

'[It] shocked everyone by concluding that, among the eight most important qualities of Google's top employees, STEM expertise comes in dead last. The seven top characteristics of success at Google are all soft skills: being a good coach; communicating and listening well; possessing insights into others (including others different values and points of view); having empathy toward and being supportive of

one's colleagues; being a good critical thinker and problem solver; and being able to make connections across complex ideas.'⁴

At that time, the course's next project was to be One Plus One, which was designed with 'creative parameters' that aimed to challenge production and budgetary inflation and focus authorial intention. In this the students were asked (amongst other things):

When is a moment best led by image or sound?

When should a shot be cut? When should another shot be added?

How does framing aid storytelling? What makes camera movement meaningful?

What does soundscape add? When is dialogue required?

*How do production details (e.g. props, costume) relate intentions?*⁵

These questions were further developed, as the course evolved, and this can be seen in the current One Plus One configuration, which will be discussed later. This approach helped to facilitate highly individual Resolution projects, which was particularly gratifying considering the conditions.⁶ This experience proved the methodology's worth (to students and staff alike) and hastened the course's adoption of this way of thinking and making.

We first wrote about this in 'Questions of Imagination and Process'⁷ as part of a broader consideration of the film industry's future in the light of the climate emergency, and wanted to return to it, to examine it in more detail. Our perspective may be a partial one, but we believe it can be part of an instructive discourse that can develop a critical position, an empowering pedagogy that can accentuate student voices and further new practices.



Figure 1. Tringle, Peter Engelmann (Resolution project, 2021)

Art and Technology

Film is a coming together of art and technology. This formulation can be seen in all forms of production, whether popular or experimental, fiction or non-fiction based. In this there is a tension between perceived industry norms and critical engagement, which has social, political and cultural dimensions.

On most British film courses the technical is privileged, as it can produce recognizable results, which are seen to be directly equatable to employability. This approach is born of a normative definition of

filmmaking, a marketable form that invokes the allure of mainstream productions, and pedagogic ‘pragmatism’, which often manifests as an unwillingness to re-think established models. Therefore, it might be imagined that graduates would be industry ready, but this is not the case, as there is an entry level skills gap,⁸ which indicates that this model should only ever be one aspect of a learning experience.

In our previously mentioned paper, we suggested that the digitization of the workplace and workflow could potentially ‘democratize’ production, however ‘the lack of any discernible change in the film industry demography has demonstrated how technology itself is not enough to determine a shift within such entrenched structures’;⁹ an outlook that is often reiterated through the teaching of film.

The film industry can undoubtedly offer opportunities, but there are profound issues, for instance its lack of sustainability, problematic ethics, monocultural representation and non-diversity, with ‘who you know’ still remaining a ‘significant barrier’ for individuals ‘from under-represented groups’;¹⁰ something that British Film Institute acknowledges,¹¹ but responses have been largely top-down, which needs to be reversed; this point can be levelled at many industries, creative and otherwise, but arguably film is a unique cultural enterprise, with its hierarchical practices and industrial processes being well known, which should make them all the more interrogatable. However, in film education there are complimentary alternatives, which can offer adaptable and applicable practice related experiences.



Figure 2. *Solastalgia*, Alice Papadacci (Resolution project, 2022)

Complimentary Resources

The art and technology dialectic can create a false distinction between research and making when in fact they are part of the same action; Peter Wollen, film theorist and historian, writes, ‘In an ideal world, production students would have a solid grounding in history and theory, just as academic

students should have a grounding in production. But will it ever happen?’¹² Further to this, Victor Burgin, educator and artist, observes that ‘a large part of the routine work of artists is a work of research,’¹³ which defines and harnesses applicable creative processes.

Being reflective practitioners, we endeavour to embody on-going transformative awareness,¹⁴ in which our experience and learning informs our own development. Therefore, we actively aim to create a discursive space that is ‘produced at the confluence of students, programme content’ and staff,¹⁵ which is a site of ‘co-presence’¹⁶ that allows different voices to be heard, that considers learners have ‘distinctive point[s] of view, based on existing knowledge and values’,¹⁷ in which staff have an ‘openness to the unfamiliar.’¹⁸ This views teaching as a ‘collaborative enterprise’ that ‘engages innovation to transform knowledge’¹⁹ for the benefit of students and staff alike.

Creative research aims to develop an awareness of specific forms of knowledge, which allows students to become ‘knowledge producers’, rather than consumers, actively engaged in ‘problem solving.’²⁰ When considering this situation, the debates around creative practice-based research degrees are instructive. This endeavour is framed through an ‘active’ engagement with ‘knowledge building’,²¹ where the ‘conversation’ centers on the ‘material objects’ of art production, and emphasizes the importance of both conversational parties, maker and supervisor.²² This academic space ‘is dynamic’ and is always being (re)created and ‘filled with constellations of connections’ and is an ‘incubator for risk taking.’²³ In this space staff must be open to different student perspectives, whilst offering a contextualizing and supportive presence.

In this reflective environment learning is a dialogue, part of an ongoing discourse, in which ‘the process of knowing and community within which the learning is situated are inextricably intertwined.’²⁴ An inter-connected cohort reinforces the individual’s growth, which also enhances awareness of and commitment to other members of the group and their activities. Therefore, a course’s ‘worth’, in this respect, can be judged by the conditions it offers and its staff’s commitment to this approach. Also, as academics we are required to regularly assess our ‘performance’ - through peer-to-peer, internal assessment, external examination – and this feedback contributed to our understanding and the course’s evolution.

Creative Strategies

On a one year course there needs to be primary and secondary objectives; we emphasize authorial vision and its innovative articulation. However, it is important to recognise that there is no automatic discounting of established industry methods and practices. So, we encourage an approach of Adopt-Question-Adapt: Adopt, because there are industrial tools and techniques that aid all film making practices; Question, because equally there are problematic issues - inclusivity, creativity, social responsibility etc.; Adapt, endeavouring to make these practices fit for emerging practitioners.

This approach has many different and overlapping elements. One such being the deconstructing of viewing and reading lists. Received filmic canons have their place, as lists of filmic acclaim, but this accounting so often has ignored important works. In order to get away from the presumptive notion of ‘best’ we have instigated an alternative method of categorization, which offers evolving thematic collections – Concerning Representation, Concerning Making, Concerning Perspective, Concerning Remembrance, Concerning Society, Concerning Place – each list is chronological and consists of ten-fifteen works. This same method was also applied to the reading list. This challenges filmic perception, making film history more approachable and current, reiterating that interests and forms change and evolve, that history and context are open to interpretation. These collections offer suggestions, which complement existing formulations, and indicate that students, staff, enthusiasts, makers (whoever they may be), critics all play a part in constituting perceived importance and developing awareness, because ‘theory is often the foundation of practice, just as film-making is often

an outcome of film-theory',²⁵ and situating the students actively in this debate is a vital part of their emerging practice.



Figure 3. Queer Self-Portrait with Friends, Beñat Uribe-Echebarria with Vendula Korsová (Resolution project, 2022)

The course is composed of three units – Strategies for Practice, Masters 1: Research, Masters 2: Resolution – that offer a clear learning pathway. Each of the units has a major project attached to it, and they are all designed according to the same complementary principles. In this model only the Resolution project is considered a ‘film’, every creative activity before this is an ‘exercise’, because this allows for more creative openness and deconstructs received technical hierarchies, for instance using mobile phones to film and record material. This emphasizes the importance of language, the need to develop cross-cultural definitions that allow active interpretation, which, for instance, transforms *what a film is* into *what is a film*?

Essential Exercises

Art as Inspiration is the first unit’s major project. It consists of four exercises that combine to make a complete work. It starts with a research relevant artistic reference, which directly inspires the first exercise:

1. *Essential Image* - what can you create & communicate with a single (moving) image, what do we need to see and why do we need to see it?
2. *Essential Image and Sound* - what can sound provide us with that the image cannot, how do we mobilize sounds unique characteristics in our creative work?
3. *Essential Image, Sound and Movement* - what does movement add, when should a camera be still and when should it be active, how does its animation affect the frame, further composition, assist a narrative?
4. *Essential Edit* - what’s the creative and communicative purpose of your final assembly, how does it relate to your research?

This process reenforces the focused application of research, in which details and meanings build towards a singular outcome and encourages self-awareness.

One Plus One is the second unit's major project. But before this occurs the students present their research Resolution proposals. Their projects can take on any form or genre, but they must relate to their evolving research and be economic in thought and deed.

A Research Resolution proposal must relate the project's conceptual and creative drive, the connection to research, its ambition (the scale and budget must be considered and realistic), and mode of presentation (will it be shown in a cinema or installed in a gallery etc.) These projects must adhere to creative parameters, for instance drama proposals' need to carefully consider their staging:

1. *Script* - a maximum of eight pages (film duration ten minutes).
2. *Actors* - ideally two (no more than four).
3. *Location* - a maximum of two main off campus sites; if proposing a studio production, the set must be modular (shared with the other studio bound projects).
4. *Conception* - all projects to be situated in the contemporary realm; any historic representation must be clearly linked to research.
5. *Further logistics* - no children, animals, weapons, stunts.

Each student project is offered seed funding by the course and encouraged to Crowdfund the any remaining funds that their project may require. Also, the students have access to the university's considerable resources – professional standard film kit, studios and post-production facilities, crew (drawn from both BA and MA film related courses), technicians, and other courses (e.g. Modelmaking, Animation and VFX). All of which asks: how is your research going to be made manifest? And what will make it distinctly yours?

To facilitate personal answers the students, engage with One Plus One. This project addresses conceptual processes, it consists of four related components that come together in a performative presentation. It challenges the students to 'sound-out ideas, visualize resonance, think beyond words', giving them 'the opportunity to interpret, re-imagine and re-present' their research, which allows their ideas to develop in unexpected ways across and between different forms. One Plus One consists of four related components that culminate in a ten minute presentation:

1. *An Image* - the essence of your production in stilled time; it should encapsulate your perspective, the emotion, feeling, narrative that you are representing; it can be a collage, drawn, painted or photographic (analogue or digital); it can examine texture, shadow, movement, but it cannot feature figurative scenes, portraiture.
2. *Soundscape* - the audio essence of your proposed project, it can feature voices, but no scripted scenes or non-original music.
3. *Colourscape* - what is the project's visual register when expressed colour treatment, a sequential colour and light presentation that 'tells the story'.
4. *Spatial Presence* - how do you see your project? How can it be located in three dimensions?

We want the students to think and re-think, make and re-make, to consider what is the essence of their proposed activity, to be authentic, resourceful and collaborative, for instance, if they intend to produce a studio based production their plans must be modular, sharing resources with other such projects.

The Resolution Project is the culmination of the students' research. The course's practices may have shaped their approach, but the outcome is determined by individual intent.

Creative parameters are versatile, unrestricting, potentially expansive; they are tools to question and focus intentions that place a different emphasis on technical and production demands, which allow imaginative and differentiated forms of applied research to emerge. This process proposes that the individual learner will discover through the programme of study what they need, and what they discover is what they needed at that time, for the answer to *what is a film?* should always be relational

and interpretive.²⁶ This may be the end of their Masters' but their practice, in all respects, will continue to evolve, as they do, and all they have been part of will aid this progression.

CONCLUSION

'When I came to AUB for my MA I transformed as a filmmaker, and throughout the process, the course team let me (and highly encouraged me) to experiment, to think outside the box while I'm exploring my idea and how I could make it work; I truly believe that I couldn't have done it anywhere else.' Peter Engelmann, MA Film Practice Graduate²⁷

We have tried to design and be part of an aware and supportive environment, that promotes personal research and applied experimentation. Some Resolution films are surprising, redolent with seemingly fresh insight, whilst others are more recognisable works, but they have all gone through the same process - finding creative research resolutions through the application of creative parameters - and their final form is evidence of their exploratory journey.



Figure 4. *Indelible*, Charlotte Howard (*One Plus One*, 2022)

Many courses make great play of their staff's industry experience, but film courses are not the industry. Technical training can, sometimes, directly open career pathways. Our critique does not negate the importance of such teaching, for this will always be attractive, but it would reiterate that there are different ways of considering film and its purpose. Therefore, we would emphasise critical thinking, which positions film as a varied international socio-cultural phenomenon, and the importance of being a reflective and reflexive practitioner; an approach that can also enhance an individual's employability, as they become an active part of the world in which they practice.

The industry requires an able workforce, but these individuals can offer more than educated willingness, they can be part of its evolution towards a more engaged, sustainable, and accountable environment. History suggests that by degrees some refocusing will occur, in accordance with changing attitudes and procedural innovation, but when change is a necessity it can happen quickly,

for instance in response to the lockdown production companies rushed to devise new working protocols to ensure that the industry did not shut down completely, which demonstrated that this production model can be adaptable and change if it needs to.²⁸

Learning initiatives are endeavouring to become more inclusive and diverse, to tell different stories, and this is where the future of the industry should lie. But these activities need to be bolder. They need to address the assumptions that permeate the industry, and question its practice, for knowledge of process and possibility will make it more approachable, allow new voices to be heard and influence its development.

NOTES

¹ The MA Film Production course was re-written and reconstituted as Film Practice by Andrew Vallance and Jonathan Carr, who at that time were Senior Lecturer, Film Theory and History, and BA Film Production Course Leader.

² 'MA Film Practice Programme Specification,' Arts University Bournemouth, accessed October 15, 2022. <https://aub.ac.uk/graduate-courses/ma-film-practice#tab-1126285-course-outline>.

³ Paul Ashwin et al, *Reflective Teaching in Higher Education*, ed. Andrew Pollard and Amy Pollard, (London: Bloomsbury, 2015), 353.

⁴ Valerie Strauss, 'The surprising thing Google learned about its employees – and what it means for today's students', Washington Post, December 20, 2017, accessed August 20 2022.

<https://www.washingtonpost.com/news/answer-sheet/wp/2017/12/20/the-surprising-thing-google-learned-about-its-employees-and-what-it-means-for-todays-students/>

We are indebted to our colleague Clare Cahill for sharing this article.

⁵ Our colleague Ronald Gow was integral to the creation of creative parameters and course's adoption of them.

⁶ Three examples of positive outcomes are Lukas Steinmaier's *Sunday Roast*, which won the Royal Television Society (Southern) Award for Student Comedy and Entertainment (2022), Karim Ouri's *Isle of Sien*, which won Lyon Young Film Festival's Documentary Award (2022) and Peter Engemann's *Triangle*, which won the RTS (National) Award for Postgrad Writing award (2022). Winning, or not winning, awards does not reflect the worth of a course, however this form of recognition is meaningful to the students.

⁷ Andrew Vallance and Robert Hardcastle, 'Questions of Imagination and Process: The Potential of Film Practice Pedagogy to Challenge Existing Modes of Production in the Context of the Climate Emergency,' *Moving Image Review & Art Journal*, 10: 1-2, (2022).

⁸ Seetha Kumar, 'Upskilling the UK's Creative Industries,' *New Statesman* (Spotlight Skills Supplement), July, (2017), 20.

⁹ Vallance and Hardcastle, 106.

¹⁰ Kumar, 21.

¹¹ 'Employment in the film industry,' BFI Research and Statistics, August 17, 2017, accessed August 23, 2021. <https://www2.bfi.org.uk/sites/bfi.org.uk/files/downloads/bfi-employment-in-the-film-industry-2017-08-30.pdf>

¹² Peter Wollen, 'Theory and practice,' *Journal of Media Practice*, 6:2, (2005): 74.

¹³ Victor Burgin, 'Thoughts on "Research" Degrees in Visual Arts Departments,' *Journal of Media Practice*, 7:2, (2006): 105.

¹⁴ Sigridur Halldorsdottir, 'Quality Attributes and Competencies for Transformative Teaching: A Theory of the Transformative Teacher', in *Quality Enhancement of University Teaching and Learning*, ed. Claus Nygaard, Nigel Courtney and Paul Bartholomew, (Farrington, Oxfordshire: Libri Publishing 2013), 151.

¹⁵ Rebecca Bell, 'Negotiating and Nurturing: Challenging Staff and Student Perspectives of Academic Reading,' in *Learning Development in Higher Education*, ed. Peter Hartley, John Hilsdon and Christine Keenan, (New York: Palgrave Macmillan, 2011), 146.

¹⁶ Ashwin, 238

¹⁷ Saul McLeod, 'Constructivism as a theory for teaching and learning,' *Simply Psychology* (2019), accessed November 8, 2022. <https://www.simplypsychology.org/constructivism.html>

¹⁸ Engels-Schwarzpaul, 1260.

¹⁹ Claus Nygaard, Nigel Courtney and Paul Bartholomew, 'Theoretical and Empirical Perspectives on Quality Enhancement in Higher Education,' in *Quality Enhancement of University Teaching and Learning*, ed. Claus Nygaard, Nigel Courtney and Paul Bartholomew, (Farrington, Oxfordshire: Libri Publishing 2013), 8.

²⁰ Isabel Huet, Ana Vitoria Baptista and Clara Ferreira, 'Developing undergraduate students' generic competencies through research actives,' in *Quality Enhancement of University Teaching and Learning*, ed. Claus Nygaard, Nigel Courtney and Paul Bartholomew, (Farrington, Oxfordshire: Libri Publishing, 2013), 157.

²¹ Anna Christina Engels-Schwarzpaul, 'The Ignorant Supervisor: About common worlds, epistemological modesty and distributed knowledge,' *Educational Philosophy and Theory*, 47:12 (2015): 1254.

²² Engels-Schwarzpaul, 1259.

²³ Craig Batty and Marsha Berry, 'Constellations and connections: the playful space of the creative practice research degree,' *Journal of Media Practice*, 16:3, (2015): 181-2.

²⁴ Ashwin, 24.

²⁵ Wollen, 78.

²⁶ Catherine Gough-Brady. 'Using film as both embodied research and explication in a creative practice PhD,' *Media Practice and Education*, (2019): 67.

²⁷ '36 Questions, Three Strangers, One Dark Question,' Arts University Bournemouth, (2022), accessed on November 15, 2022.

https://aub.ac.uk/latest/triangle-36-questions-three-strangers-and-one-darksecret?utm_source=shorturl&utm_medium=link&utm_term=triangle&utm_campaign=marketing

²⁸ We discuss this in more detail in the previously referenced 'Questions of Imagination and Process.'

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DOCUMENTATION FOR DESIGNERS: MEDIA-BASED SELF-REFLECTION TOOLS FOR UNDERGRADUATE STUDENTS

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INTRODUCTION

Reflection is the engine of the design process *and* the learning process. In design education, students learn through reflecting upon the impact of their decisions, gradually refining their technique and developing their professional practice. Reflection is key to cultivating an ethical practice — the ability to see how one’s identities, cultures, and histories play out in creative decisions is vital in designing for a more equitable and sustainable world. However, despite its embeddedness in both design and learning, reflection is seldom taught as a skill set in its own right, especially the deeper levels of critical reflection (or reflexivity) that examine the lived impacts of design decisions.

Documentation for Designers is an experimental undergraduate curriculum I piloted and evaluated in the Fall of 2021 at the University of California at Davis. Through visualizing and analyzing their work through different media approaches, students were encouraged to take a long, careful look at the histories, desires, and values that defined their work, and to consider how they wanted their practices to evolve in the future. In this paper, I outline how I constructed this curriculum as a way to pilot multimedia self-reflection modalities for undergraduate design students. I then discuss the findings of a qualitative research study I conducted at the conclusion of the term, as I investigated how specific features of the curriculum influenced the quality of student reflections, particularly students’ ability to reflect both on small-scale processes within individual projects and large-scale practices that cut across entire bodies of work. Layered, word-driven exercises proved especially fruitful in encouraging students to think beyond the confines of a single project to consider the nuanced interplay between their work and the wider world.

Reflection, design, and learning

At its essence, reflection is simply thinking about what has happened, which is something designers do frequently. Many characterize the design process itself as reflection, citing Donald Schön’s foundational model of “reflection-in-action” — a “conversation with the materials of a situation” wherein designers make decisions in dialogue with the results of previous decisions.¹ Similarly, Baumer et al. define reflection as “reviewing a series of previous experiences, events, stories, etc., and putting them together in such a way as to come to a better understanding or to gain some sort of insight.”² This power to evoke new levels of understanding may be reflection’s primary utility in design spaces and classrooms alike. Designer-scholars like Pedgley and Sadokierski have cultivated

reflection in their respective design practices through honing rigorous procedures of self-documentation and self-inquiry using tools like diaries³ as well as overview maps and experiment logs⁴ (respectively). In this way, practices of self-documentation and narrative creation often go hand-in-hand with practices of reflection. Scholars who have studied the process of reflection through the creation of personal narratives have noted its beneficial effects in increasing critical engagement and understanding of a given subject,⁵ helping people notice (and even positively influence) long-term behavioural patterns,⁶ and encouraging individuals to reach deeper levels of creativity, self-expression, and higher-order thinking skills.⁷

However, reflection can vary in scope, depth, and consequently, results. Moon's Levels of Learning framework offers a five-tiered ladder of critical engagement with a given subject, paraphrased here: *noticing* (observing what happened), *making sense* (trying to understand what happened), *making meaning* (linking what happened to other concepts), *working with meaning* (situating what happened more deeply within new contexts), and *transformative learning* (formulating new ideas about what might happen next).⁸ Each level of learning requires a deeper level of reflection, and also invites greater potential for transformation.

From reflection to reflexivity

This transformative learning is essential in preparing designers to not only interpret the world that is, but to shape the world that will be. Here is where *reflection* enables *reflexivity* — the ability to reckon with how one's position in the world influences one's engagement with it. Fook describes reflexivity as the “ability to locate yourself in the picture, to understand, and factor in, how what you see is influenced by your own way of seeing, and how your very presence and act of research influences the situation in which you are researching.”⁹ Reflexivity, then, expands beyond the mere act of reflection into an ethical imperative, characterized by Bleakley as “a practice of sensitivity to, and a caring for, the world.”¹⁰ Reflexivity is crucial to developing an ethical, culturally-responsive design practice that accounts for the fallibility of unchallenged individual perspectives. Fry et al. caution that a design education that does not allow space for critical reflection on old paradigms and prevailing assumptions is ultimately an education that will lead the world further into social and ecological unsustainability, as institutions prepare students to create new work in “‘the world that was’ rather than the ‘world that is.’”¹¹

Despite its transformative potential, reflection in design is often relegated as “means to an end”¹² in the service of existing priorities (many of which may well be aligned with the unsustainable agendas that have imperiled the world in the first place). While scholars like Lousberg et al.,¹³ Welsh and Dehler,¹⁴ and Christian¹⁵ have documented the benefits and opportunities of designing for reflection in the creative classroom, there is yet much room to explore what new pedagogies lead to not only reflection in general, but *reflexivity* — the ability for designers to situate themselves and their work in the world. To do this, design educators need tools to teach reflection beyond the confines of a single project. How can we cultivate new, centripetal practices of reflection that not only look inward but outward — attending to how minute design decisions ripple out into habits, portfolios, initiatives, and larger-scale social and environmental impacts?

DOCUMENTATION FOR DESIGNERS

With this question in mind, I developed Documentation for Designers as an experimental curriculum to bridge the gulf between reflection and reflexivity. The course encourages designers to consider how the world has shaped their practice — how their individual cultures, histories, likes, dislikes, values, and even biases influence their design decisions, while also encouraging reflection on how these

design decisions, in turn, shape the world. Unlike many other investigations of reflection in design curricula that are grounded in conventional studio assignments (hands-on projects in response to creative briefs), Documentation for Designers offers a dedicated space for undergraduate design students to reflect on the work they create in their *other* design classes — a rare opportunity for students to step back and make connections between projects; to connect the past to the present and the present to the future.

Course structure

Documentation for Designers was structured around eight weekly modules. Each week, students followed a 90-minute take-home “recipe” that guided them in exploring a different self-documentation or storytelling modality — data visualization, photography, videography, audio, card-sorting, writing, collage, and sequential storytelling. For each recipe, students received a list of “ingredients” and a manageable series of steps that included cues for pausing, observing, and mindfully reflecting. By following each step and simply noticing what happened, students could work at a slow, exploratory pace that focused on process over outcome. Each recipe had two parts: a creative portion, where students followed a set of instructions to capture and reflect upon their work using the modality of the week, and a short written portion where students logged their reflections and observations, journal-style. Each week, students responded to the same set of open-ended questions in their journals:

What did you notice in completing this exercise? Take a few moments to reflect on what came up for you. How did it feel? Did you notice anything surprising about yourself or your work? Is there anything you want to keep exploring, or take forward from here in your practice?

Curriculum design and theory

In order to help move students from reflection to reflexivity, Documentation for Designers was specifically designed to facilitate multiscalar reflection on design — within individual recipes, across *multiple* recipes, and even across students’ entire existing portfolios. Consequently, I scaffolded the course assignments to build on one another throughout the term, wherein media artefacts and reflection skills from past assignments would be revisited in future assignments, allowing students to continually (re)consider their work and their process from new angles.

The diagram below represents how media and skills were transferred between assignments, while students also reflected cyclically within the assignments themselves.

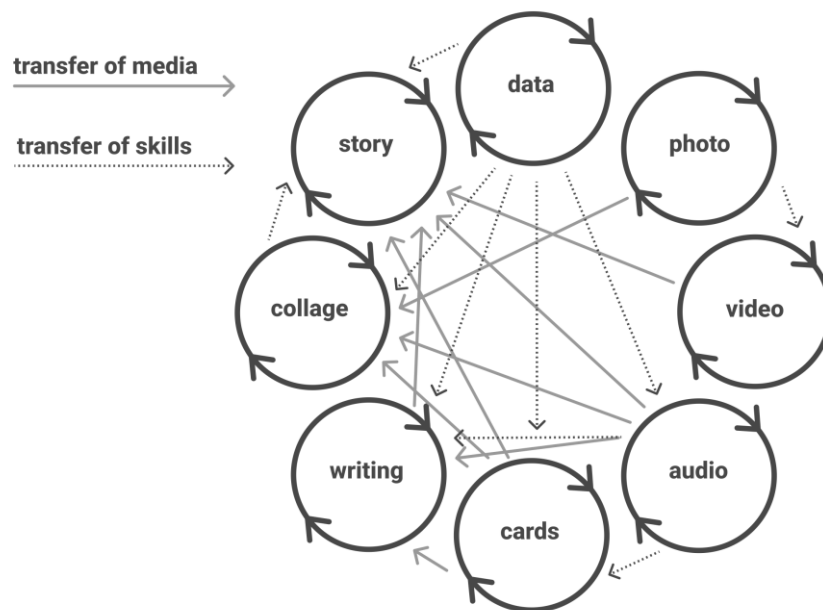


Figure 1. Diagram shows the transfer of media and skills

In constructing the curriculum this way, I drew upon three interlocking theoretical frameworks:

- **Hermeneutic circle** — In Documentation for Designers, students gained new understandings of their work through analyzing their individual assignments in the context of their entire body of work, while also investigating how themes in their work emerged from close investigation of individual assignments. This pattern of understanding and (re)interpretation is modeled on Gadamer's hermeneutic circle, wherein understanding of the whole emerges from consideration of the parts, and vice versa.¹⁶
- **Spiral curriculum** — Documentation for Designers also borrowed on Bruner's spiral curriculum — learning through revisiting a topic multiple times and in multiple contexts.¹⁷ Following Gibbs' assertion that this spiral is best implemented in condensed curricula that incorporate both scaffolding and descaffolding,¹⁸ I scaffolded up by teaching media skills in early assignments, before gradually descaffolding to allow students to combine those skills creatively in later assignments that encouraged greater levels of independence, experimentation, and storytelling.
- **Storytelling for reflection** — Similarly, storytelling served to link media skills to reflection skills. I borrowed on Alterio and McDrury's tiered approach to reflection through storytelling, mapped onto Moon's Levels of Learning (in parentheses here)¹⁹: *story finding* (noticing), *storytelling* (making sense), *story expanding* (making meaning), *story processing* (working with meaning), and *story reconstructing* (transformative learning). In early assignments, students focused on learning media skills and noticing their work from new angles. Intermediate assignments helped students probe that content for hidden meanings. Concluding assignments encouraged students to reconfigure their own stories, connect their work to their personal histories, and consider how they wanted their practice to transform.

RESEARCH

To assess the effectiveness of this course in promoting multi-scalar reflection within and across student design projects, I conducted a qualitative analysis of journal entries from throughout the quarter. I queried these writings for what specific reflective exercises in the course led to the deepest and widest levels of reflection, pushing toward reflexivity.

Methods

There were 18 students enrolled in the pilot, and I sampled each students' eight written reflections for a total of 144 distinct journal entries (used with consent). Applying a grounded theory approach²⁰ to qualitative analysis, I began with a preliminary round of line-by-line open coding, staying close to the text, before distilling out emergent themes in a series of memos. However, I simultaneously employed some strategies of a flexible coding scheme²¹ by also applying *a priori* codes to indicate specific pedagogical structures to cross-reference with themes emerging from the grounded analysis. I used the following codes to tag content pertaining to the four key types of creative activities in the course:

- **media capture** (i.e. taking a photo)
- **media synthesis** (i.e. making a photo collage)
- **word capture** (i.e. recording voice memos and generating transcripts)
- **word synthesis** (i.e. collaging text from transcripts into a designer manifesto)

Since every recipe asked students to complete a written journal reflection, the “word capture” and “word synthesis” codes only refer to activities that students completed as part of the creative (making) portion of their assignments.

Analysis

In analyzing student responses across many different combinations of creative activities, I quickly noticed that while students were unanimously reflecting (as they were asked to do), these reflections unfolded at different levels. Out of respect to the exploratory, open-ended, and partially-grounded nature of my analysis, I did not sort student reflections into a pre-existing framework (such as Moon's Levels of Learning) as part of my coding, though that approach certainly would have been possible. Instead, I noticed that student reflections organically sorted themselves across two broad categories that I am calling *reflections on process* and *reflections on practice*.

Reflections on Process

Reflections on process were largely akin to Schön's reflection-in-action framework: ground-level observations coupled with immediate insights within the stream of creative activity. As students reflected on their process, they noticed what was and wasn't working in their surroundings or workflow. While some of these reflections also suggested ways to do things differently in the future, they were all firmly grounded in the immediate processes at hand. This student provides a stream of process-level reflections after an early video assignment:

It was hard to take stable footage when I didn't use my tripod (which was for most of the shots), and the shakiness was even more noticeable when I watched the videos at full size on my laptop. There was also one shot that was out of focus, but I didn't realize when I was looking at it on my phone. After finishing the video shoot, I noticed how there were many clips in my trash folder. Finally, looking back on all the videos is cool because I could see how different angles and styles created a different feeling.

Reflections on Practice

However, students also demonstrated another type of reflection that linked their immediate activities to broader trends across multiple projects. Students' *reflections on practice* encompassed everything from noticing their preferences for certain colours, to reflecting on how their creativity was shaped by cultural dynamics, to musing on whether or not their current work reflected their values. Reflections on practice always looked forward or backward beyond a single creative activity, and often included

personal insights. This student reflects on their practice during a word-based “designer statement” writing assignment toward the middle of the term:

As I was reviewing the recipes/reflections I've done over the past few weeks and creating my mind map, I started to see patterns that could distill my values and philosophies as a designer into a few key ideas. This was also eye-opening because I realized that maybe my personal goals as a designer would not be best fulfilled in the path I'm currently focused on (which is graphic design).

Teaching methodologies for reflexivity

Given Documentation for Designer’s overarching goal of nurturing the types of reflection that lead to reflexivity, I was happy to observe that students were reflecting on both their processes *and* their practices. However, I was curious whether there were specific types of creative activities that led students to reflect *more* on process than practice (and vice versa). After applying “process” and “practice” codes to passages that contained process reflections and practice reflections respectively, I explored code cooccurrences between those process and practice reflections across the four fundamental creative mechanisms of my course assignments (*media capture*, *media synthesis*, *word capture*, and *word synthesis*).

Through these queries, I discovered that while each type of activity led to both types of reflection, there were clear variations in reflection types across activities. Perhaps predictably, *media capture* activities skewed very heavily toward process reflections as students played with capturing their work using different techniques and reflecting on the results in front of them. *Media synthesis* activities, in contrast, skewed slightly toward practice reflection (which is also predictable given the higher-order thinking involved in synthesizing multiple pieces of work or media artifacts into a coherent whole). However, *word capture* and *word synthesis* assignments generated more process *and* practice reflections than either media-based activity, and word-based assignments were especially conducive to leading students to new insights about their practice. Again, working with words requires an inherent level of abstraction and higher order thinking which could handily explain the shift outward toward wider and deeper levels of reflection in these activities. However, it is interesting to note that these word-based activities were equally (or perhaps more) impactful than standalone media synthesis activities, given many design undergrads’ tendencies to self-describe as “visual learners.” These preliminary explorations suggest that multi-layered reflection assignments that incorporate a mixture of synthesizing media and working with words may have the greatest potential to inspire designers toward deep reflection across multiple scales — from projects to portfolios to practices.

CONCLUSION

Documentation for Designers (and its accompanying research study) is one small step toward innovating new curricula that challenge designers to reflect upon the implications of their work from within the stream of creative practice itself — critically and holistically evaluating the patterns in and influences on their own practice. My grounded inquiries here were open-ended, and as such, were somewhat limited. Targeted research that is better able to isolate the mechanisms of media capture/synthesis and word capture/synthesis could help to validate these early findings and more accurately pinpoint the specific mechanisms that lead to different levels of reflection (this work was by no means a controlled experiment). Similarly, a thorough 1:1 mapping of course activities and reflections onto an existing theoretical framework of reflection and/or learning could allow such findings to interface more fluidly with other work unfolding in the literature.

However, taken as a whole, the Documentation for Designers pilot offers two key takeaways: first, there is tremendous value to students in providing a dedicated space for reflection to supplement

existing design curricula — a design class that uses design to talk about design. Through this structure, students can step back and review their work at scale, perhaps achieving greater levels of self-insight and greater critical sensitivity to their engagement with the world than they could within the confines of a single conventional assignment. Second, undergraduate design students may achieve greater levels of reflection, reflexivity, and insight from the incorporation of words into their creative assignments. Many university programs require a certain number of units from writing-centric theoretical courses, but there appears to be real value in bringing words into the design studio specifically, especially when blended with other methods of media synthesis. Conversely, educators teaching in disciplines other than design might find value in incorporating media-based reflection activities into their curricula, in an effort to make reflection practice more accessible and enjoyable. Even these short, low-stakes assignments have shown incredible potential in leading students to new insights. There are undoubtedly many more opportunities to develop practices and pedagogies that allow students to reflect on their world, their work, and themselves.

NOTES

- ¹ Donald A. Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983), 78-79.
- ² Eric P.S. Baumer et al., "Reviewing Reflection: On the Use of Reflection in Interactive System Design," in *Proceedings of the 2014 Conference on Designing Interactive Systems* (DIS '14: Designing Interactive Systems Conference 2014, Vancouver BC Canada: ACM, 2014), 93–102, <https://doi.org/10.1145/2598510.2598598>.
- ³ Owain Pedgley, "Capturing and Analysing Own Design Activity," *Design Studies* 28, no. 5 (2007): 463–83, <https://doi.org/10.1016/j.destud.2007.02.004>.
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ASSESSMENT AND FEEDBACK IN DIFFICULT TIMES: SONGS OF INFLUENCE AND EXPERIENCE

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INTRODUCTION

“Arguably the greater naiveté lies in assuming we can really get a grip on it all”.¹

This paper emerges as an interim examination of work in progress out of the presentation two of us (Victoria and Pete) shared at the Transformative Education conference (Nov 22). There, we gave ourselves the following scope: to share our values, discuss and explore teaching and learning spaces as face to face or online or hybrid, our experiences of teaching, learning, assessment and the moves we made to support student creation in post-COVID times. We did this in the sure and certain expectation that we were ‘looking for trouble’ and were going to find it, since as Jasen goes on to say: “...when we step into the throbbing messiness of life, ...language often rings false”.² We drew on a specific module called Extending Criticality in Professional Practice which we had team taught and which existed on an MA in Professional Practice and Lifelong Education. Our vocabulary centred on participation, transformative and emancipatory practice with a view to problematising how and to what extent our students are enabled to be more agentic in assessment and feedback processes (if indeed such a thing is viable).

This paper extends that conversation by canvassing opinions further. It is a collaboration between teachers which explores assessment and feedback from both the student and the teacher lens in a context which may already be facing its final warning. How can a world of grade inflations and attainment gaps reconcile itself with the reality that “the ideology of merit or meritocracy destroys the social solidarity of the intellectual force”.³ Also, if change is unable to come now after a period of sobering instability, will it ever come?

COLLABORATIVE AUTOETHNOGRAPHY

“The experiential field is a zone of experimentation, of probing, intuiting, following, adjusting. It is in this sense that the material encounter with difference is also an incitement to thought and an opportunity for invention”.⁴

This is autoethnography where we have written ourselves into our text and through our comments, into each other’s writing. The call to writing was issued by Victoria and Pete and framed in the following way: Write a vignette ie. 300 -500 or so words (more is fine, less is fine) where you explore your perceptions and experiences of working with students and or staff supporting students in the context of assessment and feedback. This was just the start and as Ellis reflects autoethnography is all

about examination.⁵ We ask questions, challenge our assumptions and check if we are writing through the layers of meaning we perceive. This is vulnerable work, which potentially involves in the ‘vignette’ form a rather unfamiliar mode of “probing, intuiting, following, adjusting” in which our relations to experience are “better understood as a trajectory reshaped over and over to the enfolding of heterogeneous intensities”.⁶ Though we will inevitably be revealing aspects of our teacher identity and or our student identity as we write out, word by word, this experience that connects us (teacher and student) to a typically high stakes, win or lose, pass or fail, assessment and feedback process, we will also be problematising these constructs. Channelling Deleuze, Jasen argues that “entering into composition with difference is key because newness can only emerge through relations of dynamic imbalance- a heterogenesis rather than a homogenesis” and that “the material encounter with difference is also an incitement to thought and an opportunity for invention”. We have commented on each other’s work, not in a critical appraising sense but as a way of participating in meaning making by sharing our views on the other’s thinking. The call to write this paper has in fact seen the emergence of a new writing group.

What follows is the simplest presentation with commentary of what we had to say both as statements of intent and then to one another’s work, shaped tentatively by the values we espouse and want to explore and promote.

THE VISIBLE AND THE SAYABLE

” To return to Foucault’s philosophical formulations, we can say that power is a strategy, a strategy that maintains a relation between the sayable and the visible”.⁷

What emerges from these initial exchange’s chimes well with our commitment to emancipatory discourses of education which challenge the didactic default that dominates the educational mainstream in the UK at all levels. In simple terms this is predicated on Illich’s proposition that most learning does not come from instruction but from “unhampered participation”.⁸ This theme, which is also a sensibility, is very clearly visible in our unforced accounts of ‘assessment’ and ‘feedback’, in fact even in the way they are ‘handled’ as verbal phenomena. Here the explicit reveals the implicit and what is ‘shown’ says much about what can be said. A significant issue in all sectors given the pace of governmental reform and escalating workloads is ‘resistance’ to those imposed ideas which certainly hamper the opportunities teachers have to ‘do’ education. This ‘resistance’ is played out in an interesting way in the vignettes partly as a hollow stylistic impairment as in Victoria’s beautifully circular “Moments of managing assessment and feedback form in my mind”(Victoria) which nestles in the brain like a blockage.

For Pete though it is discontent, boil bloody and be spilled time: “Currently universities are in a parlous state, more sites for assessment than places of learning and it seems clear that the balance of energy is directed to ‘achievement’ (singular, personal) rather than ‘learning’ (collective, communal) (Pete), Though these concerns echo Berardi’s concern that “When solidarity is broken and competition becomes the rule, research and discovery are dissociated from pleasure and solidarity”⁹ they are caught in the crossfire rather than effecting a change. Louise is more involved in this business of negotiation, in Lefebvre’s ideal of opening out possibilities and embedding in ‘everyday life’: “Education ought to centre on concrete problems that are both practical and theoretical, both empirical and conceptual.”¹⁰ This seems epitomized by “We are learning a lot and these students from Nigeria, Walsall, Sri Lanka, Bangladesh, London and Manchester are sharing and opening each other’s eyes in sometimes powerful ways.” (Louise). Nevertheless, when assessment does arrive it comes like flotsam from the deep, breaking the surface with: “I was wondering, could we go over the brief?”

As she says, this is not “Is this needed for the assignment?” but as much as anything else “Their assessment anxiety is kicking in”. She also asks, “what happens when ideas are approached only from the perspective of “what can I take from this that I can put in the assignment?” As Larkin asks “What remains when disbelief has gone?” Tina’s faith in such ‘brutal’ forms of assessment is long gone, if indeed it was ever there but she acknowledges that “for some, exams, matter”! However, like Pete she sees ingrained misfunction long established and unmoving: “It confirms in my thinking that we get assessment practices wrong on many levels and yet there isn’t an appetite for fundamental change”. (Tina)

Sarah writes very convincingly about strategies which if nothing else address assessment anxiety, “providing individual tutorials and group assessment surgeries...to develop a formative assessment piece for students to engage with towards the mid point of the module to gain feedback” and “to move their thinking in relation to the assignment forward”. (Sarah). All involved seem to accept the requirements of the ‘day job’ but without conviction: the worst of both worlds. There is a strong feeling of meaningful activity ‘hampered’ by these ‘rigmoroles: at worst the ‘event’ of education traduced by the need to account for it.

Of Influence and Experience

The sharing of vignettes is itself an influential experience and has led to one or two of us reflecting that now we see our practice/s differently. In Victoria’s vignette she ends with a line drawn proverbially in the sand, the example of an unseen lesson observation (where the student talks through and shares the planning and delivery of the session without the observer having been present) as a professional and critical dialogue; the lesson being their story to ‘tell’. Where to go from here? We return to a very open and honest student reflection in Louise’s that “I definitely want to get the assignment written before Christmas; I want to get it out of the way”. In Tina’s vignette, she expresses “a personal and professional intrigue concerning the anxiety and fear that assessment causes for students”. We try a variety of strategies and have done so throughout our teaching careers. Perhaps (i.e. Victoria) as we get more experienced, we get more confident in developing more open and creative assessments with a view to providing the students with more choice and hopefully more autonomy. Perhaps we try not to enter the fray at all (though we are all regulated to some degree) in the knowledge that “as soon as an assignment becomes an assessment then the genuine opportunity for writing has gone and the game’s afoot” (Pete).

In collaborating with each other by talking about and to and writing within each other’s vignettes, we move forwards somehow though there is no destination in sight. An example of this comes through comments from Victoria and Louise on Pete’s vignette. Victoria reflects on team teaching with Pete on the module Extending Criticality describing how at points in the session or on the module: “I get my tent pegs out and make sure they see the tent (assessment) clearly in their mind”. In Louise’s return, she shares that “the image of the tent and pegs, makes me think ‘tabernacle’ the sacred place from Jewish tradition where Moses brought the wandering tribes to worship. That would have been a tent too. The thing with tents like assessment criteria is to remember they can be roomy, the wind moves through a tent, and it changes shape while still being anchored”. For Tina, the aim would be “to move towards fully inclusive assessment where students have a rich and varied menu from which they can determine how they evidence meeting module learning outcomes”.

The tensions in these conversations are both obvious and increasingly notional as the collectivity and intertextuality intervene and work their casual magic. In the creation of the hybrid text there is a nod to a deeper multiplicity, to the rhizomatic; “Unlike a structure, which is defined by a set of points and positions, the rhizome is made only of lines; lines of segmentarity and stratification as its dimensions,

and the line of flight or deterritorialization as the maximum dimension after which the multiplicity undergoes metamorphosis, changes in nature.”¹¹ Here’s the transformation that Tina asked for, an obliteration of ‘working towards’, of ‘improvement’, even of ‘direction’. And that is an affront and an answer to Berardi’s charge that education is “being transformed into a space of mere acquisition for specialised knowledge a space where individualism and competition are cultivated to the detriment of solidarity and consciousness”.¹² Like a layered salad or trifle the component parts ‘bleed’ into one another (in a good way) and entirely in a spirit of solidarity and consciousness. And sometimes in the simplest way:

“These are great! Superstar you are 😊 Fab stuff, awareness is raised, confidence in reflective discussion on issues, valuing other experiences, cognisance of wider perspective”.

However, there is also another and yet more serious battle going on, which the German philosopher Jurgen Habermas typified as the collision of instrumental and communicative rationality, between ‘pursuing ends’ and developing our capacity to be human.¹³ The language of the ‘vignettery’ is the language of experience, sensation and affect and the insight is that this is (and always was) the language of education as part of the affective domain rather than the cognitive. And here experience is often shouted down, overcome, or simply outbid not by innocence but by ‘influence’ and its henchmen ‘impact’ and output. And their infiltration is evident across all our writing and in their appearances in new and apparently more progressive inspection regimes (Intent, implementation, impact). Experience works because it is “a zone of experimentation” (as here), in French *expérience* means both experience and experiment.

We are coaxed into imagining our job is to have influence (make X realise that Othello is about jealousy) when we are more comfortable with having affects, which are future-oriented and open-ended. Jasen explains that “For Deleuze and Guattari, ‘affects are becomings’ but also affects are...weapons”.¹⁴ Both seem to apply here in our commitment to the multiple, to the collective, to fellowship.

We struggle also here with the delusion of ‘strategic compliance’, the idea that in assessment terms that the mechanisms of assessment can be co-opted onto the ‘project of education’ when what is really tainted is the premise. Foucault a while ago showed us how examinations, both medical and educational, assist largely in the ‘management’ of populations and the operation of power. Fundamentally, however much we try to humanise, ameliorate or subvert these processes assessment renders (hands over) people as analysable objects (data) within a comparative system, transforming ‘the economy of visibility into the exercise of power’.¹⁵ And Berardi would further point out that “the ideology of merit or meritocracy destroys the social solidarity of the intellectual force”.¹⁶ Though we might move the focus, “the evaluation of our formation is wholly in another’s hands”.¹⁷ And yet we write on and in doing so commune with Marcuse’s “spectre of a world that could be free”.¹⁸ It is in this collaboration that we discover Jasen’s truth that “the idea is never to be clever or poetic but to push language so it might undermine ingrained analytical habits in productive ways”.¹⁹

CONCLUSION

It is difficult to be conclusive in an account of work in progress but not too difficult to identify progress both in the development and extension of the writing group and a set of shared values and affinities. Central to this is a commitment to reclaim experience as the central educational premise as a set of affective encounters that cannot be fully accounted for, let alone fully assessed and to embrace Biesta’s ‘beautiful risk’ albeit somewhat cautiously, through negotiation. Though Jasen’s ‘low end theory’ relates to experiences with popular music and the impertinence of any theoretical account to discuss music without feeling its impact, we argue, teaching is also about “entering into composition

with difference”, its temporality and spatiality, confirmed “through relations of dynamic imbalance- a heterogenesis rather than a homogenesis”.²⁰ It is this dynamism perhaps that standard forms of assessment attempt to quell and traditional forms of feedback serve to confirm. Jasen is clear that “There is no opening for the new in the world in which experience is always already prefigured in human culture”.²¹ What are Learning Outcomes but the pre-figurings of experience?

In our various struggles with systems of assessment and the systems they protect, we are essentially trying to struggle though those phenomena which hamper participation, often by appearing to encourage it. Our response is predicated on education as a thought-provoking, creative process, which is essentially ‘centrifugal’ in contrast to an assessment system that is decidedly ‘centripetal: “an object not of recognition but of a fundamental encounter which may be grasped in a range of affective tones”. Jasen reminds us that “These encounters are what Deleuze calls events” and that “Events are the texture of experience”.²² Our collaborations are encounters, are events that embody other events, not as records but as maps. The events of education should precisely be “the routes along which that potential is converted into qualities of lived reality opening traffic between the virtual (what may be) and the actual (what is) or in bodily terms between the incorporeal (what a body can do) and the corporeal (the effective reality of a body)”.²³ And if not now, when?

NOTES

- ¹ Paul. C. Jasen, *Low End Theory: Bass, Bodies and the Materiality of Sonic Experience* (London: Bloomsbury, 2016), 4.
- ² Jasen, 5.
- ³ Francesco Berardi, *Futurability: The Age of Impotence and the Horizon of Possibility* (London: Verso, 2017) 201.
- ⁴ Jasen, *Low End Theory*, 4.
- ⁵ Carolyn Ellis, "Preface: Carrying the Torch for Autoethnography." in *Handbook of Autoethnography*, ed. Stacey H. Jones et al., (London: Routledge, 2013), 9-13.
- ⁶ Jasen, *Low End Theory*, 4.
- ⁷ Gavin Kendall and Gary Wickham, *Using Foucault's Methods* (London: Sage, 1999), 49.
- ⁸ Ivan Illich, *Deschooling Society* (Harmondsworth: Penguin, 1973).
- ⁹ Berardi, *Futurability*, 204.
- ¹⁰ Henri Lefebvre, *The Explosion: Marxism and the French Upheaval* (New York: Monthly Review Press, 1969), 157.
- ¹¹ Gilles Deleuze and Felix Guattari, *A Thousand Plateaus* (London: Continuum, 2004), 3.
- ¹² Berardi, *Futurability*, 210.
- ¹³ Jurgen Habermas. *The Theory of Communicative Action: Vol. 1, Reason and the Rationalization of Society* (Boston: Beacon Press, 1984)
- ¹⁴ Jasen, *Low End Theory*: 14.
- ¹⁵ Michel Foucault, *Discipline and Punish* (London: Vintage, 1995), 187.
- ¹⁶ Berardi, *Futurability*, 212.
- ¹⁷ Berardi, *Futurability*, 213.
- ¹⁸ Herbert Marcuse, *Eros and Civilisation* (United States: Beacon Press, 1955) quoted in Mark Fisher. *Acid Communism*, in K-Punk (London: Repeater, 2018), 757.
- ¹⁹ Jasen, *Low End Theory*: 16.
- ²⁰ Jasen, *Low End Theory*: 23.
- ²¹ Jasen, *Low End Theory*: 23.
- ²² Jasen, *Low End Theory*: 23.
- ²³ Jasen, *Low End Theory*: 24.

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FUTURE OF INDUSTRIAL DESIGN EDUCATION FROM THE STUDENT PERSPECTIVE: DESIGN STUDIO IN METAVERSE

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INTRODUCTION

The rapid change of technology and the digitalization dictated by the pandemic have brought many changes in design education. However, in 2021, the concepts of Metaverse and the future of the internet, entered our lives. Design education conducted upon the internet with the pandemic; differentiated the classical studio educational experience. The most challenging aspect of online education is the lack of physical interactions and the distance from the energy sharing that comes from being in the same environment. Metaverse provides 3D immersive interactions in a democratic and accessible format. In this study, the future online design education setup; is discussed over the expectations of the students which are shaped through the current experiences. The comparison of students' face-to-face and online education experiences which shapes their expectations from design education in the metaverse environment were discussed with focus group work.

DESIGN EDUCATION THROUGH TECHNOLOGY

The main goal is to introduce the anchor points of the paper that frames the research. The main goal is to determine the nature and needs of the design education and intersect with the opportunities of different mediums such as physical design studio, online meeting platforms and metaverse.

Design Education

This chapter aims to reframe the elements of the design studio that are affected from the medium of the design education experience. There are two subjects in this process which are student and the instructor. Although design projects are the basis of the education process in design education experience, the most important element that determines the quality of the studio environment is student-teacher interaction.¹ There are several communication methods that shapes the structure of the design process and determines efficiency of the learnings. As Oh et. al. indicates speech, written comment, gesture, and drawing are the element of communication in design studio.² Speaking, which is one of the primary communication tools, provides support for the solution of the difficulties encountered in the students' criticism processes, and clarifies the points that are well resolved or that can be better resolved. Sketching is an effective and fast technique to support the design progress or to suggest design alternatives.³ Along with the drawings, sometimes written comments are also used in

communication with the student.⁴ Hand gestures and facial expressions used during critique are effective communication tools that facilitate communication.⁵ The medium in which the interaction takes place affects the diversity and effectiveness of the communication methods used. These methods, which are used successfully in the physical studio environment, have lost their importance and effectiveness with online education. Along with sketches and models, students also turn to communication tools such as computer models, videos and photographs. Expressing a 3D project in a 2D environment is different from 3D. There are no hand gestures, mimics that can be used freely and effectively. No touching or feeling the material. There is no smell of glue and model materials or the noise of a studio environment that strengthens the interaction and feel of presence. Speaking was the only communication tool that remain unchanged. And what if it was possible to interact in a 3D immersive platform?

Metaverse in Design Education

“The METAVERSE is a massively-scaled and interoperable network of real-time rendered 3d virtual worlds which can be experienced synchronously and persistently by an effectively unlimited number of users each with an individual sense of presence while supporting continuity of data such as history, identity, communications, payments, entitlements and objects.”⁶

This concept, which was introduced with the Snow Crash novel written in 1992, offers the possibility of 3D embodiment and 3D interaction on the internet. This technology called web 3.0 which enables users are not only represented by only a cursor though embodiment with a 3D body in web services that promises the sense of presence and immersive experience.⁷ There are three fundamental characteristic of the metaverse which are “interactivity, corporeity, persistence”.⁸ Representation through avatars is among the distinctive features that differentiates the interaction with the digital world. As Stevenson describes “The people are pieces of software called avatars; they are the audiovisual bodies that people use to communicate with each other in the metaverse.”⁹ An interactive medium that users can be represented with avatars and also a medium that never stops existing, instead continue to evolve and change even the users are not online. A medium that records the acts of users. A collaborative and democratic approach is possible with this technology. Metaverse is suitable for communication in local and global parameters.

“Embodiment” is a highly debated topic in the philosophies of existence, action and mind. Embodiment of the abstract, making the invisible visible, the use of tools, products and interfaces as a tool for concretization in the interdimensional plane have been studied especially in the field of human-computer interaction. While embodying means to exist in the physical world; digitally, it characterizes the social presence displayed on the internet in line with different purposes and practices.¹⁰ How the embodiment can be solution for the existing problems of face to face or online education? How can these technological improvements can be used for design education? The possible benefits of VR technology to design education are presented in six contexts which are boundless creation, context simulation, collaborative or participatory design, virtual prototyping, user-research, and training.¹¹

THE METHODOLOGY OF THE STUDY

In this section, the reasons for choosing the method are shared. The way of application off the methodology is explained. The initial plan before conducting the study was to conduct one-on-one interviews with the students along with the questionnaire in order to digitize the outputs. Although the nature of design education requires communication and participatory approaches; embracing diverse

individuals to shape, design and structure an education ecosystem. Accordingly, while evaluating the educational experience through the eyes of the students it is important to see relations between them. Focus group work was carried out in studio environment after a design studio session. The problems that students face both together and separately are discussed together. Furthermore, the fact that they could find a space where they could share their feelings and thoughts in a free environment enriched the outputs. Participants are 3rd year design students with online, face-to-face and hybrid education experience. 15 students participated in the focus group study, which lasted for one and a half hours. In the first stages of the study, students were asked to express their design education experience in 3 words. Afterwards, a discussion was held with the students on their face-to-face and online education experiences. At the last stage of the focus group study, students were introduced with to the metaverse through a web browser and VR glasses, and the students were asked to state their ideas and expectations about the use of the metaverse in education.

FINDINGS OF THE FOCUS GROUP STUDY

What are the students' experience upon face to face and online education?

Design Crits and Communication with Instructor

As it is known, design education; progresses through "learning by doing" and it is important for students to receive feedback from their teachers and have healthy communications with friends in the studio. The importance of communication and physical / mental interaction in the design process are known by students.

In the physical studio environment, it is possible to use the models more functionally as a presentation and idea display tool, and the student and the instructor can carry out 3D ideas together. The fact that the instructors can intervene with the sketches and models one-to-one facilitates the understanding of the critique and increases the efficiency of the critique process. The active use of both physical and verbal communication also affects communication positively. It is stated that being in the same environment with the instructor creates a synergy and this sharing increases students' interest and excitement about their profession.

Some students who develop their skills on computer programs in online education think that they cannot develop their hand sketching and model making skills enough. In addition, they stated the difficulties of communication from a 2D screen with the instructors while explaining the 3D models they make at home. The quality of the presentation and the techniques could differentiate the design crit; which eventually effects the progress of the project. Sketching or using 3d models were mostly challenging for students about how to transfer those outputs or how the instructor will interact with, without touching. Students used photographs and took videos to increase effectiveness of communication.

In addition, since models are not used as actively as face-to-face in online education, it is claimed that less material is wasted and it is a more sustainable method. With the transition to hybrid and face-to-face education, the students, who got rid of the dependency on the computer as the only communication medium, realized the facilitating effects in the project development process as they improved themselves in hand sketching and model making techniques. Most of the students prefer the physical studio environment in terms of the effectiveness of communication. It is possible to express themselves with sketches and 3D models as well as computer models. It was also understood that being physically in the production environment encouraged students in terms of motivation.

This motivation is reinforced by the feeling of being able to truly exist in an environment. Physical studio provides an environment where they are not dependent on technical equipment or internet

interruptions, also where they can experience by using all their senses and communicate effectively using their mimics and gestures.

On the other hand, in face-to-face education; factors such as preparation and planning processes for the lesson (path, preparation, etc.), change in environment, atmosphere and interaction in the production environment make students feel more disciplined in the education process. In addition, the inability to isolate oneself is a trigger for a more disciplined and planned approach.

Although, it was understood that the students were in a worried and anxious mood during the project management period, they could not be sure of what they were doing, and they felt stressed during the critique phase. Although most of the students think that face-to-face criticism leads to more productive outcomes, they stated that they feel better and more comfortable in online education even in the harshest or critical critiques, in the comfortable and safe environment of their homes, compared to face-to-face education. In addition, it was argued that they were able to hide their emotions better in the phase of design critics in online education, which made them feel stronger during the education process. Apart from this, a more business-oriented approach was adopted on online platforms; which provides students to explain their projects easily and prevent them from taking criticism personally.

It has been stated that one of the biggest advantages of online education is the rapid access to the design examples and concepts mentioned by the teacher during the critique, and the acceleration of learning.

Communication with Peers and Socialization

In design education, the collective production and sharing ideas, especially outside of class hours, is important for the progress of the project and the preservation of motivation. The fact that students are constantly communicating and exchanging information and spending as much time as they want in the studio environment provides motivation for them to overcome the difficulties of project design processes.

It has been stated in the period of online education, that being alone deepens the feeling of boredom and congestion that can occur during productivity. For this reason, getting ideas from each other during the production process and discussing the missing points support the education process.

Face-to-face education provides area for students to socialize. In online education, communication between students is interrupted, preventing them from spending time and studying together. Also, intimacy could not be built in online education period, which increases the competitive feelings that effects peer learning negatively. On the other hand in online education it is more easier for students to learn from peer's projects, reach a classmates's project and listen design crits which are persistent with the recordings.

In online education, the fact that students cannot see the facial expressions and gestures of their teachers and friends, in other words, being not aware of their reactions can cause anxiety for students. Moreover, the fact that the lesson cannot be taught in an organic environment and eye contact cannot be established reduces the quality of communication.

Work environment

In online education, students spend most of their time in their comfortable working environment which brings efficiency in general. Students have the chance to work more focused and effectively in the home environment for more analogue works such as model making. In addition, factors such as the use of computers becoming essential in project processes, the lack of infrastructure in the studios (lack of sockets, the distance from the tables to the sockets, etc.) and the lack of space; negatively affect the students' production in the studio.

It has been understood that students can deal with more than one activity during the design studio in online education, and this situation causes distraction. Extracurricular activities (eating, interacting with the household, sleeping, dealing with the homework of another lesson, watching YouTube videos, playing games, opening the door, etc.) during the studio hours make time management easier for students, while reducing focus and efficiency.

Persistency

One of the most productive features of online education for students is that they can listen to the lecture records and the feedback received from the instructors at any time and for as long as they want after the lesson. It provides benefits in the permanence and continuity of online documents, and if they do not understand, do not take notes, or miss during the course, they can access the critiques they have received through these records. It can be thought of as a 24/7 open studio.

Time Management

In face-to-face education, it is more difficult for students to manage sleeping routines and social life-academy balance. Planning and discipline become important. The students find online education useful in terms of reducing pressure, reducing the rush to catch up, making time for themselves, and facilitating time management in the educational processes that they describe as psychologically challenging. On the other hand, some students state that in online education, work, personal time, and social life are mixed together and they lose focus because they feel constantly working.

What are the students' expectations upon education in Metaverse?

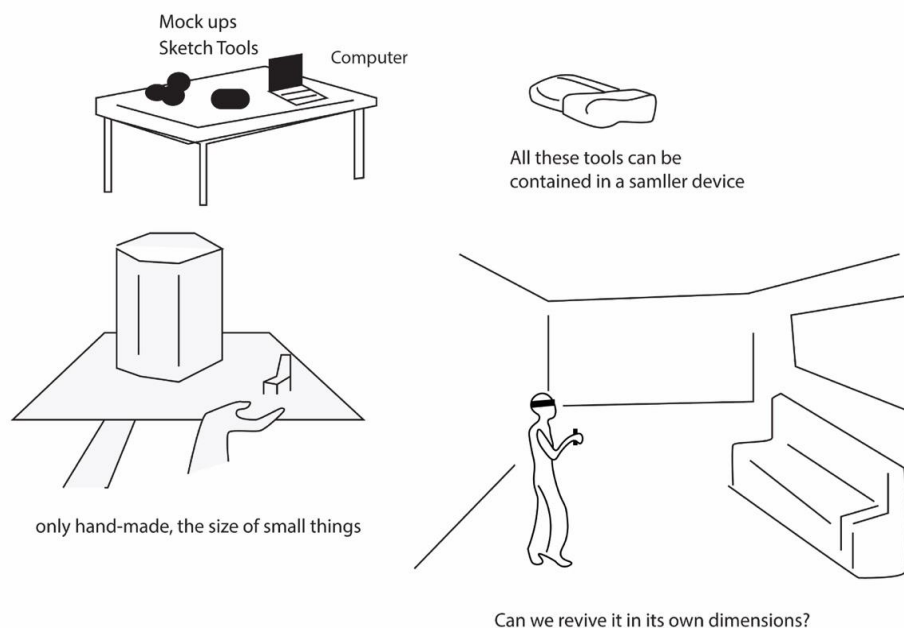


Figure 1. From physical to digital; design

Students made different and rich suggestions for the use of metaverse in design education (Figure 1). The idea of effectively transferring the design studio to the digital environment and experiencing the sense of presence in the comfort of privacy was found beneficial by the students.

Regarding design critique, students made suggestions in the context of participatory design and context simulation. The effective use of virtual prototyping technologies in taking design critiques

will be beneficial in terms of experiencing 3D models, understanding and developing the designed products.

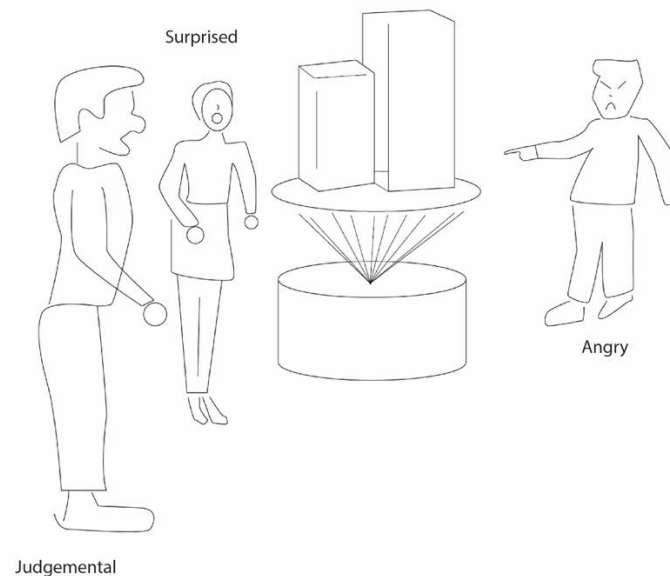


Figure 2. Expressing Emotions in a metaverse design studio

Students will be able to get the emotional reactions that the teacher and students want to show during the design critiques in metaverse where they are represented by avatars (Figure 2). With the participatory design approach, the opportunity to get critics from different instructors, users, professionals excited the students. In addition to this, being able to access the famous design artefacts in 3D, visiting architectural elements during the studio experience would increase the vision of the students. In addition, the opportunity to quickly meet the users with the completed designs, to experience the products with a near-final appearance, and to receive feedback from the users at the design stage are other advantages (Figure 3). In addition, a digital library where students can gain knowledge and experience about production methods and material types will contribute to the project processes.

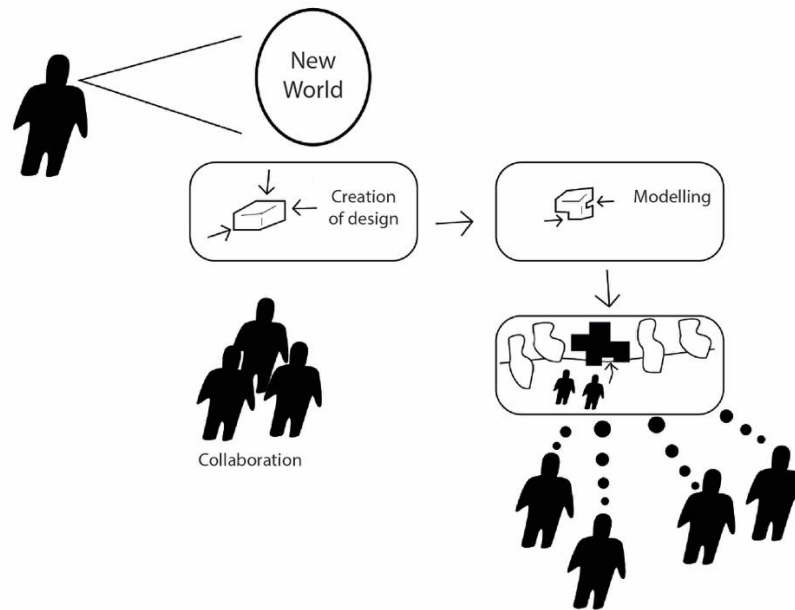


Figure 3. User research in a design studio

This platform, which gives students the opportunity to experience their creativity without limits and to create a whole new world, will also have a positive effect on their way of expressing themselves.

CONCLUSION

It is seen that Metaverse can play a role in complementing hybrid and online design educations. The problems that occur in the current implementation of design education have helped to understand the needs and expectations of more clearly. This platform, which is expected to meet the sense of existence and embodiment and socialization needs of its students more effectively than web 2.0. Especially use of avatar and being super focus in a virtual environment can be solution for distraction and insecurity problem of the students. Boundless creation, context simulation, participatory design, virtual prototyping, user-research and training contexts in Metaverse provides students a wide area of expression compared to face-to-face education.

NOTES

- ¹ João Ferreira, Henri Christiaans, and Rita Almendra, "A Visual Tool for Analysing Teacher and Student Interactions in a Design Studio Setting," *CoDesign* 12, no. 1-2 (March 2016): pp. 112-131, <https://doi.org/10.1080/15710882.2015.1135246>.
- ² Yeonjoo Oh et al., "A Theoretical Framework of Design Critiquing in Architecture Studios," *Design Studies* 34, no. 3 (2013): pp. 302-325, <https://doi.org/10.1016/j.destud.2012.08.004>.
- ³ Rohan O'Neil Bailey, "The Digital Design Coach Enhancing Design Conversations in Architectural Education," *Architecture*, Victoria University of Wellington, 2004, <https://doi.org/10.26686/wgtn.16934806.v1>.
- ⁴ Rudolf Arnheim and David McNeill, "Hand and Mind: What Gestures Reveal about Thought," *Leonardo* 27, no. 4 (1994): p. 358, <https://doi.org/10.2307/1576015>.
- ⁵ Willemien Visser and Mary Lou Maher, "The Role of Gesture in Designing," *Artificial Intelligence for Engineering Design, Analysis and Manufacturing* 25, no. 3 (November 2011): pp. 213-220, <https://doi.org/10.1017/s0890060411000047>.
- ⁶ Matthew Ball, "Framework for the Metaverse," *MatthewBall.vc* (MatthewBall.vc, December 15, 2022), <https://www.matthewball.vc/all/forwardtothemetaverseprimer>.
- ⁷ Begüm Türeyengil, Çiğdem Kaya. "Design for all in Metaverse". *Design for All*. (November 2022). Vol 17. No 11 ISSN 2582 8304.
- ⁸ Edward Castronova. "Virtual Worlds: A First-Hand Account of Market and Society on the Cyberian Frontier." *SSRN Electronic Journal*, 2001. <https://doi.org/10.2139/ssrn.294828>.
- ⁹ Neil Stephenson, *Snow Crash*. Bantam Books (US), 1992.
- ¹⁰ Paul Dourish. *Embodied Interaction: Exploring the Foundations of a New Approach to HCI*. *HCI in the New Millennium* 1999.
- ¹¹ Bernardo Nuno and Emilia Duarte. "Immersive Virtual Reality in an Industrial Design Education Context: What the Future Looks like According to Its Educators." *Computer-Aided Design and Applications* 19, no. 2 (2021): 238–55. <https://doi.org/10.14733/cadaps.2022.238-255>.

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WHAT MATTERS MATTERS: METHODS FOR STUDENT ENGAGEMENT

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INTRODUCTION

As educators, how do we engage students with the course content, and get them excited by the process of learning? Post-secondary education has become increasingly transactional, and the shift to online teaching saw levels of engagement and morale drop as anxiety levels rose, cameras stayed off, and questions from faculty were met with silence. How do we remind students of the transformative potentials of education?

To increase engagement, it is important that students feel agency over their educations and become active participants in the learning process. What matters to them should matter to us. Students should be supported to cultivate their own interests and welcomed to share their diverse experiences, perspectives, and abilities. This can occur through a strong focus on collaboration, peer-to-peer learning, and faculty facilitating students' abilities to develop a confident and skillful voice through the implementation of a supportive structure.

With a focus on first and fourth year students in a pre-professional program in architecture, this paper will share experiments in co-authoring syllabi and assignments with students, specification grading and co-assessment methods, and writing projects that guide students through acts of self-reflection that draw upon their personal experiences while analyzing the design standards that are pervasive in the architectural profession. These strategies have proven to help incorporate cultural expectations, welcome a range of voices to the discussion, increase engagement and agency, and develop life skills that transform students into engaged, empathetic, and independent citizens.

Architecture

Architecture's complicity in the social, political, economic, and environmental issues facing the world cannot be ignored. In the face of crisis, architecture's role and relevance in a world undergoing rapid change prompt larger questions around its disciplinary protocols.¹ It is undeniable that the future of the profession depends on the future of education. Radical architectural pedagogies, as described by Beatriz Colomina, emerged during a period of social and geopolitical upheaval in response to events such as the Cold War, the Vietnam War, and the Space Race. The institution was seen as a site to challenge established power structures, although it simultaneously upheld that which it critiqued.² We currently find ourselves living through profound sociopolitical shifts and environmental crises. Radical pedagogies must once again be developed to remind students of the transformative potentials of education, and to make post-secondary education more accessible to all.

This paper proposes a three-pronged approach to this transformation via

1. the spaces of learning;
2. the structures of learning; and
3. the content of learning.

SPACES OF LEARNING

The pandemic shift to online teaching (and the post-pandemic shift back to in-person teaching) has prompted the question of what is a classroom, and more precisely what could a classroom be?

The organization of our physical spaces of learning reinforce a spatial hierarchy. Seating arrangements are not a simple matter of space planning, but affect student learning, motivation, participation, and teacher-student and student-student relationships.³ These layouts are ideological, and have conventionally been planned to establish the authority of the instructor by placing them at the front of the room to deliver content to passive recipients. In an age of distraction and exhaustion, this is no longer an effective way to teach, nor does it allow for a range of voices wider than the one behind the lectern. In addition, in raked seating halls, seating for students in wheelchairs is often limited to the back aisle of the room, keeping these students separated from larger space of learning.

In the virtual classroom, this spatial hierarchy was collapsed to a grid of rectangular frames. This format, while not without its challenges, offered opportunities for hierarchy to dissolve and for conversations to emerge. The roundtable seating layout may be the closest physical equivalent. In architecture, the review, a presentation of work pinned up in front of a seated panel of critics, would be significantly less anxiety-inducing and more productive if discussions occurred around a table rather than critique delivered to a student standing in front of the room.

A format familiar in seminar settings, the roundtable is more challenging in larger lecture-based courses. For this, we might learn from the virtual tools that supported teaching and creating community during the pandemic. The benefits of running a simultaneous virtual meeting while lecturing in person include the ability for students to type questions into the chat, to create live closed captioning, and to produce recordings that allow students to review lectures and enhance learning. Working with the digital spaces and tools of learning also facilitate including alt-text for images, and designing slides to be read effectively by screen readers. The virtual and digital spaces of learning becoming part of our everyday teaching can transform the accessibility and effectiveness of teaching and learning.

STRUCTURES OF LEARNING

Transforming the spaces of learning unsettles the traditional teacher-student hierarchy to create spaces of dialogue and sharing. This relationship can be further positively disrupted by reconsidering the roles of teacher and student. Paulo Freire's *Pedagogy of the Oppressed* challenges the traditional model of teacher-of-the-students and the students-of-the teacher and proposes instead the teacher-student and students-teachers, where the possible reciprocity and shared responsibility between teaching and learning is acknowledged. In this model, the authority of the teacher is questioned, especially where students have lived experience in the topic.⁴ Here, faculty facilitation replaces explicit instruction, and the teaching role becomes one of transforming our experience and expertise into rigorous frameworks for students to confidently and competently find their own voices.

Syllabus

The key document that structures student learning is the syllabus. The syllabus is largely considered to be an administrative document outlining the course schedule and university policies. For the document that is the students' first introduction to the course and that sets the tone for the months to

come, the syllabus should be approached with the same rigour and vision as the most serious forms of academic writing.⁵ In their book, *Syllabus: The Remarkable, Unremarkable Document That Changes Everything*, Germano and Nicholls write that every thoughtfully designed course should contain “mysteries, problems, as-yet-unresolved difficulties with which students will wrestle all term. Importantly, it’s up to the students to find their way through this story together, not for the teacher to simply “deliver” it.⁶ This exploration and discovery process is a critical one in transforming teaching and student learning. The importance of the syllabus in transforming education cannot be overstated as it also establishes whose voices we include in readings.

As a professional program, there are specific learning objectives in architectural education that students must meet as a requirement of accreditation. Beyond this, students should be given the agency to define their personal learning objectives. The act of co-writing the syllabus with students, whether through a live collaborative document, or leaving blanks for students to fill in their personal learning objectives, the design program, and project deliverables empowers the students and encourages them to become invested in their education. By allowing students to contribute to the reading list, we can also start to expand the canon.

Evaluation

Students are experts to the degree of learning that has occurred, especially for the learning objectives that they have identified. If students can be offered agency in defining their own learning objectives and project deliverables, they should be given the opportunity to become partners in their assessment. Grades were originally intended to increase student engagement in the course, foster competition and establish rankings, and encourage “good moral conduct.” In more recent years, they have also become tools to facilitate movement, communication, and coordination, especially across institutions.⁷ The purpose of grades has come into question repeatedly throughout their use as a practice that often causes discomfort for both faculty and students. This is of particular concern when grading design studio courses where there is no right or wrong answer and approaches to a single brief may vary widely. At the same time, a common concern in adopting pass/fail grading systems is that it complicates awards, admissions, and transfers.

As outlined in her book, *Specification Grading*, Linda Nilson offers an alternative that allows for the numerical grades that facilitate administration, while giving students the agency to earn rather than receive grades, and to the degree to which they can commit to achieving. In specification grading, faculty outline a set of specifications that define a pass for each assignment, where pass reflects the standards of B-level work or better. Students are then graded pass/fail on individual assignments as long as they meet the specified standards.⁸ In so doing, specification grading also helps to shift the focus from grades back to learning. This grading model works well, especially in more advanced courses and those where open-ended solutions are expected.

When teaching early years where more structure is beneficial, a collaborative and communicative approach to feedback and grading can be effective. With the majority of architectural design studio delivered through the “desk crit(ique),” it is also important to identify what type of feedback each student responds best to, with language that is clear and free from jargon. By allowing students to share where they believe their grade should land, students can develop the skills to become self-regulated learners who can detect their own errors in thinking.⁹ Any space between the faculty grade and the student grade then becomes a space of negotiation, discussion, empathy, teaching, and learning.

CONTENT OF LEARNING

To teach in a manner that respects and cares for the souls of our students is essential if we are to provide the necessary conditions where learning can most deeply and intimately begin. bell hooks¹⁰

Each student brings diverse experiences, perspectives, and abilities to the program, and those insights are often dismissed in favor of creating a blank slate, especially in the early years of architectural education. To avoid passing judgment on the buildings that students have encountered, inhabited, and admired up to that point in their lives lets them know that that their experiences matter. The critical reflection of architecture is then introduced with the students' awareness and permission, giving them agency over their learning, and a point of reference to work from. When students are passive recipients of information it is the words, not their transforming power that registers with the student.¹¹ Helping students discover to whom their ideas, thoughts, and opinions are indebted to, whose work they are inspired by, and whose work is not in line with their style or methodological approach should be a key task for faculty to foster their students' intellectual growth.

Architecture is a stage for activity and a space of experience, and people should be its key driving and generative force. This section looks to a pair of exercises that explore how space can be designed to accommodate the physical and social needs of a diverse population, and that draw attention to who has been historically excluded from architectural history and contemporary practice. Each project was introduced as a vehicle to study the degree to which the spaces where we live shape and are shaped by social and cultural ideology. By understanding the larger contexts within which architecture operates, students developed the awareness that to design for others is a privilege that requires sincere empathy and care. A deliberate focus on centering joy also helped to engage students by making the task enjoyable.

Architecture is a discipline that has long relied on standards as a way of determining dimensions. Common standards describing the human body such as Henry Dreyfuss Associates' Joe and Josephine who, at 5'11" 162lbs and 5'5" 135lbs respectively,¹² were determined by a poll of the class to be representative of a very small minority of the students' bodies. Understanding the space of the body, and the dimensions of the objects and built form with which we interact was approached as critical research that would transform architecture by disrupting the norm.

A Slice of Life: What's Cooking?

This first project of the term focused on the kitchen as a domestic site whose form has been historically driven by design standards, gender norms, and sociocultural assumptions. Following the initial months of the pandemic it was clear that cooking and baking had become a source of comfort, agency, and relaxation for many people. Students were asked to cook a dish of 5-10 ingredients and document its preparation. This project was intended as an icebreaker for the students and once compiled, the result was a visual guide to the students' favorite meals. Many used this opportunity to share foods from their culture and prepare meals for loved ones, turning the exercise into a celebration of diverse culinary traditions and a vehicle for care.

Students began by drafting their kitchens. This straightforward task allowed students to see their kitchens through an architectural lens, and at a different scale than previously accustomed. Students began by taking rough measurements and then hand drafting their kitchen. This task provided students with an opportunity to learn the basics of orthographic drafting and architectural conventions in an unambiguous, non-abstract way.

During their cooking activity, students were required to use photography to track every motion involved in the activity from start to finish. Prior to cooking, students measured their bodies and ranges of motion and made note of any defining characteristics that might be considered "non-

standard.” This included mobility restrictions, forms of disability, and historically stigmatized traits such as left-handedness. This self-study followed the analysis of architectural standards and the social codes written into our built environments. Students were asked to question whether architecture encourages certain activities over others, with specific people and groups in mind, and for a “standard” body that is anything but the norm. Measuring and assessing their bodies allowed students to pay particular attention to moments of strain, discomfort, or inefficiency in the act of cooking. Students were also required to develop a secondary measurement system to supplement what photography was unable to capture. Key considerations included how can points be marked three-dimensionally in space, what subjects are being tracked, e.g., arms, legs, joints, kitchen gadgets, and whether there were moments of shared activity. For some, this involved using string to track motion, and for others video, tape to mark movements, or a combination of strategies. This aspect of the task found thematic and graphic precedent in the work of Lillian Gilbreth, yet distanced itself from productivity and efficiency as the objective of the exercise. Instead, cooking was viewed through the lens of culture and community, and the mapping of an ordinary task giving meaning and value to everyday activities.

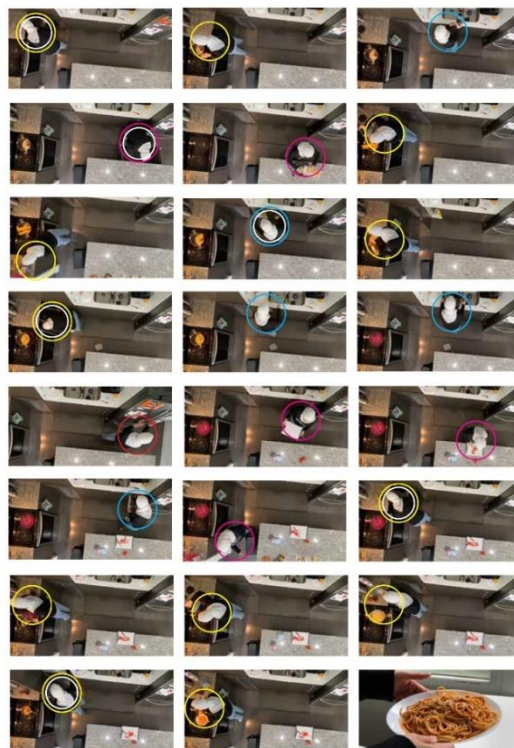


Figure 1. Spaghetti by Sarah Abdulkarim

Students were required to develop a graphic taxonomy of points and lines based on their photographic evidence along with any notes and markings recorded during the activity. The anthropologist Tim Ingold writes that “drawing is a fundamental method of observation. The beauty of it is that it links observation and inscription.”¹³ These marks were then annotated on the plans and sections drafted in the earlier exercise, documenting the choreography of the activity, and moments of strain, with a focus on the body as it relates to architecture. Floor plan mapping is a method used in both ethnography and architecture. In the book *Making Homes: Ethnography and Design*, this type of mapping is explained as an effective ethnographic and participatory method: “mapping activities are viewed as ‘cognitive toolkits’; which generate ‘stories’ which tell us how people understand and

misunderstand things, places, and events.”¹⁴ By valuing the ordinary routines and rituals of often overlooked stakeholders, anthropological and ethnographic methods challenge commonly accepted knowledge systems. The anthropologist Raymond Lucas describes anthropology as offering the potential for an architecture of broader ecologies and that by providing insights into the way people perceive and understand the world, architects can propose more meaningful ways to dwell.¹⁵

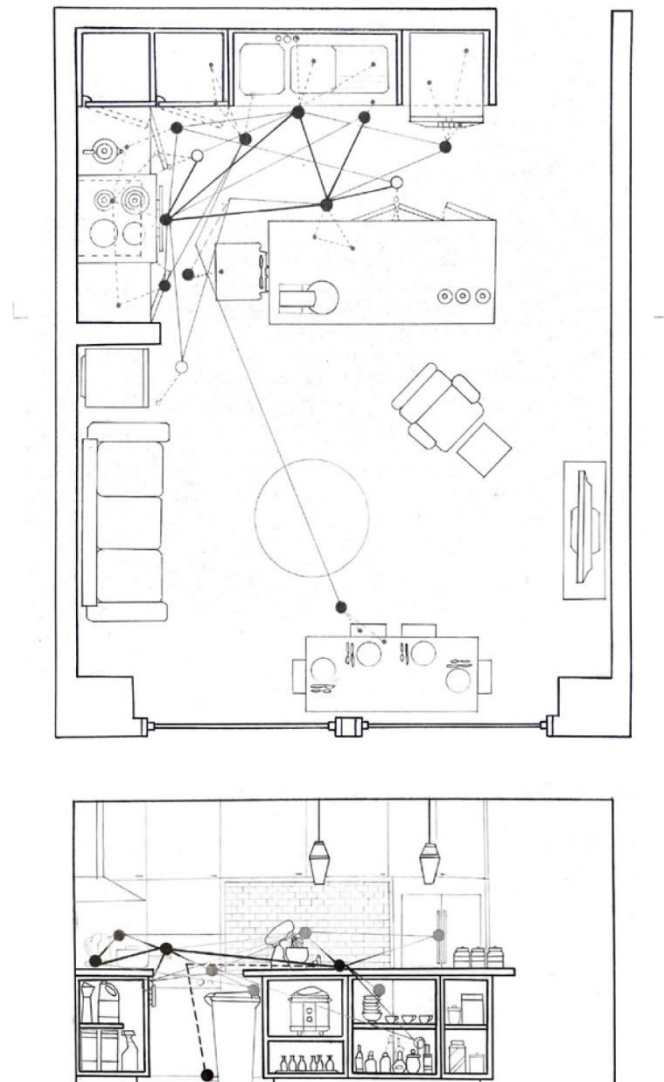


Figure 2. Spaghetti by Sarah Abdulkarim

A Room of One's Own

In the second exercise, students were asked to methodically document their daily routines using photography. These photographs were intended to capture the body's interactions with built form, with domestic objects, people, and pets, and mapped the duration of time spent in each space and movement from one space to another.

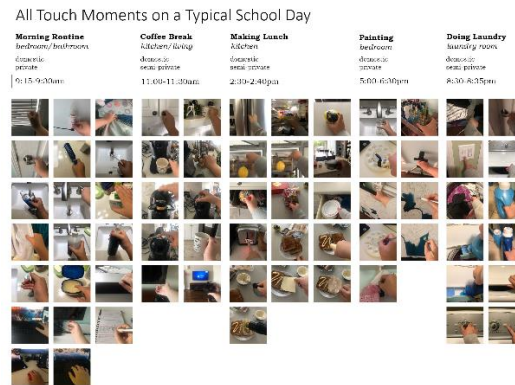


Figure 3. *A Room of One's Own* by Renee Fang

These observations then provided the information for students to design the “room of one’s own.” This room took cues from the designs of domestic environments such as Ettore Sottsass’ *Mobile and Flexible Environment Module* and Joe Colombo’s *Total Furnishing Unit*. At this scale, students directly confronted the relationship of the body to the built environment. Since the first project provided students with a deep understanding of the kitchen, this project shifted to other domestic programs such as spaces of study, rest, and entertainment so that by the term project, students would be equipped with a deep understanding of all major domestic programs. An important objective of the studio included designing each project to include opportunities for interaction and collaboration. For the “Room of One’s Own” project, students were restricted to a footprint measuring 7m x 7m, located within a larger undefined construct. The system that they designed was required to touch at least two sides of this footprint boundary, and then coordinated to connect with two members of their fifteen person studio section. This allowed for negotiation, collaboration, and fruitful discussions of other people’s “everyday,” prioritizing collaboration over competition.

CONCLUSION

At a time where computers and artificial intelligence have the capacity to coherently and convincingly answer complex questions, and architecture, in the face of crises, once again questions its disciplinary relevance, we must provide our students with the ability to think critically, creatively, and empathetically. Supporting acts of agency, and self-reflection that draw upon students’ personal experiences is an effective and fulfilling structure for teaching design, representation, and history and theory fundamentals in studio-based courses. Centering people – both valuing the unique voices of each designer, and those for whom we design – results in compassionate, clever, humorous, and rigorous projects, and engages students in the process. By ensuring students are active participants rather than passive recipients in the learning process, we can transform education. What matters to them should matter to us.

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THE TRAPS OF CREATIVITY: THE SOLUTION OF 3RPLAY'S EDUCATIONAL PRACTICES

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INTRODUCTION

Creativity is one of the main resources for coping with change. Especially in the recent times, creativity seems to be the way to solve some of the most pressing problems.

Acceleration has led about a succession of changes that, because of their speed, confront human beings with unprecedented, unforeseen and unpredictable situations. Hans Jonas' analysis is still relevant today: "Modern technology, informed by an over deeper penetration in nature and propelled by forces of market and politics, has enhanced human power beyond anything known or even dreamed of before; It is a power over matter, over life on earth, and over man himself; and it keeps growing at an accelerating pace".¹ This transformative power not only reconfigures the spaces and times of existence. This action seems inexhaustible: in fact, it keeps marking new boundaries again and again. This is its most marked characteristic: that of relaunching, namely putting back into play what has been discovered and conquered.

Precisely because of this continuous revitalization, there is - Hannah Arendt would say - a lack of banister.² That is, there is a lack of stable and secure points of reference that apply "always and in every case" or "in most cases". It is not possible to solve new issues with traditional criteria or paradigms because these are far away. It is not simply a matter of identifying new criteria or new paradigms. Acceleration would immediately render them outdated and obsolete.

What is needed, therefore, is a capability that knows how to - from time to time - formulate the most appropriate and meaningful action to bring about change that maintains a human direction of meaning. This capability can be identified in creativity, that is, that capability that neither follows nor executes, but is able to create (imagine-design-implement) actions for change.

There is convergence on the need for creative action.³ There is also convergence on the need to improve and exercise creative capabilities.⁴ It is precisely the improvement of these capabilities that has become one of the main educational goals. Pedagogical research, with the contribution of the educational sciences, has developed various theories with different operational plans. Indeed, creative capabilities have been implemented (assessments show this ... but also the speed with which change is articulated and the ways in which it diversifies).

However, it must be recognized that creativity hides some traps. The traps can be many, but there are three main ones, those that can vitiate creative action, alter its power and undermine the value of achievements.

The first trap concerns its “definition”. Creativity has such a wide semantic field that it could become ambiguous. The second trap concerns “freedom”. Creativity is the capability to create, but creating doesn’t mean doing in any way possible. The third trap is “mistake”. By changing the reality we are taking into consideration, creativity can make mistakes.

Like all devices, these traps also have a mechanism. To unhinge and overcome it, one must know how it works.

CREATIVITY AND ITS TRAPS

If - taking Paulo Freire's position - life has been transformed into existence, this has been possible above all thanks to the creativity of the human being.⁵ Indeed, the human being is not only capable of discovering things as they are, but is also able to imagine how they could become.

It is possible to recognize traces of creativity in any experience: writing, means of transport and communication, a simple umbrella, shoes or cheese, laws and courts, as well as weapons and drugs ... These are just a few examples that prove the human capability to create something (material or ideal) that would not have the possibility of existing if there were no human action.

Precisely because of its pervasiveness, creativity must be understood in its meaning, dynamics and possible relations with other capabilities.

The issue is not theoretical but practical. If we do not focus on creativity (on its definition, its dynamics and its relation to human action), we run basically two risks. The first risk concerns an only apparent interest in creativity;⁶ the second involves the possibility that its action is not creative, but destructive.⁷

The trap of definition

Creative action inevitably stumbles over the question of its definition. What is creativity? What does creativity mean? These are suspended questions because it is possible to assign the attribute of creative to the most diverse if not opposing or contradictory realities. It follows that creativity can mean imagination, originality, novelty, divergence, personality, productivity, freedom, progress, naiveté, strategy, strangeness, disobedience, invention, improvisation, spontaneity, transgression, dreaming. The list could go on because creativity has a wide semantic range.⁸ However, this range is so wide that it could become ambiguous.

Although, as Matthew Niermann argues, ambiguity may play a key role in the creative process, it is undeniable that the mysterious and elusive nature of creativity has consequences for the effectiveness and meaningfulness of creative action (as well as educational action aimed at exercising creativity).⁹ Consequently, "what is creativity" is not an unnecessary, superfluous or marginal question. On the contrary, it is a critical question: if we do not define creativity, if we do not have a clear definition, everything can be/become creative, but nothing will be/become truly creative. Theoretical approximation is then a cause of disorientation: the question of definition thus turns out to be a question of direction.

The trap of freedom

Because of this ambiguity, creative action stumbles into a second trap: that of freedom. Creative power does not merely break and replace the order of things. It is a transformative power through which otherwise impossible things are possible. The “otherwise impossible” depends on the various capacities implicit in creativity: the ability to suspend the order of change, the ability to look at reality as it could be, the ability to change the order by creating new connections. Without the human capacity for creativity much of what constitutes our existence would not exist. And creativity can only

create "otherwise" because it is able to break free from a predetermined sequence and propose changes that transcend boundaries and open up new possibilities.

However, to create does not mean to do, indifferently, in any way. Since creativity has the power to modify existential spaces, it must also take responsibility for the existence it envisages. In fact, following Robinson, "creativity is not only about generating ideas; it involves making judgements about them. The process includes elaborating on the initial ideas, testing and refining them and even rejecting them, in favor of others that emerge during the process. Evaluating which ideas work and which don't, involves judgement and critical thinking. This can happen throughout the creative process and can involve standing back in quiet reflection".¹⁰ Therefore, the freedom of creativity requires reflective skills to choose the best possibility. But "what does best mean?" The direction of creative action depends on what we judge "best".

The trap of mistake

The freedom with which creativity acts trips up the third trap. In altering reality, in creating new boundaries and new forms, creativity can make mistakes. But what are the mistakes of creativity? Errors of creativity cannot be goals missed, not achieved, and not overcome. Therefore, they are not errors subject to measurement. The evaluation of the creative process is not an audit that records the correspondence between achieved results and expected results.

Creativity raises the question of error at another level: it is not a question of effectiveness, of functioning, of performance. Creative error raises a question of meaning. In creating, creativity proposes novelties that must maintain the direction of human sense. Creative error is thus the consequence of an action that alters the direction of meaning, that has forgotten why it acts, that does not recognize the need for a direction of sense.

This ethical character is already implicit in the creative process: creativity cannot be separated from responsibility for the direction it gives to change. It is about that responsibility that - stated Hans Jonas - "concerns not the ex post facto account for what has been done, but the forward determination of what is to be done; by whose command, therefore, I felt responsible, not in the first place for my conduct and its consequences, but for the matter that has a claim of my acting".¹¹

THE NEED TO GET OUT OF THE TRAPS

We need to get out of these traps. To remain trapped is to lose the transformative potential that creativity can have in the process of humanization. However, getting out of the traps does not mean defining creativity, establishing rules or identifying a procedure for mistakes. How then is it possible to overcome these traps?

To get out of these traps, it is a matter of training creative ability by exercising two of its specific capacities: that of reflection and that of evaluation. Reflection and evaluation are "increasingly important in today's complex world as rapid technological advances with unpredictable consequences are magnifying. The effects of creative thought and action as well as the importance of ethical guidance for what we do".¹²

Although everyone is capable of reflection and evaluating, these skills must be trained and honed for creativity to be a conscious and purposeful action. The reflective educational practices of 3RPlay (*reflecting, researching, replying*) - result of a research project at the University of Turin - respond to this task. By revisiting traditional reflective practices based on Schön's reflective methodological framework,¹³ 3RPlay exercises the creative skills of reflection and evaluation through the methodological device of pretext.¹⁴

The methodological device of pretext

The methodological device of the pretext presents a situation intended to engage the participants in practices in a “problematization”: the pretext in fact stages a "suspended" situation that is undefined in the before and after.¹⁵ However, this is not a "pretended" suspension. The pretext does not interrupt the telling of a story whose end is already known. The suspension is genuine. It is not a stratagem that presents in interrogative form a situation that is already clear and defined in its sequel.

The pretext, in fact, is designed with the function of raising questions. A wide variety of situations can serve as pretexts: they can be taken from news stories, personal experiences, narratives, advertisements, photographs, ... the important thing is that the situation (even invented!) provokes a debate (Figure 1).



Figure 1. Exemple of pretext

The device does not exercise the capability of hypothesis solutions: the discussion among participants is not about different solutions; the search for the best solution is not the goal of the practices.

The pretext is an "open space" to train a problematizing approach that does not rely on predefined questions or anticipated answers:¹⁶ consequently, the discussion is about questions. The device is generative: the result is a flow of questions, always additional, that allow to focus more and more on the situation and to deepen it. This space is designed to facilitate the flow and interweaving of the different types of questions:¹⁷ realistic questions (What? Who? When? How much? Where? ...), operational questions (What to do? How to do it? With what tools?), causal questions (Why did it happen? For what reason to act? ...) and, finally, hypothetical questions (What if instead?).

Since there is no "right" or "correct" question, every question finds a place: every question is valid because every question has value. The focus on questions addresses the need to strengthen the capabilities of reading and understanding different situations.

The exercises of pretext

With this goal, the pretext device engages participants in three specific actions.

Firstly, introducing a situation, the pretext forces participants to notice something. The creative action only works well if the subject pays attention to details. It is not simply a matter of observation: it is not a matter of recording what is there. The required attention means interest, care, concern. The 3RPlay methodology aims to train an approach: in fact, the pretest trains sensitivity to details and the possible interrelationships among them. Detail is the first and main measure of creative action.

At the same time, the pretext induces participants to dwell on something. To be truly transformative, creativity requires patience and confrontation with others. By constituting a problematizing approach, the pretext encourages and promotes the habit of persevering and not settling for the first impression. The "gaze" that 3RPlay intends to form is the gaze that goes back, changes point of view, makes assumptions. It is a gaze that does not fully function if it remains solitary. Dialogue with the other brings out different questions that open up different points of view.

Finally, the pretext prompts participants to respond and move out of the pretext situation. In fact, the device does not limit the exercise to reflection. If it initially compels and "limits" participants not to respond, it is only so that the response is not generic, drawn from previous experience, or tailored to each situation. The response must be "tailored" to the situation. In other words, through the device of the pretext, 3RPlay allows participants to exercise their creative ability to problematize the situation in order to solve it as consciously as possible and, above all, in a way that respects the "human" way.

CONCLUSION

Creativity is not one possibility among many. On the contrary, in this possibility is contained the condition for an authentic process of humanization. For this reason, creativity is not an accessory modality of human being, but a necessity. Exercising and enhancing creative capability therefore becomes a task to which education (formal and nonformal) must respond.

The 3RPlay practices solution encourages the exercise and enhancement of creativity through a methodological device - that of pretext - which seeks to reduce the risks of creativity traps to zero. Reflection and evaluation are serious matters. On their exercise depends the direction of creative action, an otherwise irrelevant or deviant action. But while the solution of 3RPlay practices liberates from creativity traps, this solution does not apply once and for all. The problematizing approach is not an acquired knowledge. As an approach, it must be practiced and kept alive. Therefore, reflective educational practices of 3RPlay can open up to ever-wider areas of application.

NOTES

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REVITALIZATION OF THE DESIGN EDUCATION: ANALYZING SHIFTING DYNAMICS TO APPLY A NEW PEDAGOGY

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INTRODUCTION

Peri-Pandemic experiences and Post-Pandemic circumstances hinted once more that design education needs to be updated with new modalities in which more student-focused, performance-based, efficient and adaptable environments are implemented to have progressive outcomes. New modalities with better utilized interactions would diminish these shortcomings and will be creating more immersive collaboration opportunities which all together would be able to revitalize the design education. Collaborations between academia and industry could play a significant role for design education in staying progressive and innovative as a part of higher education modalities. This requires acknowledging and adopting new movements and trends within technological, social, and cultural domains that would affect the learning processes and educational outcomes. Inevitable developments as a result of aforementioned factors revealed that design education needs to adapt itself to new norms while learning a lot of lessons that were not known to exist. Nevertheless, this tribulation allowed students and faculty to become more tolerant, emphatic, environmentally conscious and humanely creative by recognizing global socio-cultural shifts which also require a design-related response. Design education's main areas of studio culture, tech integration in communication methods, presentation mediums, collaborative tools and pedagogies required a transformation in order to serve better to the primary needs and the behavioral aspects of individuals within it. This research aims to analyse various methodologies which could benefit a transformative teaching pedagogy for design education to adapt to the changing educational needs for the design profession.

TRANSFORMATIVE MODEL FOR DESIGN EDUCATION

The term “transformational teaching” was first used by George Slavich to describe the belief that instructors can promote meaningful change in students' lives if they view courses as stages upon which life-changing experiences can occur.¹ When group-based activities are implemented with structured guidance from an instructor, these experiences do not just “impart information to students but rather [change] something about how students learn and live”.² It is also later highlighted how instructors could serve as motivational leaders in this process by compelling students to realize a shared vision for a course, which encourages students to work together to maximize their personal and collective potential.³ Changing class and studio culture with shifting paradigms, changing methods in collaborations and pedagogies while understanding the primary needs and the ways of the industry

versus the behavioral aspects of user nature seem like becoming more predominant in design education.

The Transformative Learning Theory originally developed by Jack Mezirow is described as being “constructivist, an orientation which holds that the way learners interpret and reinterpret their sense experience is, central to making meaning and hence learning”.⁴ The theory has two basic kinds of learning: Instrumental learning focuses on learning through task-oriented problem solving and determination of “cause and effect” relationships. Communicative learning involves how individuals communicate their feelings, needs and desires with sequential phases:

Phase 1. A Disorienting Dilemma

Phase 2. Self-Examination

Phase 3. Critical Evaluation of the Assumptions

Phase 4. Planning a Course of Action

Phase 5. Acquisition of Knowledge or Skills to Carry Out New Strategy

Phase 6. Exploring and Trying New Roles

Phase 7. Building Self-Efficacy in New Roles and Relationships

Background of Design Education

The history of design practice is one of transitions from trades to professions; from purely instrumental know-how gained through employment to academic preparation that includes study of the discipline as well as the practice - that is, the theories, perspectives, and discourse that underpin professional decision-making.⁵ Many designers were trained in art schools as practitioners and have very little understanding of academia, rigor, the need for evidence, and so on. Instead, teaching has primarily been through mentorship, which basically means teaching via opinions of the instructors.⁶ Higher education system is evolving in response to cultural, technological, and economic changes, and to overarching global transformations.⁷ Countries are now actively reforming their pedagogical models, moving away from standardized approaches and “a one-size-fits-all experience” toward new and individualized modes of learning based on what students learn, rather than on the time they spend in a classroom.⁸ This approach is described as heutagogy, or self-determined learning. Heutagogy places the student at the center of educational strategy, and focuses on cultivating students’ autonomy, capabilities, and collaboration skills to prepare them to intervene in increasingly complex global contexts.⁹

Sir Ken Robinson asserts that we need a new educational paradigm modeled on criteria that model workplace complexity and ambiguity brought on by systemic flux and transformation, rather than on the traditional “us and them,” “teacher and student,” or “master and apprentice” of the industrial model. Design education has also responded to increasing complexity and systemic transformations. As observed by many scholars, the changes in design education have been significant. Its expanded curricula include less artifact driven problem-solving strategies, as design problems have also changed; stronger user-centered research focus; and new digital technology skills.

There has been a marked shift towards a more constructivist, andragogical, and collaborative teaching approach. Many institutions and programs offer project-based learning rooted in real-world problems, and increased student-teacher interactivity. However, the master-apprentice approach is still very common.¹⁰ Learning experiences should develop students' natural motivations and professionalize motivation to create a resilient, informed, and sustainable capacity which is considered to be the essence of ‘transformative learning’.¹¹

Changes in educational environments and teaching pedagogies are leading to the need for new design solutions for mental health; physical health; academic development; identity development. Social,

emotional, and cognitive developments are also the identified objectives of design education. This was heavily emphasized during the paradigm shift caused by remote education modalities.

Typical models of design education in academia adopt a linear set of steps where each must be completed successfully to continue onto the next. Whereas the circular process of design, evaluation and refinement will be essential to the creation of successful levels of design education during these shifts. In today's world where the emphasis is on interaction, experience, and service, where designers work on organizational structure and services as much as on physical products, a new breed of designers is needed.¹²

Methodologies for Design Education and Current Potentials

Systematic pedagogy and methodology in Design Education was established by Walter Gropius in 1922 with a curriculum diagram which is also known as the 'Bauhaus Curriculum Wheel'. Many decades later, 'design' is defined as the core of all professional training; it became the principal mark that distinguished the professions from the sciences.¹³

In terms of the prevailing norms, academic respectability calls for subject matter that is intellectually tough, analytic, formalizable, and teachable. In the past much, if not most, of what we knew about design and about the artificial sciences was intellectually soft, intuitive, and informal. This claim was that the older kind of professional school did not know how to educate for professional design at an intellectual level appropriate to a university, the newer kind of school nearly abdicated responsibility for training in the core professional skill which could also be correlated with transformative teaching pedagogy. Over time, various methodologies and approaches improved academia's credibility by staying current with technology and applications while still being compatible with the professional realm's demands and expectations. Other models, for design thinking and design processes, were explored with linear, non-linear and circular approaches.¹⁴ Design process is claimed to be conducted more than one stage concurrently, or by collecting information and prototype during the entire project so as to enable students to bring their ideas to life and visualize the problem solutions. A different model is proposed with a product semantic approach which basically introduces the basic ideas, concepts, principles, and language of product semantics and to practice them. This model is claimed to be enabling students to articulate design problems in a new way, to engage in research about the meanings their designs might have for others, and to enhance their ability to defend their proposals in the face of competing discourses. It also increases the competence of translating these ideas, concepts, and principles into design practices.¹⁵ Lee Shulman defines signature pedagogies as "the types of teaching that organize the fundamental ways in which future practitioners are educated for their new professions."¹⁶

Another study reveals that when it comes to courses in applied psychology or cognitive science providing students with an understanding of human behavior and theories underlying choice, decision making, perception, attention, and interaction, most schools offer either no courses or just simplified ones.¹⁷ The abrupt halt to in-person design education due to the pandemic and the shift to first remote education and then to a hybrid modality potentially brought a different approach to educate students to prepare them also for the new norm of professional world's remote working requirements in constant shifting environments.

The integration of hybrid modalities with the upgraded pedagogies for every section of higher education emerged not only from necessity but also from the nature of adaptation., Design education faculty, students, and designers were tasked with creating highly functional and adaptable environments within limited but very customized environments. These shifts happened retro-actively though and without much given time to organize properly. Hence, it needed to adopt some preceding

pedagogical models and combine them with the sharp methodologies of professional realm and its competencies of dealing with chaotic circumstances.

Adopting Methodologies

Design education starts with an understanding of psychology and technology. The rapid academic transition to remote learning showed that the preparedness of educators and learners in adopting alternative forms of education was questionable in terms of curriculum delivery, assessment, and overall execution of virtual design processes.

Transformative models should accommodate stress regulation, well-being of the students and the faculty, creating routines to keep everyone engaged in the processes, and turning the sessions into creative interactions. Interaction is constantly needed as the key component and asynchronous modality is falling short on sufficient interaction.

Remote modality requirements and standards should be learned, practiced, and established while building/adopting agile methodologies by analysing, utilizing and combining pedagogies when necessary. Providing students with more customizable environments and establishing sensory zoning to create a sense of privacy while testing and simulating design ideas within the campus-life and virtual environments proved to play a critical role therefore implementing a new pedagogy in design education should now focus more on the motivational aspect of learning.

According to a study by Steve Garner and Chris Evans, the motivation to learn is promoted when:

- a learner's curiosity is aroused due to a perceived gap in current knowledge;
- the knowledge to be learned is perceived to be meaningfully related to a learner's goals.
- learners believe they can succeed in mastering the learning task.
- learners anticipate and experience satisfying outcomes to a learning task.
- learners employ self-regulatory strategies to protect their intentions.¹⁸

There could be crucial pedagogical benefits to using the new modalities during these extensive shifts.

To enhance interactional experiences on virtual environments to give direct feedback by using tablets and digital pens, opportunities like recording sessions to revisit the content would be not just the necessity for academia but also making it pro-active against sudden challenges, compared to being retro-active.

In the learning action, not only the teachers implement their research and improving their knowledge, but also the learners make their own research: this is one of the learning methods where the learner can be more involved, actively and emotionally.¹⁹ The learner experience during the transitional modalities shifted the physical interaction through joint practices such as sketching together with the students, experiments and analyses of products, direct interference from the instructors as well as the shared prototyping experiences. Navigating these technical, social, and pedagogical needs should be addressed differently in Zoom or Canvas/Blackboard than in-person.

Cognitive And Emotional Parameters

Teaching and learning processes rely also heavily on cognitive and emotional parameters. Emotion has a substantial influence on the cognitive processes in humans, including perception, attention, learning, memory, reasoning, and problem solving. Emotion has a particularly strong influence on attention, especially modulating the selectivity of attention as well as motivating action and behavior. As many different studies suggest, the impact of emotion on learning processes is the focus of many current studies. Although it is well established that emotions influence memory retention and recall, in terms of learning, the question of emotional impacts remains questionable. Some studies report that positive emotions facilitate learning and contribute to academic achievement, being mediated by the

levels of self-motivation and satisfaction with learning materials.²⁰ Evidently, without these emotions, learning would not be fulfilled and would not turn it to memory that is needed for design education. These findings suggest that design educators should reconsider strategies for interacting with students and other faculty; more efficient tools to communicate the expectations; creating opportunities for more contact to feed the emotional responses of their students during the duration of sessions and breaks. The lack of correspondence during studio and lecture sessions would easily cause the lack of the emotions from both parties that are needed for the success of the projects and other tasks. Letting both sides express themselves more with digital interfaces and interact on virtual 2D and 3D levels as much as practical is becoming more important with the new adapted pedagogy for studio culture and other platforms in design education.

The utilization of the new tools to make the communication and methodologies stronger to create the emotional and cognitive levels of in-person design education, should grow exponentially with the adaptation of the new practices. This will help educators and students keep themselves engaged and familiar with current advancements, both in technology and education. The major tools utilized for these parameters to be established efficiently are illustrated in Figure 1.

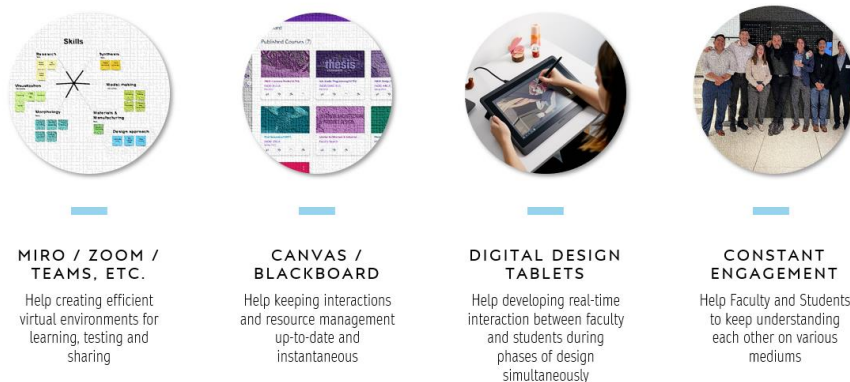


Figure 1. Key Tools Utilized.

KEY TAKE-AWAYS FOR THE SUCCESS OF THE NEW PEDAGOGICAL APPROACHES

Identifying shortcomings of the current applications with newly defined concepts and seeking out potential opportunities while trying to create new application for mostly non-described specifications are crucial to adapting new methods. Reconsidering mental and physical health, social emotional and cognitive development that identified objectives of the implementation of new modalities as well as academic development and identity development is a part of this adaptation. Virtual interactions enable professional reviewers as well as peers and collaborators to step in at any given time within the research and design development phases as a result of hybrid teaching modalities.

Main take-aways could be itemized as experimenting with different methodologies to amalgamate in-person experiences with online deliveries to establish hybrid modalities to prepare students for the new professional practice operating models, hence re-defining studio culture alongside the collaborative design environment and re-organizing personal workspaces; re-imagining a safer, more equitable campus environment starting with the studio; strategizing immediate response protocols, ensuring healthy measures are in place and restoring student & faculty confidence; establishing the proper “hybrid” environment for meetings, classes, studios, and other extra-curricular activities. Industry collaboration as a model for adaptation of progressive methods is also proven worthy. Increasing the level of empathy and awareness is also crucial. In the studio and lecture experiences

that have been observed during the hybrid modalities, the success rate of projects and other tasks undertaken showed improvement during the pandemic by utilizing efficient and improved sharing models via digital tools that are discussed in this paper (Figure 2).

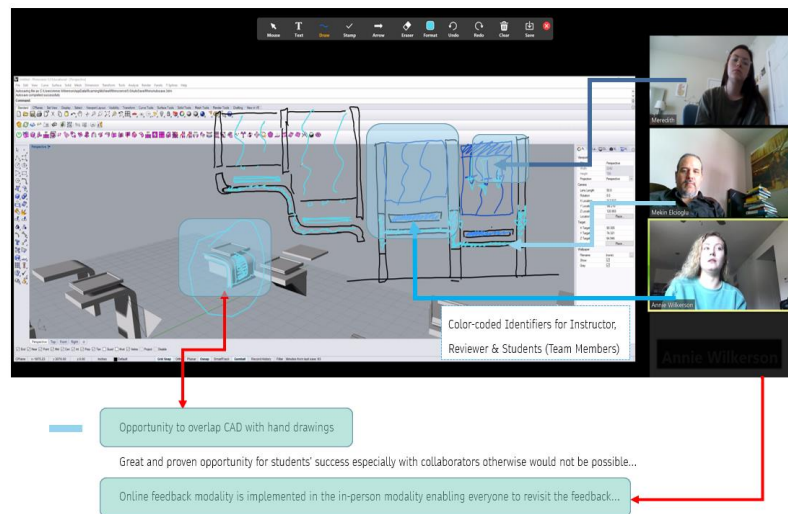


Figure 2. Transformative Methodology Utilizing CAD-overlapping Workflow.

One of the most important necessities for hybrid modalities is creating personal experiences between the educator and the student, necessary for the emotional component. Balancing social interaction with virtual environments of studio culture, the need to design the post-pandemic classrooms, workshops and studios, better utilization of Canvas/Blackboard platforms to give and get instant feedback for both sides of the table would be the critical for enhancement of the design education and its mechanisms as a part of transformative methodology.

Major emphasis areas for design programs were observed to be promoting the design intellect by curiously pursuing the knowledge in socio-cultural, technological, economical norms; balancing emotional, cognitive, and physical aspects of design education that would enable the students and the educators; and pursuing scalable teaching services through sustainable strategies. Also, another focus should be on preparing students to adapt to the changing social norms and how these affect their learning and practicing environments.

For design students, all relevant and available technological applications with interaction techniques which require experimentation should be learned and studied before the principles of design education and practice. Their adaptability with their open-mindedness to changes, opportunities and complexities of uncharted territories is crucial.

CONCLUSION

Sensory and cognitive distractions create loss of engagement and productivity in design education during any type of disruption. To cope with these issues, scenario-based education -procedural and executional- should be implemented and educational spaces, dictated by density needs and other factors, ought to shift to the new norms discussed in this paper. Design spaces should be more adaptable for new modalities; flexible for frequent turn-around; and customizable for serving better for educators, students and collaborators when needed. Adapting to the changing conditions induced by the remote learning scenarios, should maintain balance the emotional, cognitive and physical aspects of design education -as efficiently as the in-person scenarios- that connect the educators with the students, and without being disruptive or unpleasant hence progressive design education solutions

should be relatable and desirable to design students in social, cultural and academic realms. These experiences would require more adapted approaches, regardless of online or in-person, that are up-to-date with the industry standards, using the latest technology, methodology and real-life scenarios to keep both the educators and students current with remote working conditions, enhancing creativity and keep all parties motivated in every phase of education.

NOTES

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HUMAN-MEDIATED DIGITAL SIMULATIONS FOR EDUCATION STUDENTS: SIMLAB™ AT MURDOCH UNIVERSITY

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INTRODUCTION

In an increasingly globalised, digital world, contemporary practices in teaching and learning are relying more and more on virtual learning environments (VLEs) as a tool for engaging and educating. This field has seen significant growth in the twenty-first century, especially with the development of new technologies and software within the realms of virtual, adjusted, and mixed reality. While these technologies have enormous potential for education, the danger of using them without robust pedagogy support is that these activities can easily become what Wiggins and McTighe call: “hands-on without being minds-on [...] engaging experiences that lead only accidentally, if at all, to insight or achievement”.¹ They go on to suggest that while activities or tasks that use technology may be interesting or enjoyable, they “do not lead anywhere intellectually”. It is integral that any tasks or activities that are designed or implemented for students within an online or blended learning space – including the use of VLEs – are aligned with an appropriate instructional model. This is corroborated by scholars including Reeves and Reeves in their discussion of online and blended learning design.² This includes the use of mixed reality software that allows the facilitation of live human-mediated simulations for training and educational purposes – including Mursion™.

At Murdoch University in Western Australia, this technology has formed an integral part of the training of pre-service teachers (PSTs) since its introduction to the Education degree in 2016. While their course work already includes practicums where students participate in supervised work placements within schools, SimLab™ offers PSTs an additional learning environment where they can develop their understanding of best teaching practices in a safe, controlled environment. This paper discusses the ongoing development of the SimLab™ program at Murdoch University, highlighting some of the benefits and challenges of using mixed reality technologies in conjunction with simulation, and how SimLab™ is now being utilised for other areas of study both within Murdoch and beyond. It also discusses the importance of the ‘live’, human-mediated aspect of SimLab™, and the integral role that Interactors and Clinical Practitioners play in supporting student learning.

HOW DOES SIMLAB™ WORK?

SimLab™ uses mixed reality simulation software Mursion™ to facilitate simulations for pre-service teachers (PSTs). Mixed reality simulation is differentiated from virtual reality due to the combination of human and artificial intelligence in the operation of the avatars.³ Because of the live nature of the

interactions, they are what Mursion™ calls “human-mediated simulation”⁴ with real-time responses replicating real-world scenarios for learners. During these simulations, a Simulation Specialist or SimLab™ Interactor digitally puppeteers up to five avatars at one time using an X-Box controller for the movements and a headset microphone for the voices. The avatars' movements include reading and writing on their iPads, fidgeting, raising their hands, and looking at their mobile phones under the desk. The vocal performance of the Interactor is enhanced by live audio modulation software, allowing for greater differentiation between up to five different avatars at one time.

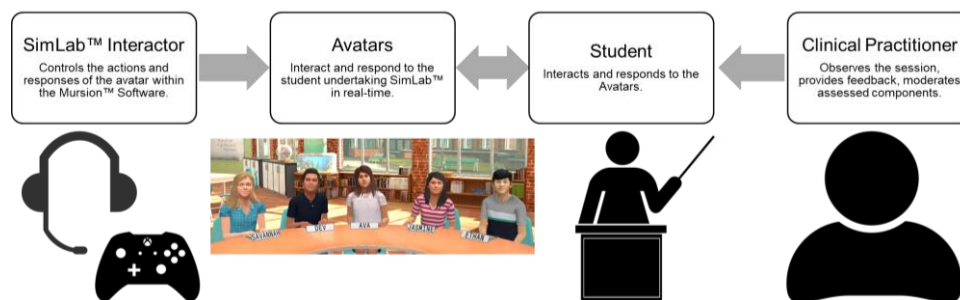


Figure 1. SimLab™ operation.

The avatars are displayed in a classroom scene and are used for Early Childhood, primary and secondary-aged students. The Interactors adapt the avatar's responses and behaviours based on their simulated age within the scenario, tapping into their unique personalities and backgrounds while also aiming to target the skills that the PSTs are working on developing in each experience. Because the Interactor can see the learner through a web camera, they can provide synchronous responses to their teaching during the simulation through the avatar/s actions and verbal responses. These elements make these simulations much more realistic than other classroom VLEs that use automated characters. After all, pre-programmed software “can only respond to students in preprogrammed ways”,⁵ but Mursion allows the Interactor to adapt the avatars' responses in a live and ongoing way throughout the session.

Simulations are shared with students through the video conferencing software Zoom, allowing them to access their sessions remotely or on campus. In the session, they are supported by the Interactor who facilitates the roleplay interactions, and the SimLab™ Clinical Practitioner (SCP) who explains the technology and offers mentorship. This role is filled by experienced teachers who either observe from within the SimLab™ classroom on campus, or through the Zoom meeting link. After the session, students are given a recording of their session to review, craft a written reflection on their teaching practice, and set goals for future SimLab™ sessions.

HISTORY AND DEVELOPMENT OF SIMLAB™ AT MURDOCH

In 2014 a review of teacher education in Australia published by The Teacher Education Ministerial Advisory Group emphasised critical areas of improvement that were needed in the education and training of PSTs. This included the use of effective pedagogies, assessment and feedback, classroom management, and working with parents and the community.⁶ This review became the framework for the SimLab™ Initial Teacher Education Program at Murdoch University led by Dr Susan Ledger. In November 2016, she trialled and introduced the use of TeachLivE™ technology – a precursor to Mursion™ that was developed at the University of Florida. In this original pilot program, Simulation Specialists from America were used, in 2017 Murdoch University acquired a site license from Mursion™ and the first Australian Interactors were trained to use the software. In 2019 the SimLab™ Clinical Practitioner (SCP) role was created. Further developing the human and digital experience. By

trialling different strategies to develop their understanding of best teaching practices PSTs upskill through a cycle of practice, coaching, and reflection.⁷

Currently, SimLab™ sessions are integrated across all Murdoch University ITE courses. Four main SimLab™ experiences are embedded in the degree at strategic touchpoints, mostly occurring just before school practicums. Each session focuses on different developmental skills based on the needs of PSTs as they progress throughout their degree, scaffolding and building upon their learning. These experiences better prepare our graduates for the challenging educational landscape of the future. It also allows them to learn through a cycle of practice, coaching, and reflection, trialling different strategies to develop their understanding of best teaching practices.

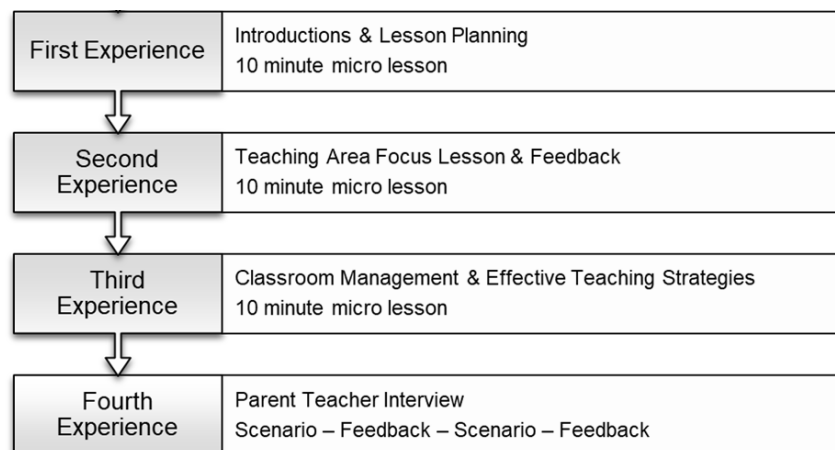


Figure 2. Integration of SimLab™ into Education Degree Structure.

BENEFITS AND OVERCOMING CHALLENGES OF DIGITAL SIMULATIONS

Benefits

As with all forms of roleplay and simulation, the use of mixed reality simulation technologies has a myriad of benefits, as well as challenges associated with its use. Some of the major benefits the SimLab™ team have identified include accessibility, the provision of learning activities that are both motivating and constructively aligned, and the ability to tailor student experience.

Accessibility

Because of the ubiquity of high-speed internet connections and web camera technology within Australia, students can access SimLab™ from anywhere. Murdoch University PST's Zoom in from all over the world, including from remote rural locations. This equalises the learning experience between internal and external students. This was particularly important during the COVID-19 pandemic and associated lockdowns when many authentic, real-world learning activities like teaching practicums were heavily disrupted or curtailed.⁸ SimLab™ was already established and integrated into our degree structure for some time, allowing us to facilitate hundreds of sessions for students entirely online, negating the need for them to come on campus while still supporting them in their learning journey. In 2020, sessions were also facilitated for other institutions in Australia whose practicums were disrupted by COVID-19. This included Education students studying at the University of Notre Dame and Charles Darwin University.

Motivating and constructively aligned

While there is reason to be cautious about the use of gamified VLEs in education, there is also evidence that demonstrates that it is their “game-like” qualities that make their use motivating for both students and educators.⁹ Students often come into their first SimLab™ sessions quite trepidatious about the technology, especially how interactive the class will be. But feedback and reflections from PSTs demonstrate that in their second, third, and fourth experiences in SimLab™, they talk about the avatars as if they were real students. One first-year student from our 2022 cohort was quoted in their feedback as saying, “I really enjoyed the SimLab as I feel I had a good connection with the students.” Another strength of this program is that each of the experiences is scaffolded and builds upon their previous learning, not just in SimLab™, but also in their classes and practicums. In Geoffrey Petty’s discussion of constructivist methods of learning, he suggests that it is the link between prior and new learning that makes learning truly functional.¹⁰ SimLab™, as a series of learning activities, aligns with and mirrors the intended outcomes in other activities and assessment tasks within the Education degree¹¹ as well as to the Graduate Teacher Standards set out by the Australian Institute for Teaching and School Leadership (AITSL).¹²

Tailored Experiences

Simulated learning environments provide a safe and adaptable environment for students to develop their skills, agency and competency.¹³ In SimLab™, PSTs are supported during the scenarios by the Interactors, who operate the avatars at three different levels of behaviour (low, medium, or high) depending on the difficulty level of the task. The SCP offers guidance and support before and after, as well as verbal and written feedback. Each scenario is carefully scaffolded, building on each task that has come prior, and our scenarios draw on real-world examples to ensure that our students are prepared not only for their practicums but also for their future field of work. Research shows that: “It has been validated in several research studies that time spent in simulated learning environments such as TeachLive or Mursion™ increases teachers’ frequency of higher-order questions and specific feedback to students, increases overall confidence in teaching, makes instruction and classroom management-based decisions in a more fluid and autonomous manner, and increases overall generalization of skills.”¹⁴ This is corroborated by students who consistently highlight how helpful they have found SimLab™ in preparing them for their chosen career within their feedback, “SimLab definitely gave me an experience that has made a big positive difference to my learning in the education field and also my confidence as it gave me an insight into my capabilities and the areas that I need to improve more to be able to teach students in real life.”

There are plans to expand SimLab™ for even more tailored experiences in the future. This includes the use of the Early Childhood Classroom environment which was piloted in 2022 and the ongoing development of a culturally diverse classroom.

Overcoming Challenges

Because of how long SimLab™ has been in use at Murdoch, many of the challenges typically associated with the use of simulation and roleplay, and mixed reality software have already been addressed. This includes most technical faults, including issues with web cameras, recording, and poor internet connections. Some of the main concerns about the use of simulations identified by the University of New South Wales in its guide to using simulation and roleplay with higher education include the cost and time involved in setting up and facilitating sessions, the creation of authenticity within sessions, ensuring engagement from both students and staff, and combatting student anxiety.¹⁵

Cost and Time

The cognitive and physical demands that are placed on the Interactors as they puppeteer and voice five avatars at once can be exhausting, especially for more complex scenarios with high emotional stakes. The number of simulations that need to be delivered within a specific time frame must be balanced with this load, which means that Interactors need adequate rest time scheduled into their workdays, as well as their weekly rosters. This limits the number of days that they can work, as well as the number of sessions that can be delivered in a day. Some of these issues are mitigated by the processes we have in place to ensure that we deliver the program in a way that benefits all parties. Ultimately, the ongoing success of SimLab™, the awards it has won, and the benefits identified by our students mean that the costs and time that go into continuing the program have so far been justified. SimLab™ positions our Education degrees as having a major point of difference from others within Australia, which makes studying at Murdoch an attractive option for many PSTs and helps to justify the cost and time spent on the SimLab™ program.

Authenticity

Because the avatars have distinct voices, personalities, and learning styles, “users of the technology become empathetic to the avatar’s emotions, abilities, and circumstances”.¹⁶ This can be seen in student responses to the avatars in their feedback, with one recent first-year student saying, “As I started the lesson and called for the students [sic] attention, it took too long for Dev Kappor to concentrate on myself so after I finally got his attention I welcomed the class and the [sic] told Savannah Boyd that I appreciated how quickly she looked my way and gave me all her attention. After this happened Dev figured he needed to behave for me to give him that positive acknowledgement.” The way they speak about the avatars is similar to the way they discuss real students. The technology and the performance of the Interactors are realistic enough that they easily suspend their disbelief not just for the duration of the scenario but also beyond it.

It could also be argued that complete authenticity in simulation and roleplay can also be too confronting for participants while they are learning. During their Fourth Experience, the Parent Interview, participants often verbally express their nervousness before and after the initial scenario. Having this technology available allows for practice and training with a high degree of authenticity through real-time autonomous responses, while also maintaining an environment that keeps both the Interactor and the PSTs safe.

Engagement from staff and students

The structure of SimLab™ and the role of the SCP ensures that student learning is appropriately scaffolded and supported throughout their degree. Education staff are involved in the timing and delivery of focus of simulations throughout each semester to ensure that it is at the most efficacious time and learning experience for each unit. There is a culture of feedback and development both within the SimLab™ team and with the SimLab™ Coordinator who liaises directly with Unit Coordinators and tutors. While there have been minor pushbacks from students and staff about using this technology in the past, its purposeful integration into the degree for so many years means that the use of virtual technology is rarely questioned.

Student Anxiety

Students with concerns or anxieties about public speaking or completing the session are well supported by the SCPs and the Interactors during their sessions. The Interactors are trained in dealing with anxious students and supporting them through the avatars, and the SCPs are also primed to step

in and stop the scenario if the student needs more support. Students also have the option to ‘pause’ the scenario themselves. While many PSTs identify that the experience can be nerve-wracking, they appreciate the opportunity to work with the avatars before they go out into a real classroom.

In addition, SimLab™ is not graded. While students are marked to a rubric for each session (Figure 3); our simulations are designed as what Biggs and Tang would call Teaching and Learning Activities (TLAs), not Assessment Tasks (ATs).¹⁷ This helps to assuage students' fears about failing and provides them with an environment to develop their methods of best teaching practice with less stress. Students at Murdoch University must complete each SimLab™ to progress in their degree, and to go out on their practicums. The experience allows for cohort moderation and identification of PSTs that may require extra support on placement.

THE IMPORTANCE OF HUMAN-LED SIMULATION

According to Reeves and Reeves, the design and implementation of online and blended learning should include the careful introduction of new technologies, keeping pedagogy ahead of technology, the use of constructive alignment to ensure the efficacy of the learning, maintaining a human presence in online/blended environments, and conducting ongoing evaluations of the subject in question.¹⁸ The technology behind SimLab™ is highly advanced, and the programme’s success is linked specifically to the work of the Interactors, SCPs, SimLab™ Coordinator and the wider School of Education support. It is the human element, combined with the virtual world that is the ultimate reason for the success of the SimLab™ program. Namely, the role that SCPs and Interactors perform within the simulation environment, facilitating and supporting the students through their learning.

Research has shown that teacher educators must facilitate a learning environment that encourages PST to become more aware of their own developmental needs.¹⁹ Each time a PST completes a SimLab™ session, they receive personalised and instant feedback from an SCP. The combination of verbal and written comments supports student learning with the written feedback being recorded in a PebblePad workbook which is immediately available to them after the session. Access to an SCP provides immediate coaching and feedback, initiating intentional reflection on PST's teaching skills. Feedback firstly commends the PSTs’ current teaching strengths and then identifies recommendations to improve practice. These recommendations form the PSTs’ future classroom goals aligned with their upcoming placement. After the session, the PST reflects on their experience in PebblePad. The use of the situation/action/outcome + (SAO+) resource provides a structured approach to discuss, record, and internalise new understandings. The addition of the takeaway video recording provides the PST with a resource they can personally review and share with others as evidence of a broadening skill set. A goal is established for their upcoming school experience from this reflective process, and the cycle then continues, allowing students to take control of their development as future educators.

CONCLUSION

The outstanding element of the SimLab™ programme is how the SimLab™ Team has utilised mixed reality technology with a whole team working to individually meet the needs of each PST. The collaboration and expertise of the SimLab™ Team have been essential to the current and ongoing success of the SimLab™ ITE Resource, creating a nurturing learning environment and a social presence that is bringing ‘virtual reality’ closer to reality in exciting ways. As new technologies emerge within this space, we hope that it remains human-led and human-mediated, providing students with positive learning experiences, as it has for another student from our 2022 cohort who left the following feedback after their session:

“My experience of Simlab has to be my most positive to date during my degree. It is SimLab that taught me how to teach and gave me a great insight into how I delivered a lesson. I was provided a copy of my session I watched over and over, which I was quite shocked to see. My idea of confidence and enthusiasm needed to be redirected, as I saw and heard myself ‘lecturing’ to the class. Having this opportunity to review myself in a classroom environment before I went out onto prac, gave me a huge head start in my journey toward becoming a primary school teacher. I was able to adjust my style, position and focus of what I thought teaching was and focus more on becoming a facilitator of learning. What a wonderful resource!”

As SimLab™ works on expanding its capacity beyond Education and training PSTs, we are hoping to foster further collaborations in other areas. We have already worked with internal and external clients in Australia and Indonesia in a variety of disciplines including business, nursing, child protection, and counselling. In the future, we hope to create more training opportunities through the application of our mixed-reality technology and our highly skilled, specialist team.

NOTES

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LIFE NARRATIVES AS SITES OF ARCHITECTURAL LEARNING AND TEACHING: REFLECTING ON MEANINGFUL CHARACTERS AND PLACES IN UNCERTAIN TIMES

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INTRODUCTION

Taking the lead from Goodson and Gill’s narrative pedagogy, this reflection is situated within the notion that “learning encompasses meaning-making, [by] connecting to what is valuable and worthwhile for human action, existence, and becoming”.¹

The reflection follows our attempt to facilitate connections, nurture belonging and foster agency through the application of narrative learning-and-teaching within the first-year architecture course – University of the Free State, South Africa. Two instances of uncertainty were identified: first-year students’ general disorientation within the field and methods of architecture and architectural learning-and-teaching, and the disorientation caused by the COVID-19 national lockdown. In both instances, narrative was employed to address uncertainties through the act of narrative emplotment and transformation.

Our journey of narrative emplotment started before lockdown. Responding to the notions of relational learning through dialogic intertwinement, preparation for the 2020 curriculum was dependent on an in-person and emplaced experiential and narrative exchange. Recontextualised, architecture and architectural learning-and-teaching were positioned within our shared human nature: storyteller beings. Through recounting and listening to stories, we make sense of our identity, actions, and values.² Narrative and environmental identity were introduced and problematised to explain why and how we tell stories, have and critique opinions, and make meaning correspondingly in the construction of buildings.

In-person contact and traditional methods of phenomenological engagement were discontinued five weeks after the start of the 2020 teaching year. Design and Theories-and-Histories modules had to transform existing narrative methods beyond storied exchanges in physical closeness. To accommodate the unfamiliar space of digital learning, we attempted to find a shared learning event in fictional narratives, translating nature-centred poems and telling stories of care.

This reflection proposes that even during uncertain times, the application of narrative and narrative methodologies can provide creative ways to strengthen self-knowledge, connections, belonging and caring agency towards “becoming,” “which concerns the flourishing of individual human beings”.³

CONTEXTUALISING OUR SITUATEDNESS, UNCERTAINTIES AND INITIAL RESPONSE

Influenced by Norberg-Schulz's phenomenological approach to Architecture,⁴ our school promotes the making of meaningful architecture, finding relevance within the ontological relationship between persons, place, and time. Architecture is tasked to facilitate dwelling, creating spaces within which persons feel connected, belong, have a voice, and can dream.⁵ As a school that focuses on the architectural client's individual and collective being in place and time, we attempt to listen to our clients attentively: the students' being in the spatiotemporal learning environment.⁶

In preparation for the 2020 academic year, we engaged informally with senior students and reviewed first-year module evaluations. Analysing their feedback, uncertainty was identified within the field of architecture and methods of architectural learning-and-teaching. The unfamiliarity of the design critique process, nature and application of architectural theories-and-histories, lack of experiential understanding of allocated sites and time constraints on teacher-learner engagement exaggerated uncertainty and rendered students vulnerable.⁷

We thought of ways to support the first-year students' process of "becoming" within the methods, places and times of architecture and architectural learning-and-teaching. Learning is most effective when knowledge is not simply disseminated but is discovered, developed, and questioned in the presence of each "self," "others" and in a place of experimentation and safety. Towards this end, narrative pedagogy has shown success and does not require much elaboration.⁸ In this process of "becoming" together, the learner-teacher narrative exchange aims to promote dwelling in learning, which fosters self-knowledge and caring agency through mutual communication, belonging and connections in shared places and times.⁹ Essentially, the three storytelling components are present: the entanglement of diverse characters in different places at distinct times – spatiotemporal events.

Ricoeur argues that we understand, interpret and orientate ourselves in the world through the stories we have told, tell, and hope to tell. Our stories are experientially intertwined with acting "others," memories-in-action (prefigured narratives), current acts (configured narratives), and future aims (refigured narratives).¹⁰ This imaginative and discerning quality of humans to configure an ontological life-story from the diverse human, temporal and environmental actants shape, what Ricoeur calls, our narrative identity. Alike an author writing a story, we too configure our narrative identity through the act of emplotment: mediating concordant and discordant characters ("selves" and "others") with orientating and disorientating events in a meaningful plot or life-story.¹¹ Emplotting the "self" as "other" and "others" as "selves" within narratives, we not only make sense of our own and others' identities in sameness and difference but also sculpt our caring and ethical actions.¹²

David Utsler elaborates on Ricoeur's narrative identity with what he refers to as 'our environmental identity'.¹³ We create and consider our environmental identity by sharing tales about the meaning of place and what it means to be there. When we consider our identity in relation to time, we evaluate our past and present acts while broadening the values which guide our future actions. Similarly, reflecting on our place identity, we evaluate and refigure the value of place and actions towards place. We contemplated that experiential learning through storytelling could address student uncertainty within communication methods., the places we investigate, the times we share and the values we hold and develop.

APPLYING NARRATIVE EMPLOTMENT PRE-COVID

The first-year architecture course centres on how individuals can find relevance in natural landscapes through meaningful placemaking. For the 2020 academic year, this focus was positioned within Architectural Narrativity.¹⁴ Storytelling and 'writing' were used as an analogy to familiarise the act of meaningful architectural making, and methods of learning. Renewed, creative exercises explicitly

explored how we ‘write’ places by attentively listening, interpreting and respecting different storied selves’ narrative-environmental identity and sense of time-place.¹⁵ Designed as self-reflective¹⁶ and caring dialogue-events between “selves,” “others” and the environment, we hoped to explore and problematise different narrative-environmental identities as part of the real practice of architecture. We realised that although the first-year course previously tried to mimic practice’s focus on spatiotemporal environments, one key ingredient of practice had mostly been rendered extremely abstract: the client. Students mainly dealt with flat, instead of round characters, when writing the ‘stories of places.’ Students-as-clients and diverse real clients were introduced as story characters. To initiate the process of narrative exchange, Goodson and Gill encourage dialogic narrative encounters between individuals, emphasising that the narrative relationship between learner and teacher constitutes the foundation of narrative learning.¹⁷ As an introduction to the year, we invited students to enter our life-stories; during a four-hour informal conversation they could ask and tell us anything. This afforded them an opportunity to recognise us as fellow humans bound to stories, worldviews and personal dilemmas.¹⁸ Story sharing transforms the lecturer from an authoritarian instructor to a caring facilitator - round character -aiming at a reciprocal relationship with learners. This rendezvous introduced the first project of the year: *My Inner-Form recounted as my Second Skin*. The *Inner-Form* brief emplots students as the main character of their own stories. The project allows learners to reflect on their inner identity (values or even vices) before translating their narratives into an autobiographical *Second Skin*.¹⁹ During the 2021 lockdown, this project was reframed. As an alternative, students interpreted their narrative as: *My Innerform recounted as an Artefact Transforming Light*. (Figure 1) Expressing sameness, uniqueness and difference, students enter a visual dialogue with themselves, each other and the department. Empowering learners to share, listen to, and discuss their visual narratives relies on an openness towards each other. This is the original act of our students’ belonging, connecting, and having a voice: This is who I am.²⁰

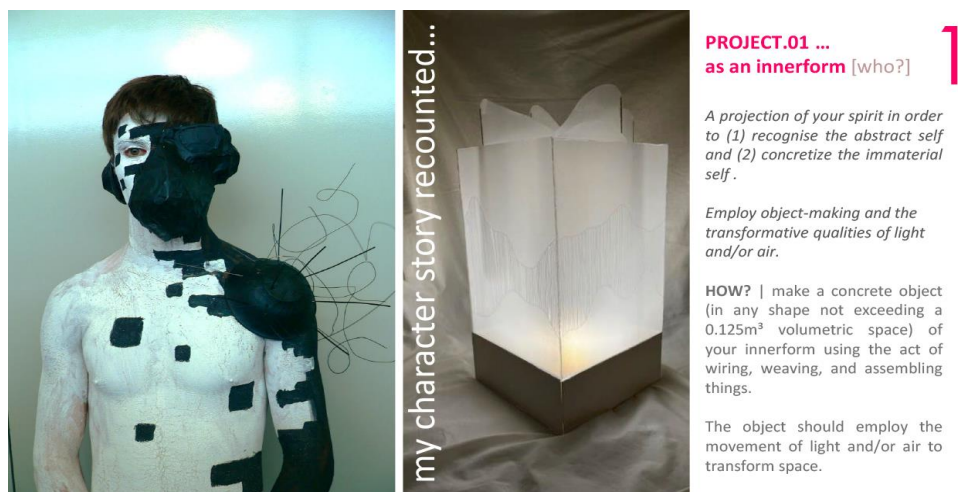


Figure 1. *My Innerform recounted as my Second Skin*: (2020) | *My Innerform recounted as an Artefact Transforming Light* (2021). Examples of student work

From this autobiographical story, biographical ‘writing’ was introduced. Group assignments exposed the difficulty of configuring concordant and discordant lived-experiences into a single story. Learners, organised within groups, had to build a *Third Skin*, a scale 1:1 adobe and reed dwelling. From interpreting and respecting their own identity as the story’s character, learners progressed to interpreting and respecting each other’s embodied-emplaced “selves” as clients. Again in 2021, physical gatherings were restricted, and in groups of two, students supplemented the *Third Skin* by

building *Third Skins for Two birds and a cat, Felicette*. The birds, a hadeda and a guinea fowl are indigenous to two specific landscape typologies and ways of nesting. For Felicette they construct a personal identity, based on her background story of travelling into space; her student-configured identity and the unique orientation of the site situated parameters for the project. (Figure 2)



Figure 2. *Third Skin* projects: scale 1:1 dwelling from reeds and adobe (2020) | scale 1:1 dwellings for two birds and a cat (2021). Examples of student work

Before the COVID-19 pandemic, we relied heavily on in-person and emplaced narrative exchanges. Theories of phenomenology and embodiment were presented on-site, in the studio/classroom, and during client interviews. Conversations allowed for narrative construction through collaboration.²¹ Combining informal theories-and-histories discussions with nature walks presented more time to recount, discuss, explore, and draw in the landscape.²² The nationwide lockdown cut short this mode of experiential learning. With the added uncertainty presented by the COVID-19 lockdown, we had to rethink how we digitally emplace students within narratives and shared phenomenological places and times.

APPLYING NARRATIVE TRANSFORMATION DURING COVID-19

Reflecting on their transition from face-to-face classes to a digital learning process, David White suggests that “embodiment is a powerful, but false, proxy for engagement.”²³ It is relatively easy to assume that physical presence during face-to-face contact hours ensures a process of engaged scholarship; we already learned from our students’ uncertainties that physical presence does not ensure learner orientation. Expanding on the possibilities of narrative teaching, we adapted our online courses to avoid simply mirroring in-person methods with webinars. Rather, we creatively investigated ways to foster our student’s “becoming” and understanding through alternative narrative exchanges.

Collaboration typically occurs in a social group context when teachers and learners compare their own narratives and interpretations. However, Goodson and Gill confirm, texts can act in a similar way to face-to-face meetings. Texts embed learners and lecturers in a shared narrative, which fosters collaboration to gain different conceptual understandings and insights, and, identify problems and difficulties.²⁴ Stories can link time, experience, and memory to the more tangible, physical aspects of a place, because “stories sequence and configure experience of place into meaningful relationships”.²⁵ Complimenting online sessions, extensive story-based briefs, poems, and narrative-based ethics of

care were introduced to substitute in-person collaboration with real clients on real sites. Storied briefs strengthened narrative emplacement, without physical presence, between the learner, client [character] and place.²⁶ Continuing the process of biographical ‘writing’ assignments, the first online project presented students with: *Narrating the Architectural Story of Three Characters: Avra, Antonio and the Tankwa Karoo: A Hermitage*.



Figure 3. Extract from the Hermitage brief: client interview, recounting memories, and experiences of place

The *Hermitage* brief tells the story of two lovers– a Mexican interpretative dancer and a Capetonian composer slowly losing her sight. Planning on settling in the Tankwa Karoo, the fictional interview between them and their architect unpacks their loves, desires, and fears. It describes Avra's indigenouness to the Tankwa, the remnants of her family home and an old 'kraal'²⁷ present on site. (Figure 3) The brief includes sound clips of Avra's musical compositions, as well as the paintings Antonio inherited from his great aunt, Kahlo. (Figure 4) This inclusion of music and art introduces visual metaphors and symbols to deepen our learners' understanding of the story. Plans, drawings, and landscape photographs orientated students within the qualities of the farm. Precedents were merged within the story as the houses the clients currently occupy or have memories of. (Figure 5)



Figure 4. Extract from the Hermitage brief: Antonio recounts memories and experiences of Avra's musical composition and performance

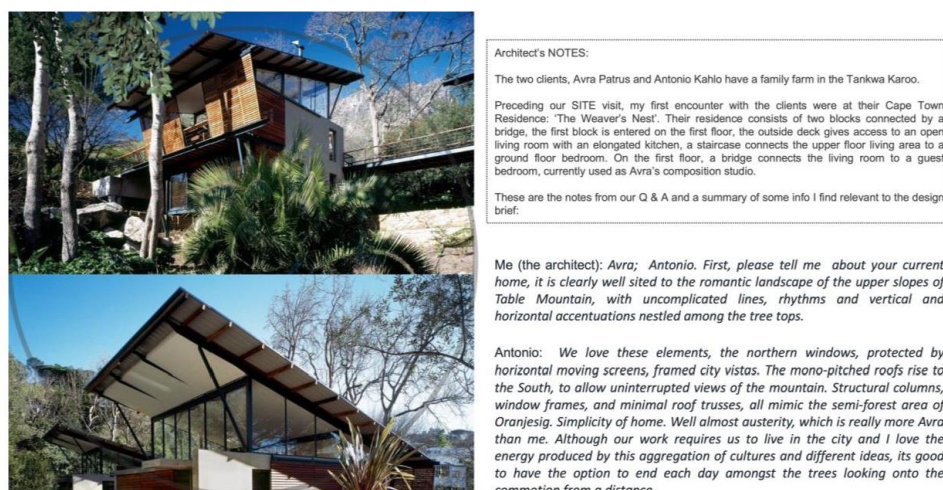


Figure 5. Extract from the Hermitage brief: Antonio explains his appreciation for their current home

To write their architectural biography – a courtyard home for the couple – students applied theories directly to the multiple essences, and intrinsic and imagined relationships immanent to Avra, Antonio, and their farm. (Figure 6)

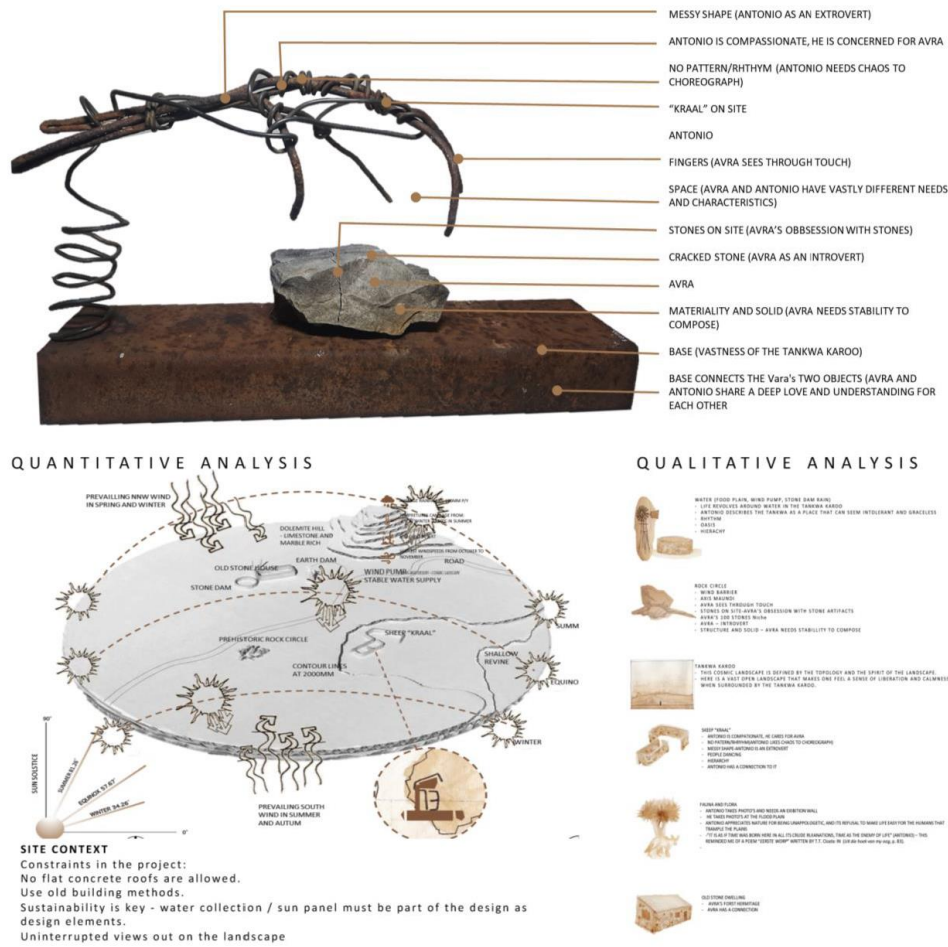


Figure 6. Student appropriation and analysis of client and place phenomena. Example of student work (2020)

In the Theories-and-Histories module, students engaged in a critical examination of seminal texts,²⁸ in order to comprehend the fundamental concepts presented within. Students employed creative expression as a means of translating and individualising their understanding of the key themes, identity, dwelling and care, discussed in the articles into a narrative form. (Figure 7)

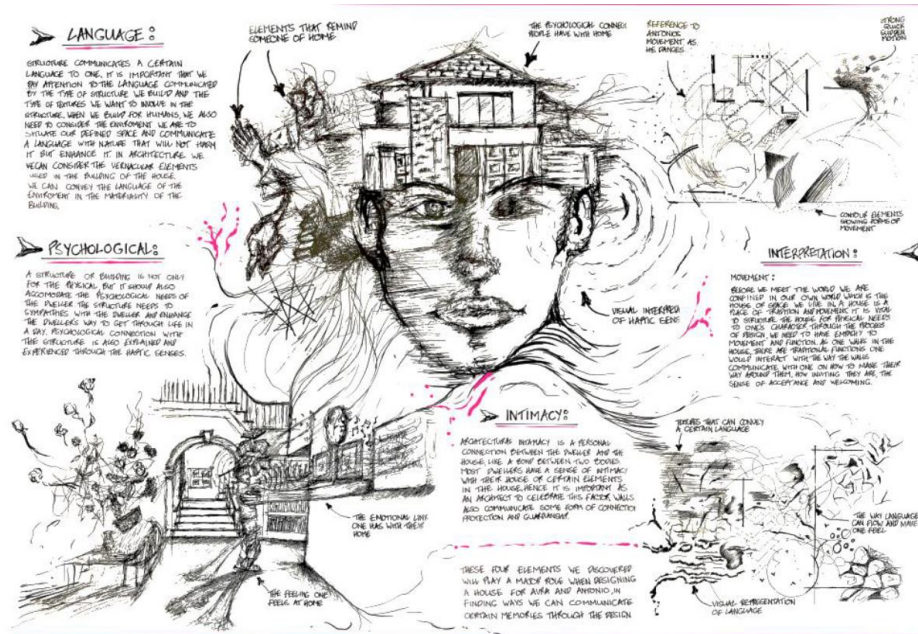


Figure 7. Interpretation of clients' spatiotemporal needs and desires, translating theories and histories. Example of student work (2020).

Additionally, the students reflected on the potential application of these themes to the fictional clients of the *Hermitage*: Avra and Antonio. Online peer discussions encouraged the sharing of their personal narratives of dwelling as a means of illustrating the relevance and applicability of the identified themes to their own experiences. Interlacing international, local, and African vernaculars into class discussions as different ways of dwelling in diverse places and times, the Euro-centric chronological timeline was questioned.²⁹ These dialectic exchanges between self-knowledge and academic knowledge sources deepened their understanding and application of theories-and-histories to our context. (Figure 8)

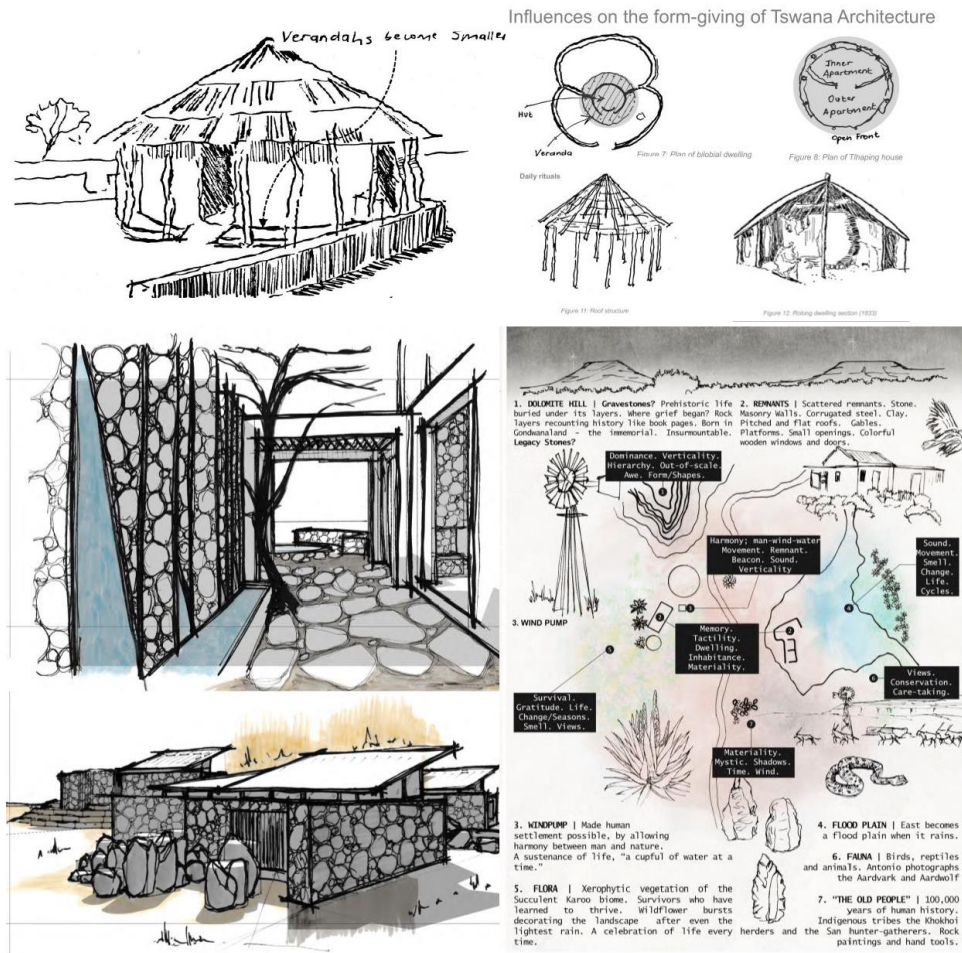


Figure 8. Recounting histories of local vernaculars within the design development of the *Hermitage* (2020). Example of student work

We find that students associated differently with the spatiotemporal characters, individually discerning which characteristics of the clients and place are important and where and how to situate the hermitage on the farm. (Figure 9)

The last two biographical ‘translation’ assignments were envisioned as a two-part capstone project, the *Eco-Ubuntu Centre*³⁰ that scaffolded on the *Hermitage* and continued our storied-brief approach through poetic translation.

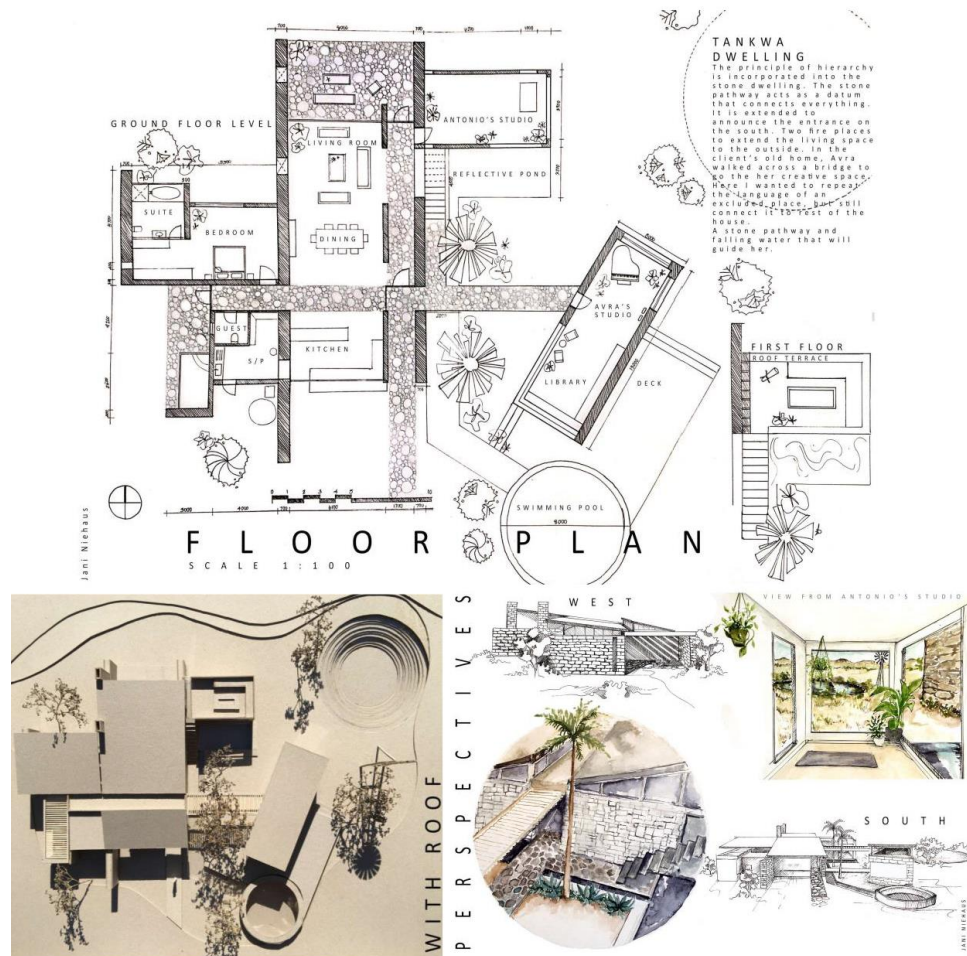


Figure 9. Hermitage design: student discerning her interpretation of client, place and sitting. Example of student work (2020)

This project commenced with individual students carefully self-selecting a local South African poem, which resonates with each student's notion of care towards nature. The assignment aims to strengthen students' own connection to nature, either as a lament of nature's vulnerability, or a celebration of their spiritual oneness with GAIA.³¹ Through personal association, students translate poetic texts into architectural texts, employing spiritual archetypes to emotionally 'speak' to visitors other than themselves. Envisioning this nature-interpretation centre, learners move from the individual agent to a translator-agent who reflects on their self-knowledge in the presence of every other selves' architectural experience. (Figure 10)



Figure 10. Capstone project: Eco-Ubuntu Centre. From biographical writing to caring translation of others' experiences with each other and nature. Example of student work (2021)

Instead of introducing new sites for different projects, the second-semester projects were sited within various aspects of one geographical context – the continued geographical emplacement allowed students to engage longer and more profoundly with place. Part two of the capstone project expanded *Ubuntu-ism* from the nature-centred to care for other humans. Students' community kitchen placed their nature-interpretation centre in dialogue with an existing heritage building.

CONCLUSION

Active engagement in storytelling proved mostly successful in assisting students to access self-knowledge and encouraged the sharing of experiences and observations. Cultural materials such as fiction, poetry, and societal values complemented self-knowledge, but this can be challenging in an online environment without physical presence. Initially, introverted students shied away from storied engagement, but in general first- and third-person narratives in instruction and critique sessions allowed students to draw on their familiarity with everyday stories to improve communication and understanding of their, ours and others shared vulnerabilities in architecture and learning.³²

Reformulated, the Theories-and-Histories replaced some academic research assignments with design-themed narrative and creative tasks and applied theories-and-histories directly to Design projects. This freed up time for conversation in online Theories-and-Histories sessions and allowed for more in-depth analysis, reflection and feedback from peers and tutors in Design. Online Design sessions were restructured by splitting students into two studios. In one studio, students presented individually while others listened attentively, preparing peer critique and feedback. The second studio participated in an online group discussion or charrettes,³³ learning from peers and tutors. This division allowed students to narrate their interpretations more extensively, creating deeper connections and a sense of belonging between students and lecturers.

In smaller online groups, we attempted to contextualise our critique/feedback in experiential narratives while supplementing the personal experiences with the introduction of new academic arguments and knowledge sources (quantitative environmental facts, theories-and-histories, precedents, etc.). The latter were interwoven within our storied-responses supported by specific online

links. In this process, precedents and theories are not prescriptive but discovered and discussed together.

Presented as a storied-brief, learning material conveys the personal and emplaced narratives of others. Self-selected poems extended students' own metaphoric and symbolic interpretations of nature, moving from human "others" to non-human "others." The story of Ubuntu introduced ethics, not as an objective or foreign philosophical notion, but within the already present human understanding of reciprocal care and solicitude for "self" and "others." The open text, whether the story of Avra and Antonio, the nature-based poem, or the story of human care, gives all ensuing architectural configurations a relevant context.

When reading and refiguring the real or fictional stories of "others," the textual material is not canonical but an open narrative. Open narratives, compared to closed, prescribed narratives, gave students the opportunity to interpret and experiment creatively. Between students and teachers, the discussion centres on what they think the client wants and why. The personal appropriation and interpretation of the material become the focus. The learner's argument for and reflection on creative doing is at the centre of learning. Students investigate the reasons underlying their decisions and actions. During COVID-19, storied-briefs allowed a shared base for continued and emplaced narrative exchange between learner and teacher.

Narrative pedagogy assists students in having greater individualization and agency in their projects, while also reciprocally developing and questioning their own and others' self-knowledge.³⁴ This approach enables students to become co-authors of the assessment rubric, complementing broader outcomes with unique ones based on their interpretation of the client's needs and desires. Additionally, by sharing thoughts and attentively listening to others' narratives, students can empathetically integrate diverse narratives and environmental identities. This results in a mutual "becoming" through the sharing of life-stories, which promotes the values of reflective knowledge and care towards meaningful "selves," "others" and places, addressing uncertainties and vulnerabilities.³⁵

NOTES

¹ Ivor Goodson and Scherto R. Gill, *Narrative Pedagogy: Life History and Learning* (New York: Peter Lang Publishing Inc., 2011), 114-115.

² In “After Virtue,” MacIntyre argues that the same “concepts of narrative, intelligibility and accountability” is present in “personal identity”, to construct the unity of our actions and identity is to construct the “unity of narrative embodied in a single life” of a “unity of a narrative quest.” This narrative quest, or quest to understand our own action and identity as an intelligible and accountable life-story, “is always an education both as to character of that which is sought and in self-knowledge.” Through reflection on our story of actions, we increase our knowledge of our identity and, for MacIntyre, increase our understanding of what is good: our virtues guiding our actions. Virtues are never “only qua individual” but are subject to our social identity and our responsibility towards others. Alasdair MacIntyre, *After Virtue* (London: Bloomsbury, 2011), 253-255.

³ Ivor Goodson and Scherto R. Gill, *Narrative Pedagogy: Life History and Learning* (New York: Peter Lang Publishing Inc., 2011), 114 - 115.

⁴ The Department of Architecture (University of the Free State) critically builds on and questions concepts of the phenomenology of dwelling. The first two years of the undergraduate program investigate different aspects of meaningful place-making. Especially relevant, see Christian Norberg-Schulz’s, *Genius loci: Towards a Phenomenology of Architecture*; *Architecture: Meaning and Place*; *The Concept of Dwelling: On the way to Figurative Architecture*; and *Architecture: Presence, Language, Place*.

In “Christian Norberg-Schulz’ Interpretation of Heidegger’s Philosophy,” Hendrik Auret situated Heidegger’s concept of care within Norberg-Schulz notion of architecture as the “art of place”: the art of place-making” is the art of care. *Christian Norberg-Schulz’ Interpretation of Heidegger’s Philosophy: Care, Place and Architecture* (Milton Park: Routledge, 2019), 127-206. From Auret, the first-year course builds on the imperative, that architecture, and by extension architectural learning-and-teaching, is not only the meaningful but caring making of places in response to the phenomena of person, places and times.

⁵ In “The Ethical Function of Architecture,” Karsten Harries problematises the architecture’s ethos. Starting with Sigfried Giedion’s imperative that architecture is tasked with “the interpretation of a way of life valid for our period”, Harries systematically considers whether architecture is capable of interpretation, and if so, for whose spatiotemporal way of life it interprets. Already in the introduction, Harries, confirms his unwillingness to let go of Giedion’s articulation, the task of architecture is to “help us find our place and way in an ever more disorientating world.” *The Ethical Function of Architecture* (Cambridge: MIT Press, 1998), 3-4.

Harries carefully situates the ethos of architecture as the process of understanding, interpreting and responding to unique and diverse human natures, reasons, values and ideals (362-364). Architecture can assist humans to find a sense of belonging and orientation, accentuating what is meaningful to individuals and communities.

⁶ For the last three decades, this endeavour has followed a seemingly simple pedagogical method: an involved and critical engagement with experiential learning centred on emplacement emplaced and embodiment ‘feeling’, ‘watching’, ‘thinking’ and ‘doing’. Our learning-and-teaching, alike most Schools of Architecture, is underpinned by experiential learning, which calls for ‘concrete experiences’, ‘reflective observations’, ‘abstract conceptualisation’ and ‘active experimentation.’ See: David Kolb, *Experiential Learning: Experience as the Source of Learning and Development* (Upper Saddle River: Pearson Education, 2014), 37-60.

⁷ Reflecting on their own first-year, some students perceived the new field of architecture as strange and unexpected. Our way of communication within architectural critique seemed unfamiliar and unstructured: especially our method of critique and assessment, which appeared subjective and prescriptive based on the preference of the ‘studio master.’ Tied to a feeling of limited ownership within projects to experiment, closed briefs seem to pre-empt design solutions through best practice precedents and peer examples. Students highlighted the formal dissemination of knowledge, which did not allow for discussion or appropriation of knowledge in the classroom. The relevance of Western histories and theories to the local African context was of concern. And of course, students were apprehensive of the ever-present time constraints. Consigned to brief daily one-on-one critique sessions, did not allow the opportunity to discover, explain and reflect on their design development. Linked to the latter: given the rush to complete the packed architectural course, thorough site engagement is sacrificed – leaving the phenomena of the project-context unexperienced.

⁸ In the second part of “Narrative Pedagogy: Life History and Learning,” Goodson and Gill elaborate extensively on reasons for, and opportunities posed by narrative pedagogy. This article does not aim to reiterate the value of narrative pedagogy but focuses on putting these methods into action within the first-year architectural modules:

Design and Histories-and-Theories. Ivor Goodson and Scherto R. Gill, *Narrative Pedagogy: Life History and Learning* (New York: Peter Lang Publishing Inc., 2011), 73-154.

⁹ Goodson and Gill forward narrative pedagogy as “learning [which] encompasses meaning-making, connecting to what is valuable and worthwhile in what humans do, being and becoming.” Learning, they argue, is also the “cultivation or strengthening of the personal qualities [which] involve caring in appropriate ways.”

Ivor Goodson and Scherto R. Gill, *Narrative Pedagogy: Life History and Learning* (New York: Peter Lang Publishing Inc., 2011), 114 - 115.

¹⁰ According to Ricoeur, only when time is embedded in a narrative account, does the notion of time become understandable or “human,” at the same time, a narrative reaches its full potential when it takes on the characteristics of temporal life. The act of emplotment, Ricoeur furthers, brings together or configures a series of discordant and concordant characters and events within an organised and comprehensible story [also a life-story].

Ricoeur employs the notion of threefold mimesis: prefiguration, configuration and refiguration. Ricoeur illustrates that in order to meaningfully configure a story, a story always relies on, interprets and imaginatively adapts the stories (factual, societal, experiential and fictional) which precede, or prefigure, it. Concurrently, the configured story is open to the appropriation and interpretation, or refiguration, of “others” that read it. Paul Ricoeur, *Time and Narrative*, Volume 1, trans. Kathleen McLaughlin and David Pellauer (Chicago: University of Chicago Press, 1990), 52-53.

In “Oneself as Another,” Ricoeur argues that just as narrative emplotment ensures our comprehension of diverse fictional characters and events, the narrative emplotment of the discordant and concordant “self” with “others” in events enables us to make sense of our lives as a meaningful life-story.

¹¹ Paul Ricoeur, *Oneself as Another*, trans. Kathleen Blamey (Chicago: The University of Chicago Press, 1992), 141-144, 147. Narrative identity is an experienced and dynamic identity: “The person understood as a character in a story, is not an entity distinct from his or her “experiences.” Quite the opposite: ‘the person shares the condition of dynamic identity peculiar to the story recounted’ (original quotation marks: Ricoeur, 1992:147). Put differently, Ricoeur proposes, “It is the identity of the story [also stories recounted through architecture, films and fictional novels] that makes the identity of the character” (Ricoeur, 1992:148).

¹² Self-reflection is for Ricoeur, an objectified revisiting of my self-constancy (my identity in self-esteem and my identity in action), whether in the position of the *other-than-the-sameness-of-me* reflecting on my self-constancy or in the position of another person’s critical reflection on my self-constancy. “Self-constancy, objectified in this way, in the image of an interlinking of all of our acts outside of us, has the appearance of a fate that makes the Self its own enemy.” Paul Ricoeur, *Oneself as Another*, trans. Kathleen Blamey (Chicago: The University of Chicago Press, 1992), 296. Self-reflection is the process of critically interpreting the actions that I inscribe and those actions which are inscribed by others into my book-of-acts: my life-story of ‘who’ I am. Through reflection I open myself to responsibility and culpability: I recognise my enacted responsibility in my identity, self-esteem, solicitude and justice. It is here where I hold myself truly responsible but also culpable. It is here where I might very well recognise myself as the enemy of my own self-constancy, or worse: recognise how others might recognise me as an enemy of their self-esteem. The self and others are never only capable but are always also vulnerable. Vulnerability is caused when someone (even the “self”) powers-over your ability to narrate your story or your capability to act. Through inward reflection, I recognise the effects of my actions, and “introduce[s] the dyad and plurality in the very constitution of the self.” From here, Ricoeur’s human telos: the “self” (familiar and different to the “self”) aiming towards a good life, with and for “others” (other “selves” different and familiar to myself) in just institutions.

¹³ David Utsler, “Paul Ricoeur’s Hermeneutics as a Model for Environmental Philosophy,” *Philosophy Today* (Summer:2009): 174-175. “Environmental Hermeneutics and Environmental/Eco-Psychology: Explorations in Environmental Identity,” in *Interpreting Nature: The Emerging Field of Environmental Hermeneutics*, ed. David Utsler et al. (Fordham University Press, 2014), 128-132. <https://doi.org/10.2307/j.ctt13x04rw.10>.

¹⁴ In “Architecture and Narrativity” and “Memory, History, Forgetting,” Ricoeur places the act of parallel to the act of construction. Ricoeur again employs the threefold mimesis, now to unite narrative and architecture. As narrative mediates between past, present and future experiences in both psychological and cosmological time, so architecture mediates between the prefigured, active configuring and refiguring of cartesian space and lived-place. Paul Ricoeur, “Architecture and Narrativity,” *Ricoeur Studies* 7:2 (2016): 34-42.

¹⁵ The concept of our *sense of time-place* is located within Ricoeur’s explanation of our *sense of place*. Ricoeur’s *sense of place* implicitly entails a temporal component. This *sense of place* is shaped by our remembering, recounting and reflecting on our spatial memory over time. In terms of spatial memory, the embodied “self,” being-here now, remembers the other instances of being in the *flesh* in other places at other times. The *sense of*

place, based on spatial memory, not only enables the “self” to relationally distinguish being-in-other-places in the past from being-here now, but also allows orientation within unfamiliar or neutral sites. Spatial memory allows us to reflect on prefigured spatial experiences to configure the meaning of a new spatial experience. The self’s notion of place folds unto a notion of a new site in a complex dialectic movement – these two perceptions cannot be separated and constitute the basis from which we, as embodied selves, write our emplaced biographies. Paul Ricoeur, “Architecture and Narrativity.” *Ricoeur Studies* 7:2 (2016): 34.

¹⁶ Donald Schön’s reflective learning is the foundation of the first-year’s reflective approach. Reflective learning, for Schön, requires learning to be situated within assignments that simulate real live complexities and practices. Schön promotes learning through “reflection-in-action” and “reflection-on-action”; a process through which learners reflect on their own actions, while they are busy with, and after they completed an action, to accommodate adjustments and improve future actions. Donald Schön, *Educating the Reflective Practitioner: Towards a New Design for Teaching in the Professions* (San Francisco: Jossey-Bass, 1987), 26 and *The Design Studio: An Exploration of its Traditions and Potential* (1985), 74. Combined with narrative learning and the analogy that architectural practice is the ‘writing’ of stories, the revised course attempted to simulate real conversations between the architect reflecting in-making and on-making of architecture through the narrative engagement with “self,” “others”/clients and environments.

¹⁷ Ivor Goodson and Scherto R. Gill, *Narrative Pedagogy: Life History and Learning* (New York: Peter Lang Publishing Inc., 2011), 127.

¹⁸ To ensure a safe environment for narrative learning, Goodson and Gill “propose a framework of narrative pedagogy consisting in four key elements: a. teachers’ authentic engagement including sharing personal narratives, b. deep caring relationships, c. respect, and d. love.” Ivor Goodson and Scherto R. Gill, *Narrative Pedagogy: Life History and Learning* (New York: Peter Lang Publishing Inc., 2011), 123.

¹⁹ For first-year students the ‘Innerform’ is defined as an unseen quality of “who” a person is, configured by their unique social and spatial emplacement over time.

²⁰ For Goodson and Gill, “[n]arrative encounter and elaboration involve the crafting and re-crafting of a personalised vision of life linked to a course of action, which is then invested with personal commitment, ownership and agency.” Narrative, they put forward, “is an ideal pedagogic site for facilitating learning and personal development.”

Ivor Goodson and Scherto R. Gill, *Narrative Pedagogy: Life History and Learning* (New York: Peter Lang Publishing Inc., 2011), 151.

²¹ Ivor Goodson and Scherto R. Gill, *Narrative Pedagogy: Life History and Learning* (New York: Peter Lang Publishing Inc., 2011), 128.

²² Reflecting on Marmon Silke’s account of the power of landscape, Herbert et al summarise: “Places on the landscape, she writes, serve as reminders of the events of stories and show ways to survive physically and spiritually, on both inner and outer landscapes. Being on the land calls forth stories embedded within the land and, too, within our bones. Living in the midst of these stories, and our interactions with them, they become part of who we are and who we are becoming.”

Janice Huber, Vera Caine, Marilyn Huber and Pam Steeves, “Narrative Inquiry as Pedagogy in Education: The Extraordinary Potential of Living, Telling, Retelling, and Reliving Stories of Experience,” *Review of Research in Education* 37 (2013):215.

²³ David White, “Pedagogy, Presence and Placemaking: a learning-as-becoming model of education”, David White Digital-Learning-Culture, May 17, 2021, accessed October 12, 2022, <https://daveowhite.com/learning-as-becoming/>.

²⁴ Ivor Goodson and Scherto R. Gill, *Narrative Pedagogy: Life History and Learning* (New York: Peter Lang Publishing Inc., 2011), 127.

²⁵ Matthew Potteiger and Jamie Purinton, *Landscape narratives: Design practices for telling stories* (New York: John Wiley & Sons Inc., 1998), ix.

²⁶ Our introduction of storied briefs aligns with Janet McGaw and Kelum Palipane’s approach that aims to create “thoughtful, ethical, and hopeful” student work by incorporating narratives and storied characters into their curriculum. They write, “Our pedagogical challenge is to equip them with knowledge built on facts, allow them to follow their concerns, and help them to read the social and the political in the sites they work on. We have tried this through assembling briefs that bring ‘the other’ in, cultivating a studio culture that is mutually supportive across lines of difference, engaging the sensory, and allowing for experimenting with an ethico-aesthetic sensibility”. We are grateful to the peer reviewer of our abstract submission who noted a tradition of using narrative in the field in a related AMPS publication from recent years. Janet McGaw and Kelum Palipane, “Design Pedagogies of Care: (Gentle) resistance for exhausted times”, in *AMPS proceedings series 28.1, A Focus on*

Pedagogy: Teaching, Learning and Research in the Modern Academy, ed. Zain Adil. (2022), 14-25, AMPS PROCEEDINGS SERIES 28.1 ISSN 2398-9467

²⁷ The word 'kraal' is a South African term that refers to an enclosure for cattle and other domestic animals.

²⁸ Architectural concepts of phenomenology were introduced informally through narrative sharing, prior to the Theories-and-Histories class discussion. During this class discussion, students engaged specifically with extracts from "Poetics of Space" by Gaston Bachelard " and "Identity, Intimacy and Domicile" by Juhani Pallasmaa, These works were presented as open to their personal interpretation, students were encouraged to recount their own stories that relate to key themes within the readings.

²⁹ During the Third Skin assignment, students are introduced to local African vernaculars through a peer group activity where they read and reflect on the paper "Exposing Students to Vernacular Concepts" by Jan Hendrik Nel and Gerhard Bosman. This paper explores ways to equip students with the ability to design contemporary buildings that incorporate elements of South African vernacular architecture. In the Theories-and-Histories class, students continue their study of local vernaculars through personal reflections on written narratives and seminar work. Jan Hendrik Nel and Gerhard Bosman, "Exposing architecture students to vernacular concepts". in *Vernacular Heritage and Earthen Architecture: Contributions for Sustainable Development: Proceedings of CIAV 2013 / 7th Atp / Versus, Vila Nova De Cerveira, Portugal, 16-20 October 2013*, ed. Mariana Correia, et al. (London: Taylor and Francis Group, 2014), 767-737.

³⁰ *Ubuntu* is described as a principle of mutual care and support for one's well-being. It emphasizes the interconnectedness of individuals and the importance of recognizing the humanity in *otherness*. It entails both individual rights and responsibilities in contributing to the well-being of the community and society as a whole, and is best expressed through one's relationships with others. In short, *Ubuntu* means that people are people through other people. South African Government, White Paper for Social Welfare: Principles, guidelines, recommendations, proposed policies and programmes for developmental social welfare in South Africa (Pretoria: Government Gazette. No.16943, 1997), 12.

³¹ GAIA is a Greek term that refers to the Earth or the entire universe as a living organism. The term is often used in the field of ecology to refer to the interconnected systems that make up the Earth's environment, including the atmosphere, oceans, and biosphere. The concept of Gaia was first proposed by the scientist James Lovelock in his 1979 book "Gaia: A New Look at Life on Earth" and suggests that the Earth's living and non-living systems function as a single, self-regulating entity.

³² Student course evaluations relate some successes of narrative learning, hard hit by the effects of the pandemic most students only reflected on their learning experience during lockdown: "at the beginning of the second term, it was a lone journey entering into architecture in physical isolation." "I believe narrative was indispensable in our first-year pandemic-year experience. Narrative relayed the demands of designing a dwelling, for a specific clientele, in a distinct place, in a way which was far less contrived, and grounded it in relatability and everyday human experience." "To have specific characters, and my personal selection of a poem assisted me in looking for precedent studies – I knew what to look for because it was not a brief but a "real" story, there for me to imagine." "To see my design at the end, I could imagine the spaces as the actual spaces for Avra and Antonio, and later the year, as the spaces the poem created in my mind. It was not telling us what to do, but telling us how to imagine." "Briefs were exposed and discovered in peer discussions, which provided us taking ownership of the information, thought disagreement and arguments as to what the theory means, or even what the clients want and what they are." "A lot of students improved in the second semester after we had the one-on-one sessions with the lectures, trying to better understand the student's struggles and challenges and how they [the lecturers] can better work with the individual student depending on the student's own needs and ways of learning." Tutors reflection: "in comparison to what we experienced in our first year, stories provide a more comprehensive understanding. Stories allow students to discern the content of the brief, making them equipped to have a greater variety of individualised architectural responses." "The lecturers were immensely patient, helpful and understanding. They went beyond what was needed of them during the pandemic. It was a wholesome feeling to know that they cared to such an extent. However, it was challenging to adjust to a new way of learning at first but through the guidance of our lecturers I feel like we persevered and overcame." "Studio culture (peer critique and tutorials) enhance the creative side, in first year you do not know the means and meaning of architecture; so it helps to orientate yourself with others' uncertainties of what design and architecture is, it allows us to share our questions and possible answers and becomes fun conversations. It also made it possible to ask the more advance year groups for help." "The in detail story telling of Avra and Antonio made the experience of architecture real even if it was a fable that was told behind a screen. It helped me understand the more emotional, spiritual and spatial depth of architecture. It brought me to a perspective of seeing beyond the four walls that we tend to put architecture in. The storytelling of place and time was a great way to bring in the not-yet

architect”. “For me personally, I liked the “moerse” stories, but then I like the poetical side of architecture. Now (referring to second-year studies 2021) our briefs fit in on one page, it makes me sad. I am like what is this? I don’t understand for who I design and I cannot design in detail for someone, because I don’t understand their need and poetry”.

³³ A charrette is a collaborative planning and design session, typically used in architecture, urban planning, and landscape architecture, in which a group of designers or students work together intensively over a short period of time to develop solutions to a specific design problem. The goal of a charrette is to generate a large number of ideas and solutions in a short period of time, and to share different perspectives and expertise regarding the problem at hand.

³⁴ Goodson investigates the use of life history methodology, which involves collecting and analysing personal narratives to understand the individual's experiences and perspectives. Goodson provides an overview of the ways learners appropriate and use narrative learning as: ‘focussed elaborators,’ ‘multiple describers,’ ‘armchair elaborators’ and ‘scripted describers.’ Ivor Goodson, *Developing Narrative Theory: Life Histories and Personal Representation* (Milton Park: Routledge, 2013), 123-128. Goodson acknowledges that not all students have equal success in employing narratives actively within their individualised learning, fostering identity and self-knowledge and cultivating agency or responsibility in making or doing. However, all students engaged on some level with learning through the use of oral history, autobiography, and biography exchange. In the first-year architecture course, narrative learning did not replace other forms of reflective and experiential learning, basic descriptive learning, or prescriptive instruction through canonical work and lectures. It was used to complement more traditional methods of learning-and-teaching. Keeping in mind, Goodson’s descriptors of different narrative learners, we attempted to adapt to our students’ comfort and engagement, never enforcing the narrative learning in their own way of becoming.

³⁵ Goodson and Gill explain the transformative potential of narrative pedagogy: “narrative learning [enhances] understanding about oneself and the other, one’s lived experience as a person over time, one’s position in the world, and how histories, cultures and socio-political forces have helped shape who we, as human beings were, who we are now, and the journey we have travelled so far and the journey we are to travel together.” Ivor Goodson and Scherto R. Gill, *Narrative Pedagogy: Life History and Learning* (New York: Peter Lang Publishing Inc., 2011), 117.

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BELOW THE SURFACE: SPATIAL METAPHORS AND NARRATIVE PATTERNS MEDIATING TRANSFORMATIVE LEARNING PROCESSES

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INTRODUCTION

*In a work of art or a building there are conscious aspirations to reflect stylistic surface structures alongside the deep structures resulting from subconscious motives. Thus, in our works, objects and buildings, there are always two narratives.*¹

The opening Pallasmaa-quote points at how the creative process in making architecture and art provide objects simultaneously expressing conscious and unconscious levels of meaning. By exploring in detail spatial metaphors and narrative patterns in a case study of a first semester architect student's design work, this paper will examine the relationship between these spatial expressions and a potential transformative learning process.

Architectural design-work is characterized by a combination of cognitive, rational, analytic processes and intuitive, imaginative, creative processes involving emotional investment.² Developing and balancing these aspects of the human mind is a crucial part of architectural education, though variably addressed.³ Within the various branches of transformative education, the approach of Robert Boyd and Gordon Myers see the deeper learning process much like the Jungian individuation process; as a dialog between conscious and unconscious forces within the human psyche.⁴

Since 2015 an interdisciplinary team of educators at the Faculty of Architecture and Design at NTNU in Trondheim, has been aligning practical experience in the field with theoretical perspectives on learning. Within the framework of TRANSark (Transformative Learning in Architectural Education), several articles have been published on the transformative learning potential in architectural education.⁵ One Ph.D. has been produced⁶ and a second is in process. However, a more detailed exploration on how a transformative learning process can be traced in a specific student design-work, is still to be done. This paper addresses this gap.

In the following, the context of the assignment and the case itself, *The Wanderings of Wonder*, is presented. Then methodological considerations and key theoretical perspectives are introduced, accompanied by a spatial analysis examining and discussing the different elements and main metaphors.

Finally, the results are summarized and commented on in a concluding paragraph, including some further perspectives on the relevance of the findings related to transformative learning and architectural education.

The basic question this paper addresses is whether there is a connection between the theme and meaning of the case project and a transformative learning process, and how this eventually can be traced.

EDUCATIONAL CONTEXT

First semester in the five year long architectural education trajectory is in many ways different from other academic studies. It is mainly based on studio work, developing skills in disciplines unfamiliar to many students, like free hand drawings, making physical scale models and developing fine-tuned awareness of our physical environment.

The experience of being in-between two different paradigms of learning, between a mainly syllabus-oriented, lecture based instrumental learning and a more open, practice based and creative learning context, may for many students provide a liminal situation. Characteristic for such a mental mode is the feeling of a loss of structure, of uncertainty and frustration, but also inspiration and creative flow. Victor Turner, who in the nineteen sixties rediscovered the works of Arnold van Gennep on liminality and rites of passage, pointed at how the liminal experience is an unstructured and radical ambiguous state of being. It is an experience where *‘undoing, dissolution and decomposition is accompanied by growth, transformation, and the reformulation of old elements in new patterns’*.⁷ The Danish anthropologist Bjørn Thomassen points out that the keyword for the concept of liminality is *transformation*.⁸

During two periods of time, 2002-2004 and 2016-2018 (six cohorts), an assignment named *Space for Invitation* was given to first-semester architecture students at NTNU as their first individual design work. Building on the experiences, disciplinary skills, and knowledge of the earlier parts of the semester, and by engaging each individual student’s natural resources as a creative and sensing human being, the intention was to bridge personal resources with the specific culture and knowledge of the discipline.

Preliminary studies of the material from the first period (2002-2004) uncovered spatial metaphors and spatial narrative patterns that neither the students nor the teachers were aware of at the time. Among the findings, four typical spatial categories: *The Path*, *The Cave*, *The Tower*, and *The Centre*, were identified. The case here chosen, the design project *The Wanderings of Wonder*, represents a specific type of projects that contain all these four spatial categories. By this, the case presents typical aspects of the total empirical documentation. The documentation of the project consists of photos of a physical scale model, freehand sketches, architectural drawings, a short descriptive text, and notes from a semi-structured interview done with the student.

THE CASE

The project *The Wanderings of Wonder* (fig.1) invites for a wandering into unfamiliar, puzzling and enticing spaces underground. It is situated in a park area close to the university campus and its spatial narrative is here presented as a walk-through divided into four sequences that later will be used as reference for the spatial analysis.

Sequence 1

In the park-landscape sloping to the west, several paths are winding among tall trees and hills. In a distance from one of the paths a tall pillar, as a tower of opaque glass, is positioned besides a tree (fig.2.A). Leaving the path and moving over to the pillar, it can be seen penetrating the surface and continuing down into the ground. Just beside the pillar is an entrance to a stairway leading down below (fig.2.B). The stairway ends abruptly, and it is not possible to proceed (fig.3). Light from

above, brought down by the glass-pillar, makes it possible to see glimpses of a larger underground space and deep down, light is reflected in a well of water. A passage leading further into the dark can be sensed, but to reach this, another entrance must be found.

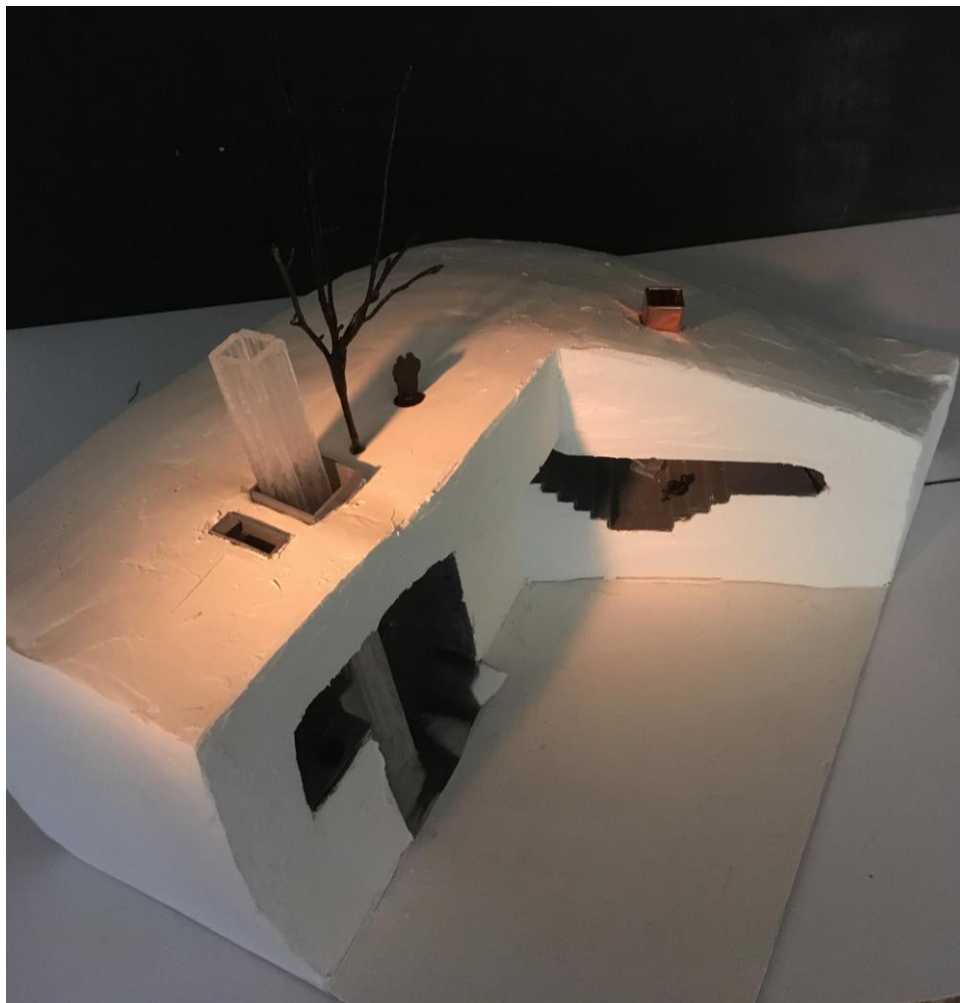


Figure 1. Case project *The Wanderings of Wonder*. Photo of scale model.

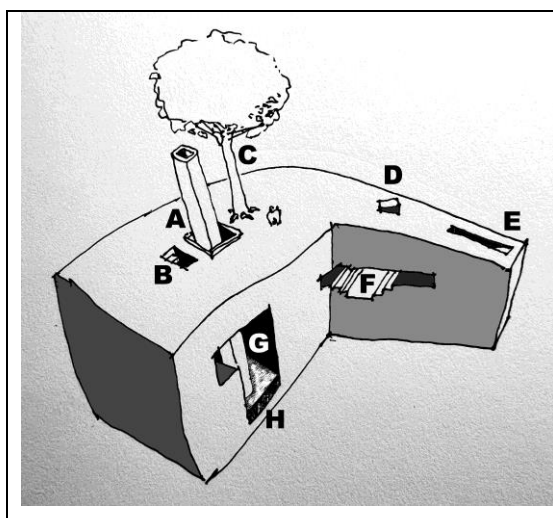


Figure 2.
Spatial elements. Analytic drawing by author.



Figure 3.
The pillar of glass seen from the cave.

Sequence 2

Returning to the surface of the park, an installation is found further down the slope, which appears to be a skylight for another underground space (fig.2.D). Still a little further, a simple cut in the hillside marks a second entrance leading into a dark tunnel (fig.2.E). Entering the tunnel and moving down a dark passage, leads to the space under the before mentioned skylight (fig.2.F). Here a luminous object of opaque glass provides a place to sit.

Sequence 3

Continuing in the dark tunnel and turning a corner, the huge cave earlier seen from the stairs is reached, illuminated by the vertical pillar of glass (fig.2.G, fig.3). A well at the deep bottom of the cave can be seen but is not accessible (fig.2.H).

Sequence 4

Having reached the center of *The Wanderings of Wonder*, the return happens in the opposite way as entered, passing the smaller cave with the sitting place and the dark passage, before reentering the landscape of the park.

In an interview with the student, the work-process is described as an emotional roller-coaster. A feeling of not having a clue, of uncertainty and things happening by coincidence was dominating much of the time. The intention was to make something strange, something that did not make sense but could evoke a sense of wonder. The play of darkness and light and bringing light into the dark spaces underground was throughout the process important. The impression, however, should be coincidental and odd, as a direct response to the process.

METHODOLOGICAL CONSIDERATIONS

The exploration of the case *The Wanderings of Wonder* is part of a larger study of more than 300 first semester *Space for Invitation*-projects that has been analysed in an abductive process over a longer period of time. This paper is the third in a series of texts reflecting on the relationship between the students' design work and transformative learning processes. The first: *The Challenging Journey. Transformative learning in architectural education*⁹ provides an overview of the development of transformative learning and discusses samples of first semester architect students design work in this context. The second: *Spatial Response to Liminality* presents and discuss a categorization of projects from two cohorts (2004 and 2018). Most of the projects present spatial patterns similar to those mediating rites of passage in pre-modern societies, liminal spaces that also can be traced in modern, contemporary architecture. The patterns were named *The Path*, *The Cave*, *The Tower*, and *The Centre*. Since *The Wanderings of Wonder* contain all the four typical spatial patterns documented in the archive, it may also provide information relevant for other parts of the documented material.

A Hermeneutical Approach and Premisses for Interpretation

The research question concerns the spatial expression of the project by means of metaphoric structures and the potential relationship to the student's learning process. The methodical issue is therefore not to *explain* what the project is as an object, utilizing a natural scientific approach, but to explore, discuss and *understand* the project's spatial expression. For this, a hermeneutical approach is chosen, which means, in a methodical way, to provide an understanding of its meaning content.¹⁰

As noted, the documentation of the case consists of mainly visual material supplemented with interview notes and a brief descriptive text by the student. Within the wide field of interpretation of

aesthetical objects, the focus here is limited to discuss certain spatial metaphors and narrative structures as projections of meaning. The linguistic concept *metaphor*, meaning *transfer*, comes from the Greek word *metapherein*. Referring to the works of George Lakoff and Mark Johnson, metaphors are not a matter of words alone, but an intrinsic multimodal part of everyday life and what we experience.¹¹ As parts of a spatial language, in addition to carrying intended meaning, these also may be product of unconscious dynamics during creative processes.

THEORETICAL PERSPECTIVES

Concerning *The Wanderings of Wonder*, the most typical trait is its narrative structure as a journey. The Journey metaphor thus becomes an important concept in the interpretation of the spatial and visual material of the case. A specific version of *The Journey*-metaphor developed by the mythologist Joseph Campbell, is *The Hero's Journey*-narrative which is a conceptualization of the individuation process projected onto the external physical world as an adventurous journey:¹²

*A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered, and a decisive victory is won: the hero comes back from this mysterious adventure with the power to bestow boons on his fellow man.*¹³

There is a close relationship between this narrative structure and what Arnold van Gennep discovered as typical patterns in pre-modern cultures' rites of passage, with (pre-liminal) *separation*-rites, (liminal) *transition*-rites, and (post-liminal) *incorporation*-rites.¹⁴ In his model Campbell uses the related terms *departure*, *initiation* and *return* as main divisions, but he also suggests more detailed elements that may or may not be a part of the narrative. The overall distinction, however, is between the known order of the (conscious) *Day World* and the strange, dangerous, and chaotic nature of the (unconscious) *Night World*. Figure 4 shows characteristic phases and elements in Campbell's model in combination with the tripartite structure of rites of passage.

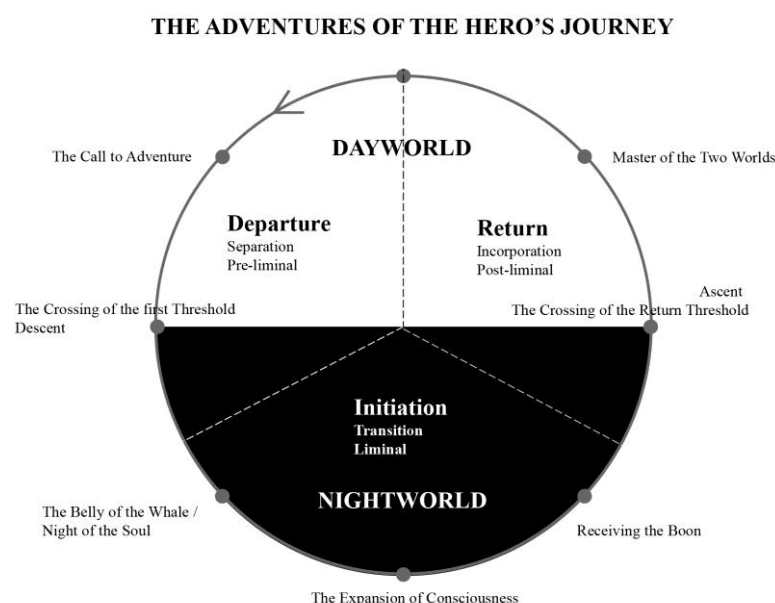


Figure 4. Combined graphical model of *The Hero's Journey* (Campbell 1949) and *Rites of Passage* (van Gennep 1960) by author.

In the aforementioned analysis of the *Space for Invitation*-archive, four spatial categories were identified and named *The Path*, *The Tower*, *The Cave* and *The Centre*. The latter usually appearing in combination with one or more of the previous three.

In *The Sacred and Profane* Mircea Eliade points at how archaic initiation-rites are mediated by certain spatial environments.¹⁵ The neophyte is typically separated from family and society, leaving the village, and entering the wilderness: a jungle, a dark forest, or a remote mountain (*Path*). The central initiation-rites commonly takes place in a small hut, dark pit or a cave which represent *The Cosmic Night* and death of the old identity (*Cave*). This is paradoxically also *The Earth Womb* of renewal. Light enters and the new identity is born. This place of renewal represents a sacred space, a potential in-between liminal space where communication and transition between the cosmic levels and an ontological passage from one mode of being to another, is made possible.¹⁶ Images related to this space of initiation and transition are typically a ladder, a tree, a pillar, or a mountain (often represented as a *Tower*), referring to the axis mundi, *The Cosmic World Pillar*. Around this pillar, a space is organized as a *Centre*.¹⁷

Similarly, in *The Hero's Journey*-model, *The Path*-pattern can be seen to represent the spatial movement through the different phases of the journey, *The Cave*-pattern generally representing the spatial character of the *Night World* and specifically *The Belly of the Whale*-phase (fig. 4). The nadir of the journey (*The Expansion of Consciousness*), with death of the old identity and the birth of the new, marks the pivotal point of the transformative voyage. This place of initiation / enlightenment typically is represented by the spatial patterns of *The Tower* and *The Centre*.

In the following chapter, this model will be used in analysing the spatial structure, patterns, and elements of *The Wanderings of Wonder*, to test the initial hypothesis and to see what new understanding may emerge.

SPATIAL ANALYSIS

In this section an analysis of the case project in relation to *The Hero's Journey* narrative will be presented. This also includes identifying certain typical spatial patterns and main spatial metaphors.

Sequence 1

The first part of the *Hero's Journey* narrative structure, *Departure*, typically starts with *The Call for Adventure* (fig. 4) when something allure the wanderer away from the common path. In *The Wanderings of Wonder* it is the glass pillar that make us curious and to depart from the common path of the park.

Sequence 2

Following the narrative pattern, finding, and entering the subterrestrial darkness (fig 2, E), marks *The Crossing of the First Threshold* and the descent into the unknown *Night world* (fig. 4). A growing disorientation, unease, and anxiety is stirred in proceeding into the dark unknown, often called *The Night of the Soul*, or *The Belly of the Whale* as in the Biblical story of Jonah (fig. 4). This represents in myths the breakdown of familiar ways to understand the world and habitual ways to deal with it. The explorer / wanderer is lost in the *Cosmic Night*.¹⁸ As the journey-narrative continues, the dark subterrestrial world of chaos and danger starts to transform through an incidence of flickering light into a space of renewal and creative wonder. The luminous object in the smaller cave of *The Wanderings of Wander* can be seen as one of the wonders of the underworld and may represent a first level of *The Expansion of Consciousness* (fig. 4).

Sequence 3

The central part of *The Hero's Journey* is that of *initiation*. This is where a new identity is born, based on the acquired new knowledge (*The Expansion of Consciousness*, fig. 4). This is also the place of communication where connection, dialog and transition between the cosmic levels are made possible.¹⁹ With the huge pillar of light that connects the underground cave, the surface of the park and the sky, it contains the typical attributes of the *axis mundi*.

Sequence 4

The Crossing of the Return Threshold (fig. 4) and return to the *Day World* mark the final parts of *The Hero's Journey* narrative. In the spatial structure of the case-project, it is not about finding a new exit, but a return through the same passages as entered. That which seemed scary and challenging on the way in, are now familiar and can be seen as part of a new horizon of knowledge.

The Parts and the Whole

The metaphor of *darkness and light* carries a rich potential of meaning. Within the educational context here discussed, it seems most relevant to associate *light* with knowledge and *darkness* with ignorance. The pole of light in the great cave, stretching from the depths of the inaccessible well to the sky above, being the central element of the journey, connects the whole spectrum of knowledge, both conscious and unconscious, and enables a dialog between them.

The spatial narrative of *The Wanderings of Wonder* deals with exploration of something hidden (the wonders of the great cave) that only can be experienced by finding and entering the darkness of the underground. This journey, with its hidden second entrance and underground dark passages, may well be seen as a sequential spatial metaphor for the challenges, anxiety, and uncertainty of the liminal state of mind. But as such, it is also a formative journey. Discovering the hidden wonders of the cave may provide new insight, into the “secret” knowledge of the profession: to see, think and act like an architect. In this respect, it is a potentially transformative journey, representing a transition of status from layperson to becoming architect student.

CONCLUSION

The hypothesis here explored is that unconscious dynamics play a decisive role in negotiating a liminal experience, and that this happens by thematically processing the challenge through the design process itself. Three findings from the analysis appear particularly relevant in this respect. The first is the spatial narrative sequences corresponding to the structure of *The Hero's Journey*, which in general represents a basic process of transition and transformation. The second is the identification of the spatial patterns *The Path*, *The Cave*, *The Tower*, and *The Centre*, typical for mediating liminal experiences and rites of passage. The third is the basic metaphors of *darkness & light* and *the central pole*, dealing with connected levels of consciousness / knowledge.

Transformative learning is by nature a subjective, inner processes that is hard to trace. Because unconscious dynamics play such an important part, and the process may develop over longer periods of time, the student may even not know this process is going on except in hindsight, maybe year later. The “camouflaged” character of the process is certainly also a challenge for the teacher. Being able to recognize spatial transformative narratives and elements in architecture students' design work, will greatly contribute to recognizing the deeper processes taking place. It is important to further explore and discuss the role of the teacher in this kind of processes, to map out the potentials and limitations in a pedagogy of liminality.

NOTES

- ¹ Juhani Pallasmaa, "The Mind of the Environment," in *Aesthetics, Wellbeing, and Health - Essays within Architecture and Environmental Aesthetics*, ed. Birgit Cold (Ashgate, 2001), 204.
- ² Ashraf M. Salama, *Spatial Design Education. New Directions for Pedagogy in Architecture and Beyond* (Farnham and Burlington: Ashgate, 2015); Adrian Snodgrass and Richard Coyne, *Interpretation in Architecture. Design as a Way of Thinking* (London and New York: Routledge, 2006).
- ³ Salama, *Spatial Design Education. New Directions for Pedagogy in Architecture and Beyond*; Juhani Pallasmaa, "The Two Languages of Architecture," in *Encounters, Architectural Essays*, ed. Peter MacKeith (Helsinki: Rakennustieto, 2005).
- ⁴ Robert D. Boyd and J. Gordon Myers, "Transformative Education," *International Journal of Lifelong Education* (1988).
- ⁵ Gro Rødne and Leif Martin Hokstad, "Making is Thinking: From Design Fixation to Provocative Competence," *ARENA Journal of Architectural Research* (2022); Bjørn Otto Braaten and Leif Martin Hokstad, "The Challenging Journey. Transformative Learning in Architectural Education," in *Formation. Architectural Education in a Nordic Perspective*, ed. Elise Lorentsen and Kristine Annabell Torp (Nordic Baltic Academy of Architecture NBAA (Architectural Publisher B), 2018); Leif Martin Hokstad et al., "Transformative Learning in Architectural Education: Re-thinking Architecture and the Education of Architecture," in *Threshold Concepts in Practice*, ed. Ray Land, Jan H.F. Meyer, and Michael Flanagan (Rotterdam: Sense Publishers, 2016).
- ⁶ Johanna S. Gullberg, "Cogenerating Spaces of learning. The Aesthetic Experience of Materiality and Its Transformative Potential within Architectural Education" (Doctoral theses, NTNU. Norwegian University of Science and Technology, 2021).
- ⁷ Victor Turner, "Betwixt and Between: The Liminal Period in Rites de Passage," in *The Forest of Symbols. Aspects of Ndembu Ritual* (Ithaca and London: Cornell University Press., 1996), 99.
- ⁸ Bjørn Thomassen, "The Uses and Meaning of Liminality," *International Political Anthropology* 2, no. 1 (2009).
- ⁹ Braaten and Hokstad, "The Challenging Journey. Transformative Learning in Architectural Education."
- ¹⁰ Føllesdal, Walløe, and Elster, *Politikens bog om moderne videnskabsteori* (København: Politikens forlag 1992); Gunnar Skirbekk and Nils Gilje, *A History of Western Thought from Ancient Greek to the Twentieth Century* (London and New York: Routledge 2001).
- ¹¹ George Lakoff and Mark Johnson, *Metaphors we live by* (Chicago and London. : The University of Chicago Press, 2003).
- ¹² Keith Cunningham, *The Soul of Screenwriting* (London and New York: Continuum, 2008).
- ¹³ Joesph Campbell, *The Hero with a Thousand Faces* (New York: MJF Books, 1949), 30.
- ¹⁴ Arnold van Gennep, *The Rites of Passage*, trans. Monika B. Vizedom and Gabrielle L. Caffee (Chicago: The University of Chicago Press, 1960).
- ¹⁵ Mircea Eliade, *The Sacred and the Profane* (New York: Harvest Books, Hartcourt, Brace & World, Inc. , 1963).
- ¹⁶ Thomas Barrie, *The Sacred IN-Between. The Mediating Role of Architecture* (New York: Routledge, 2010).
- ¹⁷ Eliade, *The Sacred and the Profane*.
- ¹⁸ Eliade, *The Sacred and the Profane*.
- ¹⁹ Eliade, *The Sacred and the Profane*.

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CHILDREN'S POETRY AND L2 STUDIES IN JAPANESE UNIVERSITIES: EXPLORING GROWTH THROUGH THE VIEWPOINT CHARACTERS IN SHEL SILVERSTEIN'S WRITING

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INTRODUCTION

Aside from its practical utility in learning and practicing a target language, the L2 classroom provides students the opportunity to experience language through culture. This is of particular importance in countries like Japan which are largely homogenous and therefore are lacking many opportunities for meaningful use of English. While diversity within the country certainly exists and travel or overseas studies are often within the reach of students, practical opportunities to use the language remain scarce. The result is that English usage is viewed less as an everyday skill and more of an academic necessity.¹ The Ministry of Education, Culture, Sports, Science and Technology (MEXT) is aware of the difficulties currently facing English education and has thereby promoted the establishment of an educational environment which corresponds to globalization, seeking to enhance English education at nearly all levels.² Any establishment of greater focus on education is a positive result, but concern remains regarding cultural exposure. Solutions for this concern tend to take the forms of either dialogue and discussion from standardized textbooks or extensive reading of (usually simplified) fiction by way of graded readers. These are fair and completely acceptable resources, but at times are either too simplistic in their approach, too rote in their view of strict practicality, or otherwise limit student engagement with a living and changing language. In order to meet goals internationalization and sharing of cultures at the university level, I have found that alternative methods of engagement are needed.

While graded readers for extensive reading practice are often clearly labeled and organized by functional skill level of the individual students, they tend to have limited vocabulary and use fairly straightforward sentence structure following simple grammar rules.³ Those students who have yet to master a functional level of English may find them an easy entry into their studies and are often met with a good deal of success.⁴ Concern, however, arises in the extent of the simplicity of language used and the limitations with student exploration of that language, the culture represented in text, and opportunities for thorough discussions of philosophically dense topics. While there is the possibility of a conflict in beliefs and values as these topics are explored,⁵ the diversity of broader cultural contexts offers students opportunities to compare and contrast experiences. My own efforts in this regard – seeking to provide students an avenue for more interesting modes of thought⁶ – have led me

to conduct this present study and expand upon regular extensive reading goals and provide students with a curated collection of culturally relevant poetry with a particular focus on popular children's author Shel Silverstein.⁷

The use of language in material intended for younger audiences may indeed be beneficial for students to experience a broad variety of texts and styles.⁸ Indeed, the objective of many of my prior classes has been to expand student access to a more holistic collection of material which explores the human condition, allowing for the analysis of matters related to culture and philosophical thought. These classes were exposed to a collection of texts from a variety of authors, but for the sake of the present study we will limit our coverage to student interaction with and reception of children's poetry. Students here were introduced to the material, given discussion questions revolving around the themes of the text both before and after the readings, and provided with instructor-led summaries and analyses. Concluding the project, students were asked to complete a questionnaire assessing their initial concerns, providing some background information from their childhoods and/or early university experiences, as well as their beliefs on the usefulness of the material covered.

THEORY

The L2 classroom, by nature of it often being conducted in the target language, is subject to an array of challenges. Not the least of these are related to student skill level and motivation. It is not uncommon for beginner students or those who lack confidence in their skills to fall behind the instructor's preferred level of productivity. Anecdotally, this proved to be an issue in many prior classes where poetry was used as the primary resource therefore increased scaffolding and other preparation was greatly needed. A solution to the motivation problem was to communicate with students early on and identify their struggles and interests in order to cultivate a reading list best suited to them. While a perfect curation that pleases all groups may be an impossibility, I have found that children's literature – as in the case of the present study's use of Silverstein – most easily bridged any existing gaps in student interest. This is likely due to a combination of relatively simple vocabulary, presentation of themes and morals, and entertaining illustrations which make the material more pleasurable to use. If students view reading as work, the goals of the class will be much more difficult to achieve. The comparably pleasurable content in Silverstein aided in the motivation of students to read, review, and otherwise interact with the text.⁹

Having identified and managed outstanding issues with motivation and willingness on the students' part, preparation of reading material was the next step. To aid in the organization, presentation of the material avoided a rigorous adherence to the text itself in favor of a more open dialogue of themes and messages conveyed. Students were presented ideas related to the content before exposure to the actual material and reviews were conducted in a post-exposure phase where students could further analyze and practice the key vocabulary and further discuss the generalized topics related to the readings themselves. The modes of engagement – student discussion and close reading of the text and paratext – served as an evaluation of student comprehension of the material as well as their ability to apply interpretive pressure based upon extratextual analysis.

Different forms of textuality are also important in the analysis of the material. Whenever I introduce a poem or other reading to the class, paratextual material is among the first information that must be resolved. Paratext in this case refers to instructor-built material that is included with the class studies. In other contexts, books for instance, paratext refers to details that may be gleaned by the viewer at a glance: title, author, any pictures that may indicate the content, etc.¹⁰ Presentations built for my students always include information on vocabulary, themes being discussed in the text, and information about the author him or herself. Of course, it is necessary to practice restraint when

providing some of this information as too much paratext can be confusing and even distracting for the student.¹¹ This has been a minor obstacle that I have overcome by minimizing information about the author. While I do find it important to learn about the author of a piece as we try to extract meaning from the writing, from the student perspective much of this detail simply stalls them from engagement with the text.

Finally, we try to go over extratextual information: anything relevant to the student experience with the text that is not included in our actual reading packets. This is, rather, a preconceived knowledge and cultural awareness or any kind of information they might have about the material ahead of time. As an example, I often teach “Jabberwocky” by Lewis Carroll. In order to introduce the poem to them, I remind or inform students that he wrote *Alice’s Adventures in Wonderland* and they already know – at least in broad strokes – the basics of the story. Because of this extratextual knowledge, expectations are primed for an otherworldly and silly experience with the poem.¹²

Outside of reading the actual material, student engagement with instructor-built paratextual information is the most critical aspect of these lessons. Included with this is often a short author biography, perhaps a note or two about themes being presented, and – most crucially – pre-reading discussion questions. This is where students have their first opportunity to truly engage with the concept if not the text itself. Questions are built around theme; they address what message or what topic is being presented by the author in order to aid in student receptivity. The questions themselves provide the students with their most needed aspect in the L2 context: an opportunity to use the target language. Once I am satisfied that students have applied the language to an appropriate degree (which varies based on the skill level and other factors), we proceed with reviewing the text, any necessary summaries or analyses provided by the instructor, and then on the post-exposure phase.

The post-exposure phase of our poetry coverage is where students use the text itself as a foundation for subsequent discussion questions, projects, or other language-based activity building on to the text. Finally, the hope is that students leave our discussions each week with newfound extratextual knowledge which they can use in future conversations in the class, later classes, or in their personal lives in some capacity.

STUDENT RECEPTION

As the use of poetry in an L2 context had been a pet project of mine for some time, I found it useful to collect self-reported student reception of the material. A survey (see Appendix) was therefore conducted for two courses at Daito Bunka university: English Writing B and English Culture B. The former had no experience with poetry in English and served as something of a control group while the latter had studied poetry with me for nearly two complete semesters. Both courses were of equivalent English ability and student motivation tended to vary within each group.

The questionnaire was designed to collect information about the perspectives and experiences that the students had in their childhood years. It furthermore analyzed student comprehension of and exposure to uncommon and often nonstandard vocabulary or dialect forms found in the Silverstein poems. It concluded with student feedback regarding how relevant the material was to them personally and whether they felt our exercises were useful in an academic or practical sense.

In order to gauge the relevancy of the material, students answered the question “What challenges did you have when you were young?”. A number of students shared their experiences with growing up, giving answers that can be loosely categorized into academic issues, language learning and retention, problems with socializing, and health concerns including issues encountered during the pandemic. Students reported mostly on their struggles with academic work and language issues with some lamenting the times they traveled or studied overseas and were unable to use the local language or a

lingua franca with one answering, “When I was in junior high school, I went to a middle school in Hong Kong, so the language aspect was a challenge.” It should of course be noted that all students involved in the questionnaire were part of an English class and therefore language concerns were foremost on their minds.

While not all of the issues students reported directly correlate to themes covered in our Silverstein collection, many concerns are addressed in some capacity. The poems used in the instructor-built packet were from the *Where the Sidewalk Ends* book and were chosen in part because of the shared themes of misunderstanding, apprehension, and loss of innocence.¹³ They depict either child characters viewing the adult world around them or adult characters looking back on childhoods left behind. The child characters in these poems very often face confusing scenarios in dealing with the adult world. The poem “Ma and God” is a good example of this as the speaker character is given orders by his mother which he feels run counter to God’s intentions: “God gave us puddles – Ma says ‘Don’t splash.’” This representation of uncertainty (in this case, one of dueling loyalty) was found to have some relevance among students with one explaining, “God gave something, but my mother denied it and said the author was wrong one way or the other. Humans tend to think only about immediate things without looking at the root of this world.”

The adult retrospective also had some relevancy, the best example likely being “Forgotten Language” which is about losing childhood innocence as one grows up. The concept of forgetting something – especially when framed as a language and presented in an English language classroom context – makes the topic a very relatable one for the students. One student who interpreted the poem fairly directly offered the summary, “Where are the languages we once spoke?” while another offered a somewhat more holistic understanding, “I lost my childish innocent heart.”

LANGUAGE DEVELOPMENT

The lexical interest of this project was in analyzing student reaction to new vocabulary, non-standard expressions, and artistic language in general. The questionnaire included a section which asked students to rate their familiarity with some of the terms in their readings. Key terms were provided for students and response options presented a range of familiarity (see Appendix).

To highlight the differences in student comprehension of language, the poem “Early Bird” serves as a good example. The poem itself is easy and straightforward enough with little by way of deeper meaning (although deeper meaning can be found by reading against the text and applying a good deal of interpretive pressure), but the term “early bird” as well as its antonym “night owl” are often unfamiliar to students at this level as is expressed in Figures 1 and 2.

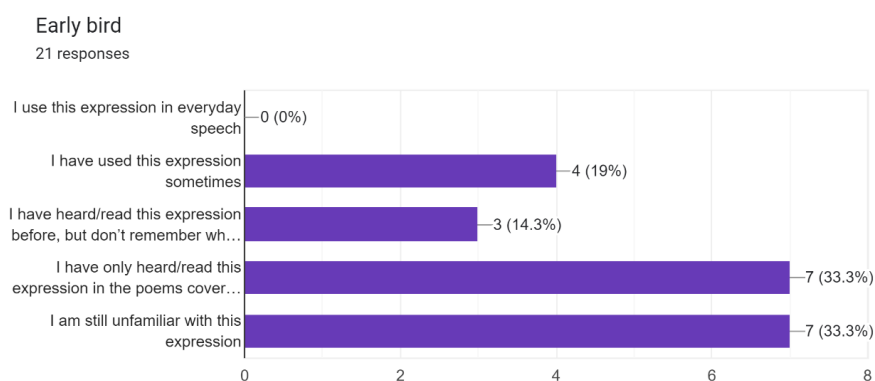


Figure 1. English Writing B – control group

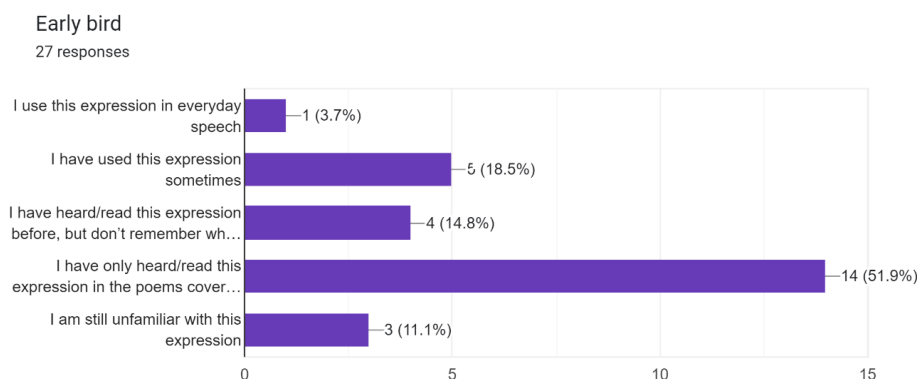


Figure 2. English Culture B

For the term “early bird”, we can understandably see how the less experienced group (Figure 1) is mostly unfamiliar with the expression or they have only seen it in the poems covered in class. For the main group that has studied with me before (Figure 2), the familiarity is much stronger. Similar responses were found with “night owl” which, although it does not exist in the text, has a paratextual relationship with the material as it was included in the instructor-built reading packet.

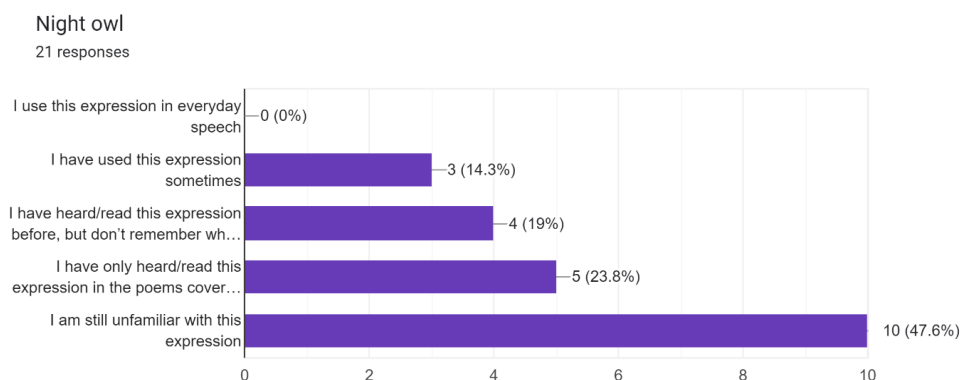


Figure 3. English Writing B – control group

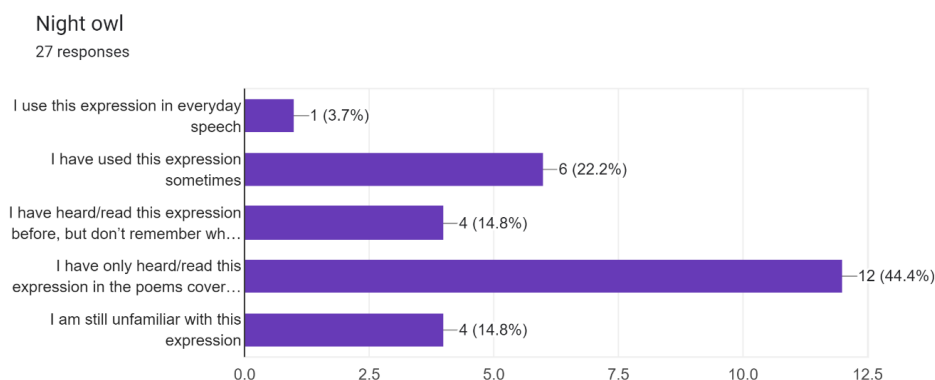


Figure 4. English Culture B

The terms in Figures 1 through 4 are some of the more common vocabulary that are discussed as we review the Silverstein collection. Also common are examples of non-standard grammar such as “he don’t”, or the phrase “just ‘cause” which in itself is simply phonology deletion as written in text. Among the reasons for using Silverstein poetry was in how he portrayed a childish dialect in print and student response to these were of great interest.

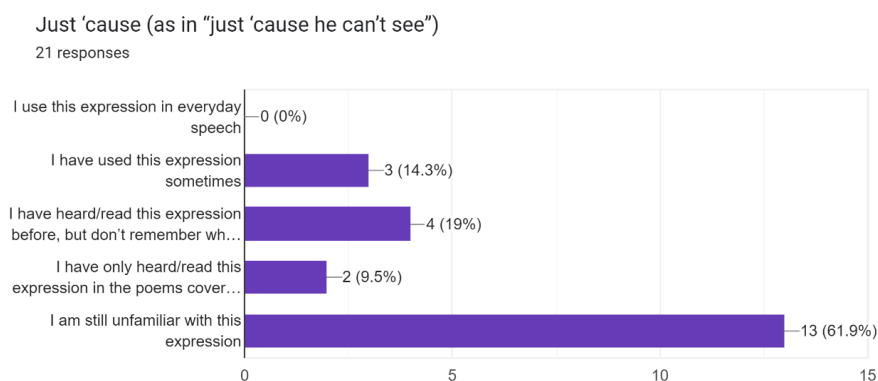


Figure 5. English Writing B – control group

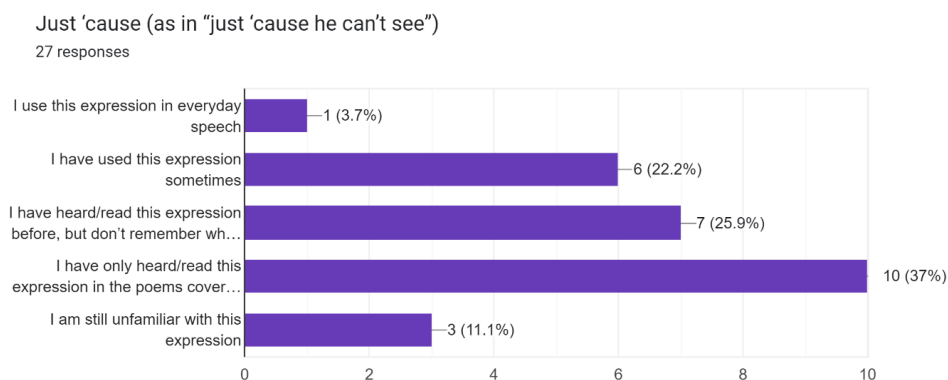


Figure 6. English Culture B

Additional vocabulary of interest include the term “knack”, which is taught very rarely in standard English language textbooks. “Hanky” being a somewhat non-standard and arguably childish term for “handkerchief”. The phonological deletion of “them” being “em” which is sometimes covered in pronunciation classes or segments of a class, but being presented in a written format extremely rarely. Finally, “ain’t” which itself has a poor reputation among English speakers in general despite its origin as a simple contracted form of “am not” and is described by Jack Lynch as forbidden for the sake of being forbidden.¹⁴

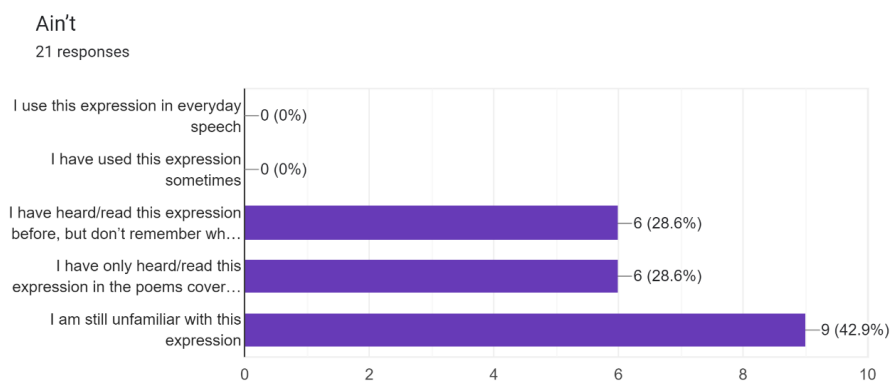


Figure 7. English Writing B – control group

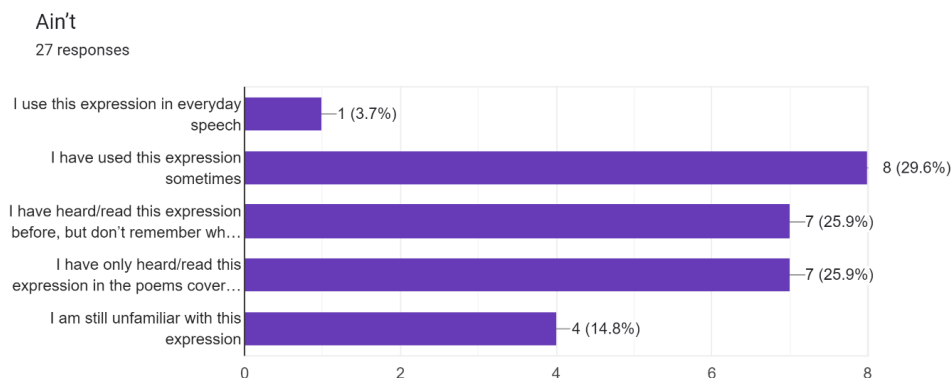


Figure 8. English Culture B

CONCLUSION

Challenges on the instructor end of using children's poetry to facilitate culture and language learning are varied.¹⁵ Foremost of these challenges are in finding thematic applications of the poem and in matching the poetry to the students' lived experience. Furthermore, being able to meet university goals and mandates with an instructor-curated collection of resources may pose administrative difficulties. Time limitations are, of course, always of chief concern as English classes in Japan tend to be strictly for ninety minutes once a week for only fifteen weeks. Instructors are therefore limited in how much or how thoroughly we are able to explore poetry and tailor the presentation of material to promote continual language development and critical thinking skills.

Student skill level and motivation are also important matters of consideration, particularly as the material being used may still be quite complex for students who have not yet made substantial gains in the target language. It should be noted, of course, that while the texts provided to students were written for a child audience, it is presumed that the standard child reader is a native speaker of the language in print. It should therefore be a given that a solid basic foundation of the target language is essential to engage with all textual material. However, as student-reported data may indicate, the lighter themed children's poetry as used in the present study allows for a cultural experience with the living language, including providing opportunities for exposure to often overlooked nonstandard usage.

Throughout my efforts in expanding student access to poetry in L2, I have concluded that project-oriented practice is the best mode of continual active engagement. The classes discussed in this study were required to complete reading journals of outside material, specifically graded readers borrowed from the campus library.¹⁶ However, a revised project with similar goals may be useful in expanding discussion of instructor-provided material. Creative writing exercises – in which students attempt to replicate either the theme or style of the provided material – may also be of some use. This has been done successfully by Hauer and Hanauer and holds a great deal of potential when considering the simplistic nature of the course’s Silverstein readings.¹⁷ This type of exercise provides an avenue for students to engage in their own cultural identity as they express their personal philosophies in the target language. Garvin’s application of students writing poetic forms in L2 produced intriguing expressions of deeply held personal beliefs and appreciation for their own backgrounds and identities.¹⁸ With Silverstein poetry being mostly simple and silly yet possessing depth of relatability, there is a wealth of potential to explore.

There will always be language-level issues when introducing students to artistic forms that have a tendency to break standard language rules. Student motivation is also a factor.¹⁹ It is my contention that poetry and other less commonly taught material allow for a greater appreciation for the depth of the language and piques learner interest. Through the readings and discussions in this project, students have been exposed to a plethora of vocabulary that they would have otherwise likely never encountered through standard means. They also benefitted from a greater diversity of perspectives as they reflect upon their own lived experiences.

The argument for use of poetry in L2 contexts may best be expressed with one student’s response to the survey, “I believe that you can learn a lot about life from poetry. At first I thought it was impossible to be impressed by poetry, but when I actually learned poetry, I was impressed by some poems and some poems changed my view of life. So I think it is good for children to learn poetry during their growth period, when their minds and bodies are changing so much.”

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APPENDIX

Shel Silverstein Poems Questionnaire

Cultural and Linguistic Background

What is your native country?

What is your native language?

How would you rate your English level?

How do you study English?

Vocabulary

Responses:

- I use this expression in everyday speech
- I have used this expression sometimes
- I have heard/read this expression before, but don't remember where
- I have only head/read this expression in the poems covered in class
- I am still unfamiliar with this expression

Terms:

Early bird

Night owl

He don't (as in "I guess he don't know")

Just 'cause (as in "just 'cause he can't see")

The fool gave me (xxx)

Soothe my troubled mind

Knack

Hanky (as in "use your hanky")

'em (as in "go wash 'em")

Ain't

Representation & Personal Meaning

What challenges did you have when you were young? Tell me briefly about school trouble, social problems, language learning, misunderstandings or misbehavior, etc.

Which of Silverstein's poems did you enjoy the most? (you may choose more than one)

Briefly explain your choice

Which of Silverstein's poems did you connect with the most (based on your previous life experiences)? (you may choose more than one)

Briefly explain your choice

Comprehension & Interpretation

Which of the poems do you feel you understand well? (you may choose more than one)

Tell me about one of the poems you chose. Explain what happens in the poem or what it is about. (you can be very brief in your explanation)

Tell me about your personal interpretation of that poem. What meaning does it have for you? (you can be very brief in your explanation)

Student Feedback to the Text

Rate the following statements on a scale of 1 – 5; 1 = strongly disagree, 5 = strongly agree

- Reading these poems was worthwhile as a student.
- Reading these poems helped me to reflect on my own childhood experiences.
- These poems are relevant to my life now.
- Discussing these poems was useful for practicing language skills.
- Discussing these poems was useful for practicing writing skills.

Optional question: What changes do you think should be made in our approach to teaching/discussing these or other poems?

CONSTRUCTING LIGHT: AN EXPERIMENTAL PEDAGOGY IN THREE ENVIRONMENTS – VIRTUAL, IN-PERSON AND SITE SPECIFIC INSTALLATION ABROAD

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INTRODUCTION

Light is an ephemeral medium, one that determines how we visually perceive our physical environment. Turrell speaks of light as a powerful substance, but “for something so powerful, situations for its felt presence are fragile.”¹ He notes that working with light requires constructing a situation that produces a viewer experience.² Robert Irwin similarly states that “the ‘real art’ is the experience; the viewer actually looking at what the artist has given them is an extended way of looking at the world.”³ In order to create these experiences, one assumes a shared spatial atmosphere, where a collective physical experience takes place.

As Turrell observes, working with light as a medium in art does not have a long tradition;⁴ therefore, teaching how to work with light as material is also nascent. As a spatial and experiential medium, teaching how to work with light requires experimentation and testing. One example for this form of teaching is Olafur Eliasson’s Institut für Raumexperimente, [Institute for Spatial Experimentation] where pedagogy operates as an open, co-created experiment of finding potentials within conditions and situations.⁵ In Turrell, Irwin and Eliasson’s work, we see the criticality of sharing a physical space when working with light. But what happens when this shared space is removed as a key for learning?

With the onset of COVID-19, educators in all disciplines were forced to restructure pedagogical frameworks from sharing a physical environment to sharing a digital setting. Shifting to remote teaching poses a fundamental question about the ability to teach an immersive light course without co-sharing one physical environment.

As an architecture educator and light artist, I have been working with students in an experiential lighting seminar that morphed as it was conducted in different contexts, from a conventional in-person classroom with a black-box component to an abroad site-specific seminar in Rome. In Fall 2020, the seminar shifted to an online format. With the change of setting, the class’s interactions and learning potentials radically transformed. In this text, I will be addressing how we approach teaching “constructing with light” and explore the consequences of shifting from a hands-on, experiential, in-person environment to an online setting.

Light Seminar in Three Environments

When working with light, setting is critical. Light is a subjective and relative material that allows us to perceive the world. Goethe observed that the eye sees no form: Light, shade, and color together inform our vision.⁶ We are dependent on light to gain our spatial understanding, and yet, light can be

deceptive. Though a highly direct and precise material, light requires a great degree of experimentation to gain precision in working with it.

The lighting seminar I teach is targeted at educating architecture students how they can creatively work with light. Each setting changes the seminar's focus and embedded lessons: A black-box setting allows for live, in-person experimentation in a highly controlled and curated environment. An abroad setting prioritizes site-specific relationships, making light an ideal material to converse with architecture. An on-line setting produces insular student investigations that are communicated remotely, thus fundamentally changing the framework of established spatial experiments. We did not share one physical space where we could test things together, and our shared reality was through the online computer screen. In a surprising revelation, the remote format allows students to personalize their studies, bringing tests into their own homes and other personal environments. This version of the seminar held unexpected benefits and challenges, and I would like to explore how we can insert this more personal approach back into the classroom.

THE STRUCTURE OF EXPLORATION – OVERVIEW

The seminar's structure was investigated in depth in my paper, "Constructing Mystery: A Pedagogy for Projecting Light,"⁷ which underpins this inquiry. As I deconstruct the course to its structural components, I will examine how the change in setting has affected each one of the elements and the course as a whole.

The *Projecting Light* seminar is structured as a scaffolded series of lectures about different aspects of light that could be studied spatially and theoretically. The lectures are accompanied by mini-labs, or student run experiments, that respond to each aspect we study— projection, camera obscura, shadow, reflection, and color—with a spatial experiment. The course culminates in a final light installation where these tests can be further interrogated; however, the change in environment significantly impacted how the course was run and understood.

Transforming the class to an online setting was not only spatial, but it was also structural. The lectures were converted to a recorded format to create a flipped classroom – one where students pre-learn the material and respond to it in class discussion, or in this case, in sharing light experiments. In previous formats, the lecture information was conveyed to students in the same session as their conducted investigations. Relocating the experiments after the lectures allowed students to situate their exploration in reference to theoretical context and precedent. This aspect of the online format has been retained and has allotted more time for in-class discussion and experimentation.

Space of experimentation – Student MINI-LABS

The in-person format allows for a space of shared exploration: The class works together to construct and deconstruct a shared experience by observing how light phenomena are manufactured. Students bring experiments they have developed into the shared space, and together we unpack the mechanisms that construct the phenomena and explore how they may change under different lights and adaptations. Similar to Eliasson's school, the experimentation opens a threshold to discovery. In the on-line format, on the other hand, the class could not collectively experiment in one physical space, so the students had to document and present their experiments clearly and consistently to effectively communicate them. Collective discussions became the space for unpacking our individual spatial experiences.

Each mini-lab pairs conditions in light with conceptual and theoretical underpinnings.⁸ These mini-labs are intended to be quick exercises that provide architecture students with an opportunity to experiment with light to observe specific conditions and respond to them. Since light experiments are spatial in nature, different settings alter how the mini-labs are experienced and shared. Through

selected mini-labs, I will explore some conceptual differences that emerged between different settings, aligned to the seminar content.

Projection – Placing oneself within a shadow drawing

Following Robin Evans's insights,⁹ we trace the links between light and projection to origins of drawing. Pliny the Elder posits that the first act of drawing was the tracing of the absence of a lover about to depart,¹⁰ an attempt to preserve a memory by solidifying the shadow (Figure 1A). We explore how both perspective and orthogonal projection are linked to the idea of projecting and tracing a shadow in different renditions of Pliny's tale. Each projection system is aligned to a lighting condition – parallel projection to parallel light rays and perspective to an internal point light source.¹¹

Studying projection allows students to precisely test geometric relationships between line its and resulting projection. Conducting this lab in-person allowed students to test these ideas through interaction and joined experience. For example, in an experiment led by student Hana van der Kolk,¹² the lab became a class performance of tracing absence and movement, as students traced each other's moving shadow (Figure 1B). In addition, having access to facilities such as 3D printers and laser cutters allowed students to explore formal implications of the relationship of line and projection with greater precision (Figure 1C)

The remote version of this lab posed more significant challenges. Projection, by definition, links elements spatially. In the on-line format, we were faced with a fundamental question of how to replace an experiential and experimental shared space. Students needed to explore light experimentation on their own and document their observations. Therefore, we needed to establish a relationship between light and photography. We were also positioned to create imagery that may privilege defamiliarizing the viewer (Figure 1D). This extension of the viewer can be captured in the way we can represent everyday objects, echoing artists such as Constantin Brancusi or Man Ray, who speak of photography as a discourse to reframe the understanding of an art.¹³

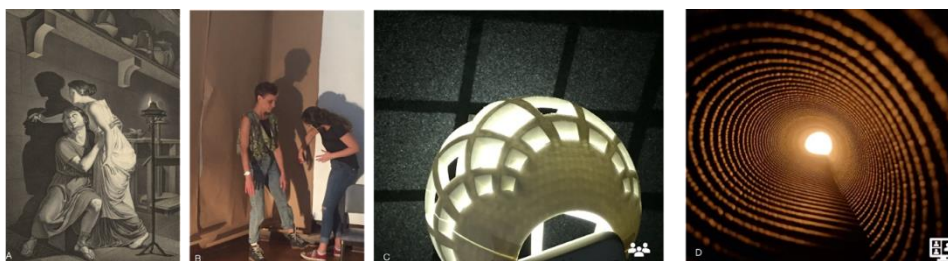


Figure 1 - Projection mini-lab in different settings - (A) Pliny's invention of drawing (B) Invention of drawing live class reenactment; (C) 3D printed study of a shadow sphere; (D) photographic study of Yoga Mat in remote format¹⁴

Camera Obscura - Folding the outside in

The camera obscura is a straight-forward device that links spatial setting and context: The outside image passes through the pinhole-sized aperture and invertedly projects onto the interior surfaces. This relationship between inside and outside in the camera obscura is fixed and cannot be separated. The setting of the seminar therefore becomes highly visible as it literally is grounded within a site.

As Johnathan Crary observes, the camera obscura defines the position of an interiorized observer to an exterior world,¹⁵ He sees the Camera Obscura as an objective record of an observer's position, as opposed to the camera, where the spectator is displaced from the objective space. Crary understands the camera obscura as both discursive and material device.¹⁶ As Anthony Vidler describes,¹⁷ Locke and Leibnitz use the camera obscura as a metaphor for how humans understand the world: Locke

understands knowledge as an external projection onto a clean slate,¹⁸ while Leibnitz views the process of acquiring knowledge as a negotiation between the exterior projection and the interior prior knowledge as screen.¹⁹

When in person, the folding of outside to inside is a shared, multi-sensory event that occurs in real time and space. Together we see the exterior migrate as if in a film into the interior of our environments. In the medieval palazzo, we see the movement of a water fountain or see the car in the Piazza go past our ceilings (Figure 2).²⁰

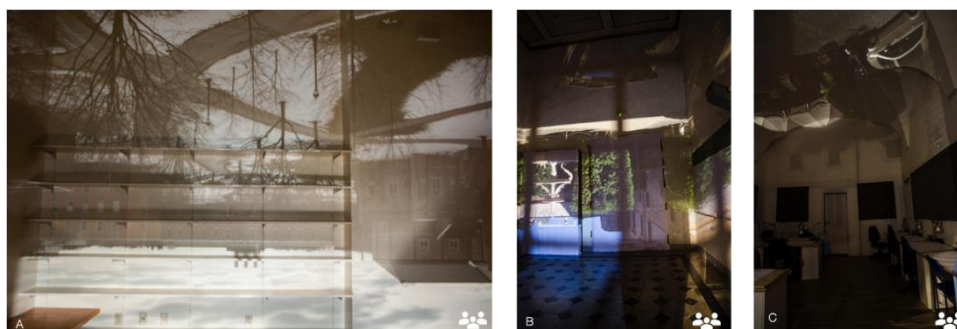


Figure 2 - A full room camera obscura by Rensselaer students (A) in person in a faculty office, revealing projected campus view, and (B, C) in Palazzo Orsini Taverna in University of Arkansas Rome Center, Italy.

However, when we shifted to a remote setting, each student was on their own. As the students' home environments became our screen, they mimicked Leibnitz's superimposition of knowledge: Students used their personal spaces as canvases for the projection of their neighborhoods. Using the camera obscura, students merged their internal and external personal environments, providing a glimpse of each other's lives and settings (Figure 3). Each student created a seal from the outside lit world and an aperture to let it back in as focused rays. As the student adjusted the aperture location, we could uncover more of the context. They could wait for the perfect weather instead of being limited by the conditions that happened to occur during a scheduled class meeting time. In the height of pandemic isolation, students commented on how their interior space became theatrical projections, providing a sort of relief from being forced to limit their interaction with the external world.



Figure 3 - Camera Obscura studies in a student's home settings in a remote format seminar.²¹

The different lessons between the two formats are substantial: In the in-person format watch the events unfold in real time together, understanding how our human eyes see color differently in low light levels than a camera does. In the remote format, we carefully construct photographs documenting this highly personal inside-outside overlay, capturing a moment in time and space. What is interesting about this documentation is that the photograph has additional layers than our eyes; what we see in the photograph and what we perceive in “real” space are different experiences.²²

Shadow – constructing a projected world

A shadow is the two-dimensional cast of a three-dimensional figure. Plato links shadow to the absence of knowledge and truth. In “The Allegory of the Cave,” the shadow represents the absence of light—a negation of truth—understood as a type of deception,²³ seen from a fixed perspective. Only after they were freed could the prisoners understand the full spatial reality. Sue Webster and Tim Nobel’s installations explore the contrast of an object and its shadow. Webster and Nobel compose abstract objects to cast realistically detailed shadow silhouettes, creating a clash of expectation, as viewers understand their projective system.

In the shadow mini-lab, similar to Pliny’s myth, we look at shadow as a device for drawing. We acknowledge the conflict between the figure and its shadow like in Webster and Nobel’s work. When in person we understand the relationship between the shadow and three-dimensional object viscerally. We see them together as a shared reality, similar to Plato’s freed prisoners we can perceive the full picture that constructs the shadow drawing. When remote, the visceral conflict for the viewer is not as readily available. Instead, students experience shadow individually, and intellectually communicate it through photography and presentation (Figure 4).

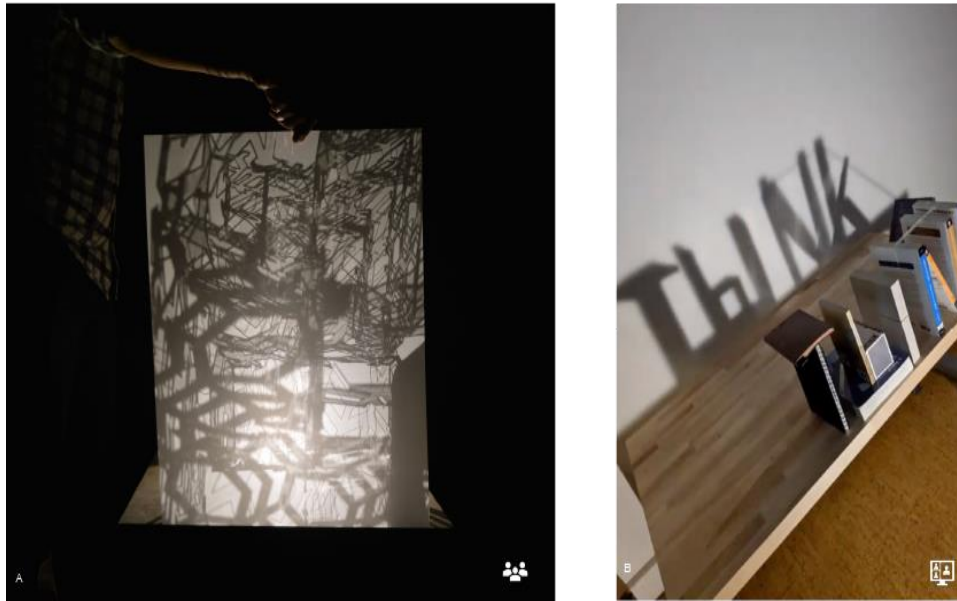


Figure 4 - Shadow studies in (A) an in-person setting and (B) remote setting.²⁴

Color

Josef Albers posits that the clearest property of color is its relativity:²⁵ Color is deceptive since it continually changes based on its environment. We see color as wavelength stimuli in our eye. A perceived object stems from the color of the object and light wavelengths that illuminates it. As seen in the works RGB by the artist pair Carnovsky, different light color radically changes the visible information perceived. In person, students viscerally experience how our perception of an object can change under different lighting conditions. In this lab, students also begin to gain an intuitive understanding about how color in light is different than color in pigment. When we mix light colors, we combine wavelengths, results of which may be counter intuitive. Testing color mixing and shadow, were possible in the virtual environment due to the greater availability of colored lights. During online class discussions, we analyzed the students' photographs and marked them up to see how we could rationalize and probe the different resulting color shadows and projections (Figure 5B). Although each student viscerally experienced color in their own space, we could still use the experiments as learning tools and examine the results as a collective (Figure 5).

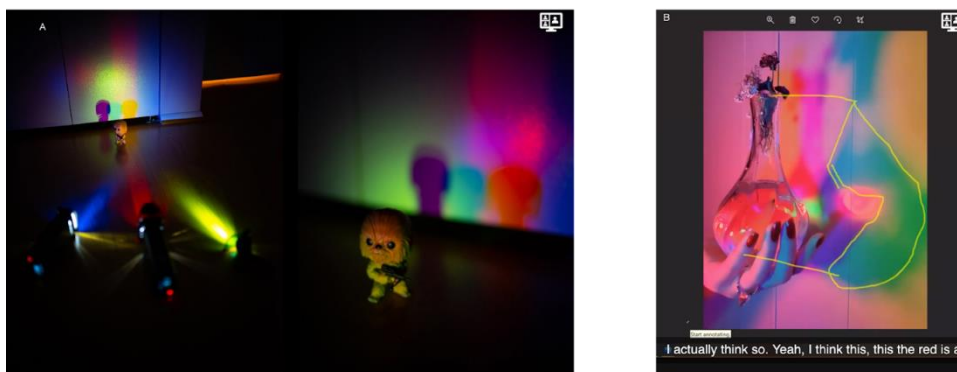


Figure 5 - (A, B) Color lab in remote setting, uncovering color mixing and shadow through documentation of lighting and (B) sketching during screen sharing.²⁶

Spatial conclusions in three environments – installation as a public and private act

Concluding the seminar we move to the final act – the installation. Each setting created a different backdrop with different constraints. As a student recently observed, once we came back to campus, sometimes it felt as if this was not the same course.

In person – Installation as a performance

In person, students work in teams, expanding upon an idea from the seminar or lab into an installation. Such an installation may take the form as a time-based performance, consider viewer expectation, and subvert it. In a black box setting²⁷, we have access to projection screens and analog projections, which are powerful tools that could be used. Students considered how to craft and curate a viewer's passage through spatial investigation and interaction that would craft the intended viewer experience (Figure 6).

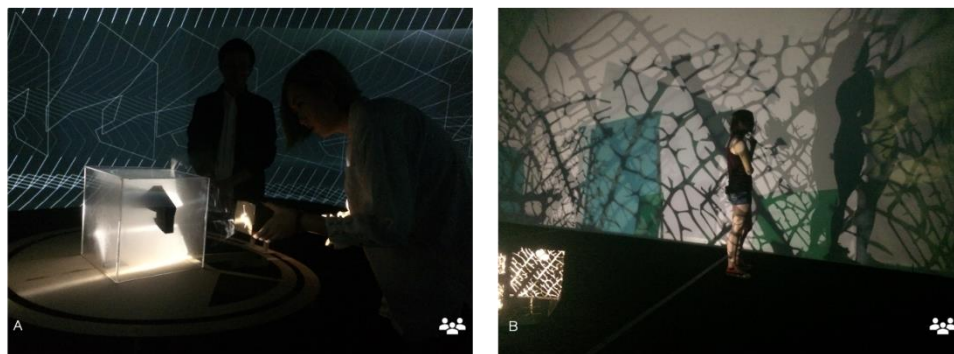


Figure 6: In-person, the final installation is a temporal performance with viewer experience.²⁸

Abroad

During the Rensselaer travel abroad program in Rome, the final installation project radically transformed. We were given the unique opportunity to create an installation in Francesco Borromini's Falconieri Crypt in the church of San Giovanni dei Fiorentini in Rome.²⁹ The Falconieri Crypt project spanned the liminal space between analysis and intervention as the students projected light onto the existing architecture. Light allowed us to create a temporary transformation to the space of the crypt. Students experimented and cast their analysis in light and shadow onto the Crypt walls, creating an interaction between space and projection. In the process we discovered unplanned surprises and spatial readings created by our projections and their material properties.

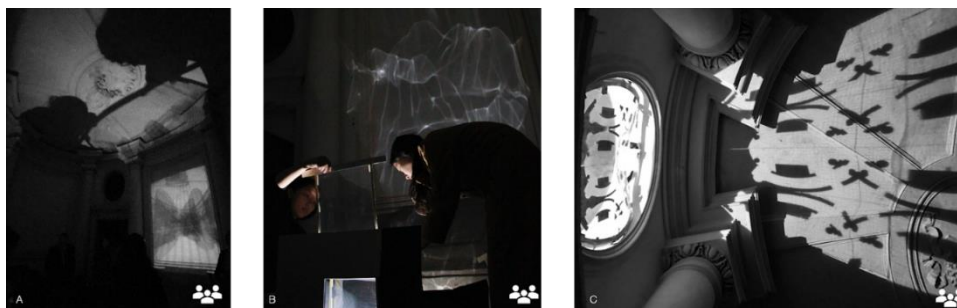


Figure 7: In-person abroad final installation in the Falconieri Crypt, Rome, Italy³⁰

Remote – Installation as research

Lastly, when we entered the online space, students conducted isolated, individual investigations. This shift allowed them to focus on individual projects that extended into a more thorough and developed research project from one of the labs. In many cases, that led to a highly methodological approach. Students tested different aspects of previous labs (Figures 8B and 8C studying reflections methodologically). Students could also extend experiments beyond the typical classroom and used reflection to redefine the space of an outdoor environment, surreally collaging elements of their landscape through reflection (Figure 8A).

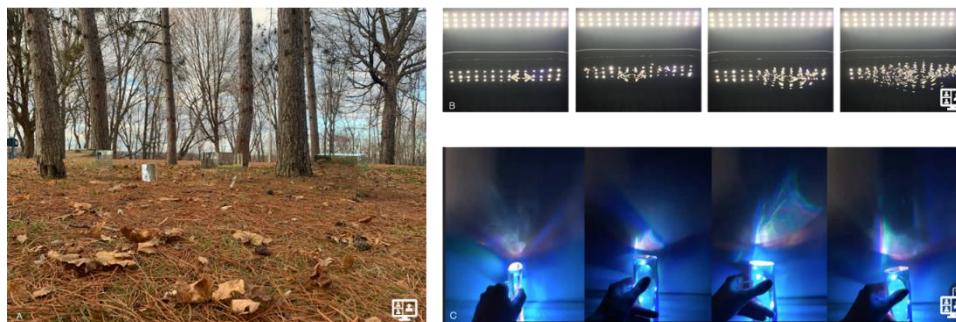


Figure 8 - Final installation, online setting - (B, C) exploring methodological organization as well as (A) unique outdoor sites³¹.

The online setting also permitted students to have a stable setup in their homes that could be undisturbed for longer durations than is possible in a classroom. In a case of expanding on the shadow exercise, a student created a “light painting” in his bedroom which he refined over weeks, experimenting with different materials and found objects (Figure 9). The student crafted a rich narrative constructed in line and color, and layered material properties of objects to constrict line texture and atmosphere.



Figure 9 -"light painting" with different materials and found objects. (A and B) Abstract "light painting" and (C and D) corresponding material setup.³²

CONCLUSION

Studying light is experimental and experiential. When experimenting with light an in-person experience is invaluable, since it addresses our perception and extends our way of seeing the world.. Sharing these moments of redefining perception is a powerful educational tool. Yet, in the online space, there is a possibility to maintain value in insular investigations that are interrogated collectively. Although we do not co-share a spatial reality, we convey one through our documentation. Access to private resources allows for a different type of ingenuity and process. Lastly, conducting insular inquiries within domestic private spaces, allows for us to share slivers of personal worlds, while connected to larger questions of light and space.

NOTES

- ¹ Julia Brown et al., *Occluded Front, James Turrell*. (Fellows of Contemporary Art, Los Angeles, 1985), 22.
- ² Brown et al., 15.
- ³ *The Beauty of Questions*, Produced, directed and edited by Leonard Feinstein.(Berkeley, CA: University of California Extension Center for Media and Independent Learning], 1997). DVD.
- ⁴ Brown et al., *Occluded Front*, 42.
- ⁵ Thomas Jellis and Olafur Eliasson, "Spatial Experiments," *Cultural Geographies* 22, no. 2 (2015): 369–74.
- ⁶ Johann Wolfgang von Goethe, *Goethe's Theory of Colour*, trans. by Charles Lock Eastlaee, (London: John Murray, 1840), xxxviii.
- ⁷ Yael Erel, "Constructing Mystery," *Journal of Architectural Education* 73, no. 1 (January 2, 2019): 120–27.
- ⁸ Throughout the lectures we unpack the historical and philosophical texts and explore precedence from art and architecture history as well as light and art installations.
- ⁹ Robin Evans, *Translation from Drawing to Building and Other Essays*, (London: Architectural Association, 1997), pp. 163-165.
- ¹⁰ Pliny The Elder, *Natural History*, Vol. XXXV, Chapter 5.
- ¹¹ Evans, *Translation*, 163-165.
- ¹² Hana van der Kolk was a PhD candidate in the Electronic Arts department at Rensselaer at the time she took this seminar as part of her coursework.
- ¹³ Victor I. Stoichita, *Short History of the Shadow*, (London: Reaktion Books Limited, 1997).
- ¹⁴ Figure 1 – Projection mini-lab image credits – (1A) Pieter Jan de Vlamynck After Joseph-Benoît Suvée, The Invention of Drawing after 1791, Digital image courtesy of the Getty's Open Content Program. (1B) PhD student Hana van der Kolk re-enacting Pliny's invention of Painting in class (2019, Photo by Author). (1C) 3D printed model developed to project an orthogonal grid with a point source by RPI students Mingda Guo and Weihang Huang (2019, photo by Mingda Guo and Weihang Huang). (1D) Photographic study of yoga mat by Sofia Gabriela Sosa, remote seminar, (2020, photo by Sofia Gabriela Sosa)
- ¹⁵ Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century.*, October Books (MIT Press, 1990), 34.
- ¹⁶ Crary, 31.
- ¹⁷ Anthony Vidler, *Warped Space: Art, Architecture, and Anxiety in Modern Culture*. (MIT Press, 2000).
- ¹⁸ John Locke, *An Essay Concerning Humane Understanding*, Book II, Chapter XI, #17 (London: A. and J. Churchill, 1706).
- ¹⁹ Gottfried Wilhelm Leibniz, *Die Philosophischen Schriften*, 7 vols, ed. G.J. Gerhardt, (Berlin: Weidmännische, 1882). Vol. V: 131. Translated, G.W. Leibniz, *New Essays on Human Understanding*, translated and edited by Peter Remnant and Jonathan Bennett (Cambridge: Cambridge University Press, 1981):144-145.
- ²⁰ Figure 2 – In person camera obscura – (2A) A full room camera obscura by seminar students in a faculty office, revealing projected campus view. (2017, photo Tanner Whitney - RPI school of Architecture publications.) (2B) Camera Obscura experiments conducted in the medieval Palazzo Orsini Taverna in as part of a Rensselaer travel abroad program travel in the University of Arkansas Rome Center (2017, photo by author and Fabio Grassi of the University of Arkansas Rome Center).
- ²¹ Figure 3 – Remote format full room Camera Obscura -- (3A) Jessica Lyn full room camera obscura, (2020, photo by Jessica Lyn); (3B) Wei Luan full room camera obscura (2020, photo by Wei Luan) ; (3C, 3D) Jenna Hoggan, full room camera obscure (2020, photo by Jenna Hoggan)
- ²² In low light levels our eyes mainly use rod photoreceptors that have no color information, therefore our color perception in low light level decrease, as opposed to a camera that can receive this information with long exposure times.
- ²³ Stoichita, *shadow*, 20-28
- ²⁴ Figure 4 – Shadow mini-lab – (4A)- In-person Exploration of shadow drawing cast by plexiglass onto a screen using a single LED source by RPI students Andreas De La Paz and Jesse Goguen,(2016, photo by Andreas De La Paz) Figure (4B) Shadow mini-lab, remote setting, Fall 2020, by RPI graduate student Damien Pelo (2020, photo, Damien Pelo)
- ²⁵ Josef Albers, *Interaction of Color*, rev. ed. (New Haven, CT: Yale University Press, 2006), 1.
- ²⁶ Figure 5 – Color mini-lab – Figure (5A, 5B) Studies for Color mini lab by RPI student Jessica Lyn, (2020, Photos by Jessica Lyn). Figure (5C) Studies and review session screenshot – work by RPI student Sofia Gabriela

Sosa Color Mini-Lab (2020, Photos by Sofia Gabriela Sosa, screen shot from WebEx session with sketch by Author)

²⁷ Black Box at CRAIVE lab RPI - Jonas Braasch, Jeff Carter, Samuel Chabot, Jonathan Mathews *An immersive teleconferencing system using spherical microphones and wave field synthesis*, invited paper for the 22nd International Congress on Acoustics, September 5-9, 2016, Buenos Aires, Argentina, Session: Virtual Acoustics: Paper ICA 2016-826.

²⁸ Figure 6 – Final light installations by RPI students at immersive CRAIVE lab image credits - (6A) Project by RPI students Jieran Geng and Tony Feng (2018, photo by Author); (6B) Final Project- Projecting Light Seminar Spring 2017, by RPI students Abbey Dolan and Sarah Farnham (2018, photo by Author)

²⁹ This project was made possible with the help of the church of San Giovanni dei Fiorentini in Rome and the church curator Julia Vicioso as well as the University of Arkansas faculty in the University of Arkansas Rome Center.

³⁰ Figure 7 – Final light installations by RPI students at the Falconieri Crypt San Giovanni dei Fiorentini in Rome, Italy image credits - (7A,7B) “Distorted Memories” by Haruka Liu, Lila Sferlazza, Ai Teng and Tian Yao (2017, Photo by Yael Erel.); Figure (7C) “Drawing Borromini through Borromini by Lindsey Carpenter, Amanda March, Rob Nielson & Lindsey Wood (2017, Photo Ai Teng)

³¹ Figure 8 – Final installation Remote Format – (8A) Final Project by Emily Sturges (2020, photo by Emily Sturge); (8B) Final Project by Brianda Valerio (2020, photo by Brianda Valerio), Final presentation by Kaci Ann Lake Toms (2020, Photo by Kaci Ann Lake Toms, Screenshot of remote session recording)

³² Figure 9 – Final ‘shadow painting’ installation Remote Format by RPI student Nathanael Musera, (2020, Photos - Nathanael Musera).

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EMERGING TECHNOLOGY COLLABORATIVE DESIGN STUDIO

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INTRODUCTION

This paper introduces a collaborative design studio course that has been evolving for the past several years. The course introduces design students to strategies for learning about emerging technologies. The instructor has a joint appointment split between a design department, an interdisciplinary computer animation research center, and a translational data analytics institute, all located in one of the largest research universities in the United States. Despite a background in computer science engineering in graphics and AI, the author has been working primarily in arts and humanities education contexts for the past few decades.

Design education, like many fields, must wrestle with how to handle the growing flood of emerging technologies. The AIGA Designer 2025 report, among its many recommendations for design education, stressed the importance of adjusting curriculum to be able to *adapt* to changing technology, saying, “Technology plays an outsized role in the future of design...the field risks losing influence to other disciplines if colleges and universities do not reset their expectations of design curricula.”¹ To this end, in this studio course design students are given positive experiences using unfamiliar software and hardware in their design practice. This paper begins with an overview of goals, describes the projects and content covered, then closes with discussion of typical challenges and successes.

COLLABORATIVE STUDIO GOALS

Our upper-level design students are required to choose between six different collaborative studio sections, each having a different topic. This year, other studio topics included sustainable retail, healthy cities, digital archives, material design, and social design. Students are third- and fourth-year undergraduates from our three different design majors: visual communication design, industrial design, and interior design. In nearly all their other design courses students stick with a cohort within their major discipline. This studio is one of the few multidisciplinary collaboration opportunities they have during their degree.

In the studio described in this paper, the primary objectives center on acquiring experience with “learning how to learn” about unfamiliar technologies and becoming aware of new capabilities as well as potential societal impacts of emerging technologies. Students learn to take an active role in their knowledge development, gain better intuition about difficulty (i.e., estimating what might be easy or hard), and increasing their *confidence* with approaching potentially important new technologies.

The class provides design students with opportunities to think about how, where, and why they might encounter emerging technologies. Through *making*, they examine why some technologies are more difficult to work with, and how they might consider issues like the usefulness or risks involved with unfamiliar new design tools.



Figure 1. Data analytics research collaboration space

Each year, one broad subject is selected to provide students with a bit of context to guide and bound their problem discovery. This spring we are considering possible roles and impacts that emerging technologies may play in the future of design. In previous years students applied their technology prototyping to topics such as “the digital humanities” (2022) and “data analytics research collaboration spaces” (2019-2021, see Figure 1).

GROUP PROJECTS

At the beginning of the course the students are asked to email the instructor responses to a set of questions about their current working habits, learning preferences, and group role tendencies. There are typically around sixteen students in the class each spring. The instructor assigns them to groups of three or four students for the duration of the course. Students are separated into groups to maximize diversity, based on their major, year in school, and self-described leadership and working tendencies. Most students express positive feedback about this arrangement at the end of the course.

Throughout the semester, students individually decide topics and technologies they would like to learn about, then collaboratively negotiate the processes their groups use for both design and decision making. Collectively, students are required to discover and address problems that *combine* their group members’ interests and learning goals, prototyping design solutions in these emergent problem spaces. The course is divided into a three-project structure that includes visualizing these collaborative possibility spaces, hands-on learning with unfamiliar technologies, and system prototyping. For each project, the instructor’s primary role is most often facilitating group *process* design. Inclusiveness, rather than assigning hierarchical team roles, is always encouraged. The students are given roughly one month for each project.

Possibility Space Visualization

The first project lets students explore their potential research interests through very low-pressure making. Each group member individually chooses topics that interest them within three categories: unfamiliar technologies of interest, issues related to the annual studio theme, and any other topics that interest them personally. As a team they then must decide how to *merge* their group’s large collection of interests into overlapping and intersecting areas of research, rather than choosing or voting which individuals’ topics to pursue.

For this first assignment, they are asked to use only their favorite, familiar tools for their making so that trying to learn new tools does not further add to the project's complexity. Students iteratively generate visual representations of the abstract possibility spaces created by their research topics. Teams investigate properties, problems, and projects existing within these spaces and discover connections within the “adjacent possible”² that they were previously unaware of. Final outcomes for this project range from concept maps and infographics to 3D renderings and animations, system visualizations, physical models, and metaphoric animations.

The type of technologies that students are initially curious about include things like e-textiles, augmented reality (AR), virtual reality (VR), artificial intelligence (AI), responsive environments, 3D printing, projection mapping, motion tracking, and virtual assistants. In last spring's studio, some of the thematic humanities topics that groups chose to focus on included “cultural representations of death”, “music history”, and “cultural heritage preservation.”



Figure 2. Traditional analog pin board and white board concept space mapping

There are a few specific challenges that frequently emerge for students in this first project. The first is understanding that the desired outcome is a *visualization* of an abstract space of design possibilities, and not a solution for one selected design problem, as they have been trained to produce. Additionally, it can be difficult to get some of them to trust that they will be able to find overlaps between independent diverse topics. They eventually discover this is nearly always surprisingly easy. Last spring, students were momentarily stuck on an unlikely combination of interests: “projection mapping”, “childhood education”, and “cultural portrayal of aliens.” They quickly discovered an example of a technology artist working in exactly this space.³

Another significant challenge: the more students are provided with (much requested) examples, the more it dictates what they create. The fewer examples⁴ they are given, the less they understand what they are being asked for and the more they worry about finding so-called “correct answers.” Students *frequently* inquire about the “correct” processes they “should” be using and are in turn asked to consider and evaluate the benefits of alternatives, given their goals. This process nearly always works out fine in the end, but many students get stressed along the way, worried about the lack of precise outcome constraints.

Surprisingly, almost all students in the past two years have independently chosen to replace traditional analog approaches for making sense of their complex web of topics (Figure 2), or other digital options, with Miro web-based collaboration software for their group collaboration.⁵

Unfamiliar Technologies

For the second project, students are asked to attempt to use unfamiliar technologies that interest them. However, students are allowed and encouraged to learn through speculative technology prototyping as well. As in the previous project, they are required to integrate their group members' technology interests together, as well as their group's other non-technology interests and topics. Students are also

required to use and create both digital and physical assets, make a systems diagram, and create videos showing usage of their speculative technology systems. Students sometimes become interested in “new to them” technology tools that their peers from other design backgrounds use routinely, but that are uncommon within their design sub-discipline (e.g., 2D graphic designers investigating interior design software, or interior designers learning about UX prototyping tools.)

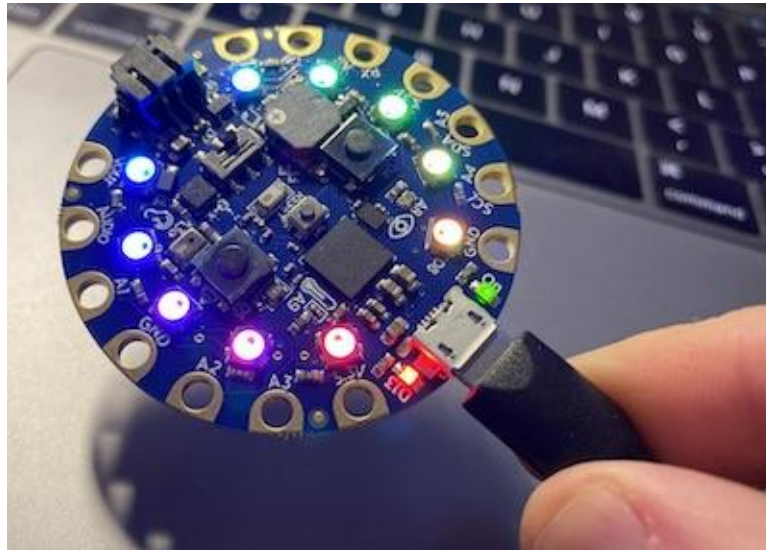


Figure 3. Microcontroller with lights, sound I/O, and sensors

While access to technologies is frequently offered (e.g., physical computing components as shown in Figure 3, VR headsets, tablets, cameras, and software) most students prefer to work with technologies they can run on hardware they own, or to use inexpensive technologies that they can buy. Examples of projects students created that integrated last year’s digital humanities theme included: 3d printed Greek mythology NFTs; augmented reality historical architecture; networked microcontrollers sensing conspiracy theories; sound visualization of international languages, and immersive exploration of lost religions.

Recently, 3D-scanning and AI-based motion recognition training have been common interests. There is growing curiosity around connecting AR to both biosensing and biophilia. Many practical-minded students are interested in learning how they might integrate new 3D animation technologies with their other design skills.

During this second project (the middle third of the studio course) students are particularly encouraged to monitor their *transition process* from time spent with tutorials (i.e., following clear sequential directions, often without much thought) into more exploratory and creative stages of making. Students frequently evolve what they want to know through the course of this project: it may shift between understanding how something works, using a technology as a tool, or figuring out its capabilities and limitations. Each requires different activities and attention. Students are encouraged to track the reasons behind their process changes as well as their progress, throughout the project. Most of the design students self-impose significant pressure to create impressive design outcomes, instead of merely taking this opportunity to focus on new skills. For this project, the instructor always emphasizes that it is completely acceptable to “fail” to get a technology working successfully, if investigations, choices, and lessons learned are thoroughly documented and presented.

Technology Prototyping

For the final project, teams are again encouraged to work on something they *want* to learn, but they still must collaborate and connect to the annual studio theme. For the first two projects, students scrambled to figure out new processes and understand their collaborators. The third project finally provides them with an opportunity to *use* their new skills, and the processes they now feel more confident about. We frequently start from “what would you do next if you had more time, now that you know what you’re doing?” They are asked to balance prototyping, functionality, speculative concepts, and research. Each individual and group is encouraged to consider what would be most productive given their design education goals. Examples of recent final project topics students have decided to prototype involved interface design, AR, networked lighting, and modeling for VR. The most recent studio generated projects demonstrating brand storytelling with 3D software, a VR historic artifact museum, site specific cultural music visualization, and simulated sleepwalking surveillance (Figure 4).



Figure 4. Sleepwalking tracking prototype by Ashland Damron, Sierra Dayen, and Josh Leidich (left) and VR museum by Claudia Heitkamp, Justin Pokorski, and Amelia Walker (right)

For this final third of the course, students are primarily excited about the new “superpowers” they’ve acquired and now have many ideas about what they’d *individually* like to do. It takes significant effort from the instructor to keep groups collaborating, the intended purpose of this course. At this point several students typically question the collaboration requirements. Some express a wish for *additional* classes that similarly allow individually directed technology-based learning, something our curriculum does not typically provide. “Focusing on process” sometimes also goes out the window at this point, due to excitement about specific outcome ideas. This enthusiasm for specific outcomes frequently must be combined with discussions about reasonable project scoping, given the time constraints. This shift in a couple of months from over-concern about imposed course requirements to over-confidence about their technological learning capabilities is a great problem to have as they begin working on the complex design problems they generate.

SHIFTING MINDSET

Throughout the semester students are given occasional readings on topics related to the new strategies they are learning about. Examples include subjects such as generative design,⁶ system diagram representations,⁷ complex systems⁸, and technology ethics.⁹ We do small group exercises where they are asked to consider the technologies that they are learning about through some of these lenses.

It’s not uncommon to hear a few students express some variation of “I’m not really a technology person.” By going through unfamiliar processes and coming out with positive experiences students acquire the confidence and basic skills needed to continue learning on their own, as their interests and

technologies evolve. They discover that the actual difficulty level of using technologies often misaligns with their intuitions and likely requires experimentation. Students are surprised to learn how quickly they can go from discovering a new technology to working with it. Ideally, they change from assuming they are “not a technology person” to having a growth mindset.¹⁰

Perhaps the most important outcome has been encouraging students to allow their initial work with new technologies to *emerge* from capabilities they discover, instead of always deciding first what to make, then struggling to meet that goal. This has been very significant for having a positive experience learning about new technologies. The change in focus is strikingly counterintuitive for design students who have much more experience targeting well-defined outcome constraints than opportunities for problem discovery.

Design students (like many of us) can be very concerned about the work they make with unfamiliar tools not looking like it was done by an “expert.” It is less important to reward students for creating exceptional designs, relying on skills they already have, than it is to make them comfortable with the risks of creating beginner work. Kevin Kelly makes the point that increasingly we will all *always* “...remain in the newbie state...because the cycle of obsolescence is accelerating...you won’t have time to master anything before it is displaced.”¹¹ Giving students permission to fail has been a key to encouraging experimentation. Students express relief at the freedom to attempt things that they *can’t* know whether or not they will work.



Figure 5. Learning to use challenging AR head mounted displays

Just as students are asked to become comfortable with the unknown and adapt to the unexpected, so too must instructors. Teaching an emerging technology studio where students follow individual learning interests requires of the instructor many of the same attributes that are being encouraged in the students. Professors are *expected* to be “experts” on the subjects they teach. When the subject involves a stream of new technologies, this expectation is unrealistic. Instructors will need to become comfortable with potentially “looking foolish” (Figure 5) from time to time as they explore new capabilities, limitations, and concerns. Instructors will also need to have a growth mindset, be comfortable with hands-on learning, worry less about imperfect outcomes, and maintain metacognitive awareness.¹²

CONCLUSION

It is consistently surprising how infrequently the students are limited these days by a lack of physical technology resources. This is not because of any sudden increase in technology lab access, but rather because of how accessible emerging technologies are becoming. While many expensive technology resources are available in our labs, most students are choosing to work with technologies that run on hardware they own or can afford to buy. Cutting edge AI and AR software now runs for free in student laptops, web browsers, and mobile devices. Students are surprised when shown that their latest smartphone or tablet now has 3D scanning capabilities. Easy to use microcontrollers and sensors cost only tens of dollars. Advanced 3D computer animation software is free and now runs on any operating system. High quality free tutorials for all these are readily available on YouTube. In just the past few years, “access to technology” seems less about obtaining the technology and more about navigating terminology and obsolete information. A two-year-old tutorial is frequently no longer accurate and discovering proper search terms can be one of the biggest challenges. Learning to use new technology is becoming increasingly more about information curation.

Design strives to positively impact society. Few things are now having greater social impact than technologies mediated by designers. Smartphones, social networks, artificial intelligence, location tracking, voice recognition, and video conferencing have all been integrated into our daily lives. Enabling designers to better understand and responsibly apply new technologies is a critical need within our discipline. Designers must consider hazards such as racial bias, privacy risks, barriers to accessibility, and mental health concerns. The possibilities and challenges within diverse design topics such as sustainability, complexity, collaboration, and communication are being continuously reshaped by accelerating technological change. Developing strategies for adapting to this rapidly shifting landscape is essential. It is easy for students to drift too far in the direction of excitement about possibilities, or to become solely focused on negative potential impacts. When class conversations do head too far in either simplistic direction, it is useful to nudge things back towards acknowledging the *complexity* of the situation being considered. That new affordable VR headset may provide immense education potential, but it likely also requires agreeing to continuous biometric surveillance by a major advertising company.

The studio approach presented in this paper has been evolving each year as students and technologies keep changing. There will always be emerging technologies at all levels of expense and accessibility. Students will always have diverse interests, concerns, and needs. Helping students gain confidence learning to learn about unfamiliar technologies and becoming aware of new capabilities and societal impacts will be invaluable as change continues to accelerate. The educational framework discussed will hopefully be useful to those considering ways of integrating emerging technologies into other collaborative studio courses. I hope this encourages discussion about the challenges mentioned, as we work to develop classes that can engage with both technology and the complex societal problems of the future.

NOTES

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STRENGTHENING EDUCATION FOR SUSTAINABLE DEVELOPMENT: A DIGITAL ESCAPE ROOM FOR TEACHER EDUCATION

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INTRODUCTION

University teacher education aims to impart central competencies required for the later (self-) responsible, reflective and professional actions of teachers in schools. The teaching of specific professional knowledge for Education for Sustainable Development (ESD) at university is fundamental for future teachers.¹ Against this background, a digital escape room on ESD (BNE^{Room}) will be developed for student teachers, tested and scientifically evaluated at the TU Dortmund, Germany, in 2023. The project will initiate interdisciplinary exchange between student teachers for all school subjects, test the innovative escape room with a focus on a sustainability goal (SDG 10: Reduce Inequality), and scientifically accompany the negotiation processes on ESD of the students. In the seminar, student teachers will first pose questions on sustainable development from their own disciplines and discuss them together. In a second step, they can follow up by designing didactic settings for schools in which pupils carry out tasks related to sustainable development.² At the same time, the pupils expand their digital media competencies.³ Thus, digital formats, such as the digital BNE^{Room}, are expected to increase the motivation of students to work independently, collaboratively, and digitally on a learning object.

Education for Sustainable Development (ESD)

In the context of Education for Sustainable Development (ESD), the 17 Sustainable Development Goals (SDGs) of the UN play an important role. As part of the Agenda 2030, these SDGs include gender equality, quality education, and climate action.⁴ Building on these goals, ESD and Global Learning have been developed with the objective of fostering transformative learning. ESD has received much attention in recent years; today it is a cross-sectional task for all teachers in schools in Germany. This means that teachers of all subjects have to integrate ESD into their lessons. A possible way of meeting this challenge is presented by Mandy Singer-Brodowski, who distinguishes between two sides of transformative learning: (1) the change in individual perspectives of meaning and (2) the collective process of awareness and emancipation.⁵

Social inequality

Questions about the causes and effects of social inequality are not new and were already discussed before for example Karl Marx. It should therefore be noted that the unequal distribution of life chances has always existed, both in the past and in today.

Solga and others: “always speak of social inequality when people (always understood as belonging to social categories) have unequal access to social positions and these social positions are systematically linked to advantageous or disadvantageous conditions of action and life.”⁶

However, the ways of looking at the unequal distribution of resources (material, e.g., property, or immaterial resources, e.g., power) differs, depending on the epoch in which the topic is investigated.⁷ In addition, structures of inequality have reproduced themselves that manifest themselves in principles of superiority and subordination and are socially recognized.

This gives rise to the recurring questions:

“Is social inequality unjust and must it be overcome if possible, or is it at least partly, under certain conditions just and even necessary for social coexistence?”⁸

Is it enough to know the causes of social injustice in order to propose appropriate solutions for politics, education and society? These question cannot be adequately answered in this article. Indeed, they have not yet been adequately answered from a sociological point of view either. Nevertheless, they make it clear that if school is understood as a social space,⁹ structures of inequality are maintained and/or reproduced to a large extent.

The BNE^{Room} project cannot resolve the different dimensions of social inequality, but it can create a discursive framework in which student teachers from different disciplines learn about each other’s perspectives. In addition, they learn to grasp the social situations of their future students and to question and critically reflect on their own normative actions.

Competencies of teachers

To ensure the implementation of the 2030 Agenda, teachers competencies have to successfully apply its goals in school. Therefore, ESD changes the competences teachers need as it changes learning processes and educational goals. Some models that express the competences teachers require for ESD are founded on the notion that ESD does not aim to normatively change lifestyles. More importantly, it aims to empower teachers to do two things: (1) to participate in sustainable development and (2) to critically reflect on their own actions.¹⁰ For example, the German Transfer -21 program fosters competences that enable teachers to deal with sustainable development issues in an appropriate manner in terms of content and methodology.¹¹ Building on this, models have been developed with a three-pronged approach. They identify teacher competencies, enable teachers to participate responsibly in shaping sustainable development, and get teachers to reflect critically on their own actions in this area.

In 2012 the UNECE formulated teacher competencies that encompass four areas: learning to know, learning to do, learning to live together, and learning to be. These can be aligned with the so-called “4Cs” – Communication, Creativity, Critical Thinking, and Collaboration – which are the central competencies for the 21st century.¹²

Future teachers must acquire the appropriate competences in the course of their education and gain specific professional knowledge in relation to ESD, as they are responsible for transforming future generations into the co-designers of a sustainable society. ESD is therefore a tremendous challenge for the education sector, and we all need to rethink educational processes. The aim of the project “BNE^{Room}”¹³ is to help address this challenge. The digital escape room is an interdisciplinary research and teaching project in university teacher education in the context of ESD, which will be carried out

in Germany. Teacher education is structured in terms of subject sciences and subject didactics in Germany, – as illustrated in Figure 1. In order to facilitate interdisciplinary exchange and networking among future teachers in university, as is necessary for ESD, we will test the interdisciplinary escape room.

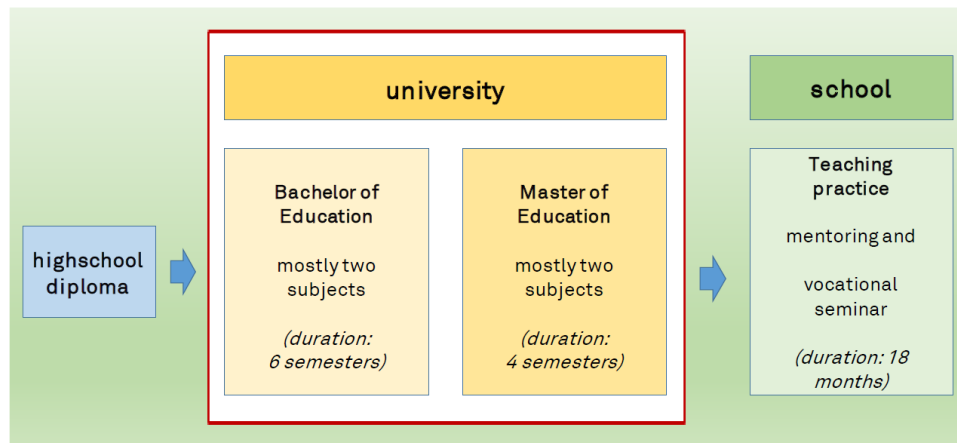


Figure 1. Teacher education in Germany.

INTERDISCIPLINARY RESEARCH AND TEACHING PROJECT: “BNE^{ROOM}”

For this interdisciplinary project, we are developing a digital escape room which combines a point-and-click-adventure game, a live-action-role-play, and a treasure hunt. The benefit of the project is that it brings together interdisciplinary student groups to solve puzzles together. By drawing on different knowledge bases, they aim to reach the goal together, i.e., to complete the set task as a team. In this way, the students learn with a narrated challenge in a team.

Social-constructivist teaching and learning approach

In this project, future teachers deal intensively with SDG 10 (Reduce Inequality) and are tasked with finding solutions to eliminate exemplary inequalities. With this, the project follows a social constructivist teaching and learning approach: „From a pedagogical point of view, escape rooms are based on a social-constructivist approach.”¹⁴ Learners construct their own knowledge based on their real-time experiences of advancing through several challenges in the escape room; they are asked to face new and often complex problems, which can be solved by interacting with their peers and getting support from their tutor.¹⁵ The students are prepared for future tasks and learn valuable competencies that are essential for future teaching. In this way, the whole institutional approach can also be realized at this level.

Aims and alignment

The interdisciplinary project “BNE^{Room}” pursues the following goals: Its overall aim is to implement ESD in teacher education through an ESD-oriented escape room. Further central goals are: (1) the development of a digital escape room on ESD for student teachers, including its conceptualization and the development of a storyline; (2) testing and realization with the students, and (3), ultimately and importantly, the goal of scientific education.

The project will develop and test an escape room with content based on a sustainability goal. We selected the 10th SDG (Reduce Inequality), because it bundles the challenge in education in a special way and can be used as a topic to initiate interdisciplinary exchange between student teachers. The

“BNE^{Room}” layout simulates a school building with classrooms in which students work on different situations. The simulation includes avatars, who are the student teachers dealing with concrete tasks and dilemmas related to the 10th SDG. The tasks and dilemmas can only be solved in an interdisciplinary manner working in a small group. Hence, the student teachers will have to coordinate, discuss, and find common solutions. They will work on topic-specific tasks, which focus, for example, on inclusion, religion, or poverty as a category of difference.

Structure of the escape-room-based teaching unit and research approach

Within the project “BNE^{Room}”, the seminar structure will consist of three parts. In the first part, the topic will be included in the respective teaching degree programs from a disciplinary or educational science perspective. The students will work within their subject discipline (in our case, theology, vocational education, or educational science), – as illustrated in Figure 2.

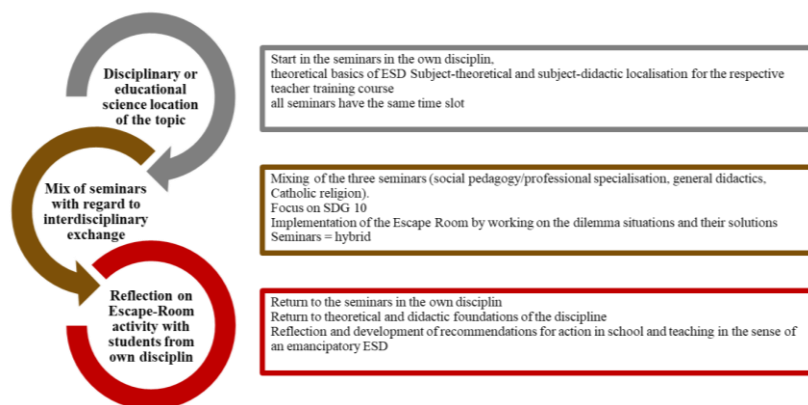


Figure 2. Structure of the escape-room-based teaching unit in university teacher education and research approach of the project

After the first part, the whole group will be divided into interdisciplinary seminar groups. Online events with all seminar groups will take place. The escape room will be used and examined, with the students complementing each other due to their different disciplines. The third part will consist of reflection in seminars in the student teachers' own discipline. Here, the student teachers will have time to exchange ideas and clarify what worked well and what did not. At the same time, the experiences with the escape room will be used to derive initial ideas for conceptual and pedagogical-didactic action in schools and to establish a link to an emancipatory ESD.

Within the framework of the accompanying research, we will apply a Designed-Based-Research approach (DBR), which allows for the further development of teaching-learning arrangements. Although this approach is still more commonly used in research into subject didactics, we will use it for this educational sciences project, because a discrepancy experience in educational practice is important as a starting point in the approach.¹⁶ It is precisely this focus on a school problem that will be taken into account when developing and evaluating the escape room with the SDG 10 "Reduce Inequality" as a topic. For example, students' academic performance in Germany is still related to their family background.¹⁷ Hence, it is important to place the 10th SDG at the center of school practices and to make future teachers aware of the problem. The escape room will enable student teachers learn collaboratively how to deal with challenges on this topic. Therefore, it can be understood as an intervention within the framework of the accompanying research. In educational science, DBR can be classified as development research in the field of practice research so that, according to Lehman-Wermser and Konrad,¹⁸ its aims are often bi-polar. On the one hand, it aims to solve relevant problems from educational practice (*here*: reducing the inequality of opportunities in

the education system) and, on the other hand, it aims to yield results that contribute to the development of theory (*here*: the benefits and limitations of implementing a digital escape room on ESD in teacher education). In order to evaluate the digital escape room, the students will be surveyed with questionnaires as part of a pre-post design. In addition, the students will be videotaped while using it and in following group discussions on the results of the Escape Game. This will be done in the “Labprofil” of the TU-Dortmund (<https://doprofil.tu-dortmund.de/labprofil/>), which has the appropriate technical equipment for developing and exploring different scenarios, such as the use of an escape room. The aim of the analysis of this data is, to evaluate how purposeful the dilemma situations are for empowering the students. At the same time, the aim is to gain insights into the inner structure of students' negotiation skills and to record which (interdisciplinary) knowledge they claim. Against this background, the evaluation will be carried out using the documentary method.¹⁹

CONCLUSION

In conclusion, the interdisciplinary project “BNE^{Room}” in teacher education aims to implement ESD more strongly in teacher education. By doing that, it acknowledges how ESD is changing school and university educational processes. Accordingly, teacher education needs to change in order to provide future teachers with the skills and abilities they need to cope with the challenges in the field of education. Therefore, a special focus of the project is the development, implementation, and evaluation of a digital escape room. After testing and evaluating, the interactive escape room will be further developed for other SDGs and for other subjects. We are convinced that teacher training needs a stronger interdisciplinary and digital orientation in order to meet the changing circumstances.

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THE PERCEPTUAL SHIFT RULE AS AN EDUCATIONAL TOOL

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INTRODUCTION

This paper focuses on using immersive techniques to support education, personal growth, and positive learning habits in response to the adverse effects of the pandemic on mental health. It proposes a “whole-person” approach to learning, which includes integration of the five senses and psychological and social components and focuses on the personalization and maturity of the student. The “Perceptual Shift Hypothesis” and “Perceptual Shift Rule” (PSR) emphasize a holistic view of learning, focusing on independent thinking and feeling in an era of excessive information.¹ The paper presents evidence-based tools to empower skills and promote perceptual shifts in learning and teaching.

We look at the use of digital and non-digital immersive tools as effective methods for positive transformation. The PSR combines experiential learning and absorption to create a holistic, supportive learning experience that leads to positive transformation. This approach can be applied to any subject and creates an effective meta-learning style. The combined methodologies resulted in immersive experiences supporting whole-person and embodied learning.

The triple-loop learning approach provides a comprehensive and deep understanding of the subject matter, leading to better decision-making and data analysis. It involves evaluating and potentially modifying an individual’s beliefs and assumptions through an immersive learning experience guided by teachers. This approach results in embodied transformation and growth, leading to perception shifts and new beliefs.² At the third loop level, triple-loop learning can involve evaluating and modifying an individual’s assumptions and beliefs about a particular subject or task through a fully immersive learning experience.³

An embodied transformation entails integration and whole-person understanding, somatic and emotional synthesis, and the creation of new habits. Learning becomes a whole-person process that helps synthesize the new practices learned into a life/learning style for lasting transformation. By using digital and non-digital techniques, it is possible to develop a sense of presence that will support a more integrated self and increase resilience and curiosity rather than reactivity and neurosis.⁴

Because of the adverse effects of the pandemic, including increased anxiety and depression, we suggest that skills such as adaptability, self-leadership, and clear thinking are essential in this new, fast-changing world. Education must embrace immersive tools and technologies to address these needs, focusing on the whole person, five senses integration, and psychological and social aspects.

Immersive Learning

Research has shown that immersive learning effectively promotes personal transformation and perceptual shift, as demonstrated in a study of 50 participants where it was found to support the depth and breadth needed for a change in perception.⁵ The study used a combination of VR experience, online workshop, and holistic approaches such as experiential learning, art therapy, and mindfulness practices. Participants reported improved quality of life, physiological processes, self-awareness, expression, and perception of death. The results highlight the importance of addressing the whole person in teaching and learning and suggest that the approach could be helpful in mental health treatment and overall well-being.⁶

The results of this study demonstrate the potential effectiveness of holistic, immersive approaches in promoting personal transformation and the potential for a perceptual shift. It highlights the importance of addressing the whole person, including emotional, mental, and spiritual well-being, in teaching and learning. The combination of experiential learning, art therapy, and mindfulness practices provided a powerful tool for personal growth, learning and healing. The study suggests that this approach could be beneficial in other areas of mental health treatment, learning and in promoting overall well-being.

The study found that VR is more effective than online workshops in promoting personal transformation and reducing stress, anxiety, and fear of death. This is attributed to VR's immersive nature, which enables a deeper level of engagement and a more authentic experience than online workshops that limit individuals to a 2D screen.

In an immersive environment, whether digital or non-digital, students can learn using their strengths.⁷ Students can engage with the material in a way that is most meaningful to them. This can include visual, auditory, and kinesthetic learning styles, allowing them to learn using their strengths. For example, a visual learner student may benefit from interactive simulations and visual aids. In contrast, a student who is an auditory learner may benefit from lectures and discussions. Additionally, immersive environments can provide hands-on learning opportunities, which can be especially beneficial for kinesthetic learners. Overall, an immersive environment allows for a more personalized and engaging learning experience, enabling students to learn using their strengths.

The basic premise is using a human-centered approach to education focusing on flow states, whole-person learning, and contemplative strategies that support the transformation of the students into their mature personality structure which supports effective cognitive skills such as discernment. Through maturation and transcendence, the expectations and constructions of our personality structure and object relations,⁸ it is possible to assimilate, cooperate and engage in knowledge and interpersonal dynamics in a new way.

Immersive learning can cater to the depth and breadth needed to succeed professionally in several ways. Depth of learning allows learners to experience a subject or task in a highly realistic and interactive way, which can help them gain a deep understanding of the subject matter. For example, in a virtual reality training program for surgeons, learners can practice surgical procedures in a simulated environment, allowing them to gain a deeper understanding of the procedures and develop their skills. From a non-digital perspective, immersion can be achieved through project-based, team-based, and action-based learning, for example. All these methodologies of learning increase the sense of presence.⁹

The breadth of learning that supports learners acquire a wide range of skills and knowledge, as it often involves multiple modalities such as visual, auditory, and kinesthetic learning. A whole-person approach can cultivate a diverse skill set that can be utilized in real-world scenarios and professional settings. This type of learning is immersive by nature.

Immersive learning can also help learners apply their knowledge and skills in a realistic, simulated environment, allowing them to practice and develop skills similar to the real world. This can help learners better understand how to apply their skills in professional settings and prepare them for career success.

Overall, immersive learning can provide learners with a highly engaging and realistic educational experience that can help them develop the depth and breadth of skills and knowledge needed to succeed in the next century.

Absorption and Immersion in Support of PSR

As mentioned, one of the primary benefits of immersion and absorption is that they can enhance focus and concentration. When fully immersed in an activity, our attention is fully engaged, and we can focus more intensely on the task.¹⁰ This can lead to improved performance and productivity and more remarkable accomplishment and satisfaction.¹¹

One of the main ways that immersion and absorption can reduce anxiety is by providing a distraction from negative or anxiety-provoking thoughts. When a person is fully immersed in an activity, they may be less aware of their surroundings and may not be paying attention to any anxiety-provoking stimuli. This can help break the negative thinking cycle that can perpetuate anxiety.¹²

In addition to providing a distraction, immersion and absorption can also have a calming effect on the body and mind. Engaging in activities that promote these states has been shown to activate the relaxation response, which can help to reduce physical and emotional stress. This can decrease anxiety symptoms such as racing thoughts, muscle tension, and difficulty sleeping.

Immersion and absorption can therefore provide a sense of accomplishment and enjoyment, boosting self-esteem and self-confidence. This will inevitably result in some sort of a flow experience.¹³ These positive emotions can counteract anxiety and help to create a more positive outlook on life.

Stress reduction, therefore, increases learning capacity. As seen in recent research, immersion and absorption increase the learning capacity.¹⁴

The same conclusion was reached by the General Adaptation Syndrome (GAS), a model proposed by Hans Selye in the 1950s, outlines the body's response to stress in three stages: alarm, resistance, and exhaustion.¹⁵ In the alarm stage, stress triggers the activation of the sympathetic nervous system and the release of stress hormones such as adrenaline and cortisol, increasing heart rate and blood pressure to prepare the body for action. In the resistance stage, the body tries to adapt to the stressor by using its resources. If the stressor continues, the body will reach the exhaustion stage, where it is unable to maintain its physiological responses and becomes susceptible to illness and other adverse effects. By using techniques like immersion and absorption, the effects of exhaustion can be reduced.

In contrast, the growth model is a psychological approach explaining how people develop through their experiences.¹⁶ It asserts that people are naturally inclined to grow and improve and can do so through various learning and development opportunities. This growth model results from ongoing third loop learning and integration of the whole person. It highlights the positive outcomes that can stem from challenges and difficulties, leading to changes and shifts in perception and overall transformation of the person.

A study on virtual reality (VR) as an intervention for personal transformation found that immersive technology can significantly reduce stress and change self-awareness leading to a higher availability for learning.¹⁷ The study on virtual reality (VR) as a tool for personal transformation highlights the potential of immersive technology to increase learning capacity and openness to experience. By reducing stress and altering self-awareness, participants were able to gain deeper insights into their subconscious and emotional processes. This led to a stronger sense of self and a deeper understanding

of themselves and their relationships with others. The VR experience also fostered a greater sense of inspiration, embodiment, and connection to the physical world, allowing participants to feel more authentic and open to their own needs and stories. The impact on emotions, such as the ability to observe their own emotional lives from a new perspective, further supported this increased sense of self and openness to experience. Overall, the VR experience helped participants develop a more profound sense of presence, self, and increased awareness of their perceptions within an immersive environment, even after the experience ended, this led to an increased learning capacity. The study concluded that repeated exposure to the VR environment can bring about physical memory and a deeper understanding of the self, emotions, and relationships. Used in this manner, VR can support personal transformation and lead to improved self-awareness, growth, and openness to learning. Participants reported increased insight into their subconscious and emotions, a deeper understanding of themselves and their relationships, and a sense of safety and transcendence.

The VR experience positively impacted learning by increasing self-awareness, reducing stress and anxiety, and promoting personal growth. It enabled participants to understand their learning styles and emotional processes better. This led to increased authenticity, self-observation, and self-management, which improved the learning experience and retention of material. The VR experience created a more personalized and engaging learning experience.

Triple Loop Learning and Teaching as a Part of Immersive Learning Process

Triple Loop Learning and Teaching is a component of immersive learning that emphasizes hands-on, interactive experiences and the transformation of beliefs, skills, and behaviors, leading to a journey of growth and learning towards greater consciousness by gaining insight into unconscious thoughts, emotions, and actions, allowing individuals to become aware of their unconscious patterns and behaviors and make conscious and intentional choices.

By gaining insight into unconscious thoughts, emotions, and actions, individuals can become aware of their unconscious patterns and behaviors and make conscious and intentional choices. Mindfulness meditation, journaling, intention and goal setting, and other contemplative learning tools and techniques can aid in this process. This process connects with the levels of learning proposed in the Triple-Loop theory. The Triple-Loop Theory recognizes three learning levels: Single-Loop, Double-Loop, and Triple-Loop. Single-Loop learning involves improving performance within a set framework, and Double-Loop learning involves questioning and changing the framework. Triple-loop learning involves examining and rethinking the underlying values and beliefs of the framework. This journey toward consciousness is a continual process of growth and learning.¹⁸

Triple-loop learning is a type of learning that involves the evaluation and modification of an individual's underlying assumptions and beliefs. It is one of three types of learning identified by Chris Argyris,¹⁹ the others being single-loop learning and double-loop learning. In immersive learning, triple-loop learning can involve evaluating and modifying an individual's assumptions and beliefs about a particular subject or task through a fully immersive learning experience.²⁰ This can involve simulations, role-playing, or other interactive and immersive learning experiences that allow learners to practice and apply what they have learned in a realistic, simulated environment.

As has been mentioned transformation through immersion refers to the idea that an individual can undergo a transformation, learning experience or change by fully immersing themselves in an activity or experience. This transformation can involve a change in an individual's mindset, behaviors, skills, or values. It may be the result of the immersive experience itself or the process of learning and growing that occurs during the experience.

The concept of transformation through immersion involves a change in an individual's mindset, behaviors, skills, and values through fully immersing in an experience or activity and being in flow. This can be facilitated by engagement, focus, self-reflection, and interactions with others. Transformative whole-person pedagogy leverages experiential and triple-loop learning to create a deeper understanding and lasting transformation. The use of digital and non-digital immersive tools supports the development of presence, resilience, and curiosity and makes learning a holistic and integrated experience.

PERCEPTUAL SHIFT RULE

The PSR emphasizes the importance of immersion and absorption in the learning process. When learners are fully engaged with the material, they experience a sense of presence and may enter flow states. As illustrated in Figure 1 the PSR operates in a circular manner, with the elements of Being, Perception, Understanding, and Expression being interrelated and impacting one another.

Being refers to the individual's physical, emotional, and mental well-being. Perception refers to how they interpret their experiences and the world. Understanding involves making sense of perceptions, while Expression is how individuals communicate their understanding. The PSR aims to create a holistic and immersive learning experience that addresses these elements for deeper understanding and personal growth.

The PSR model emphasizes immersion and absorption in the learning process for deeper understanding and personal growth. It operates by addressing the individual's Being (physical, emotional, and mental well-being), Perception (interpretation of experiences), Understanding (making sense of perceptions), and Expression (communication of understanding). Immersive teaching techniques support the development of Understanding and Expression. There is a neuroscientific basis to the PSR, with theories of attention and the amygdala influencing perception, and the prefrontal cortex and mirror neurons playing a role in presence. Presence is crucial for transformative learning, as it enables individuals to become fully engaged with their thoughts, feelings, and experiences, leading to greater self-awareness, clarity, and insight. Transformation through immersion can result in a change in mindset, behaviors, skills, or values.

Research has shown for example that attention can be influenced by various factors, such as an individual's emotional state, expectations, and prior knowledge. This suggests that an individual's perception of a situation or event may be influenced by how they allocate their attention and the factors that influence it.²¹

Transformation through immersion refers to the idea that an individual can undergo a transformation or change due to fully immersing themselves in an activity or experience. This transformation can involve changing an individual's mindset, behaviors, skills, or values: Their Being. It may be the result of the immersive experience itself or the process of learning and growing that occurs during the experience.

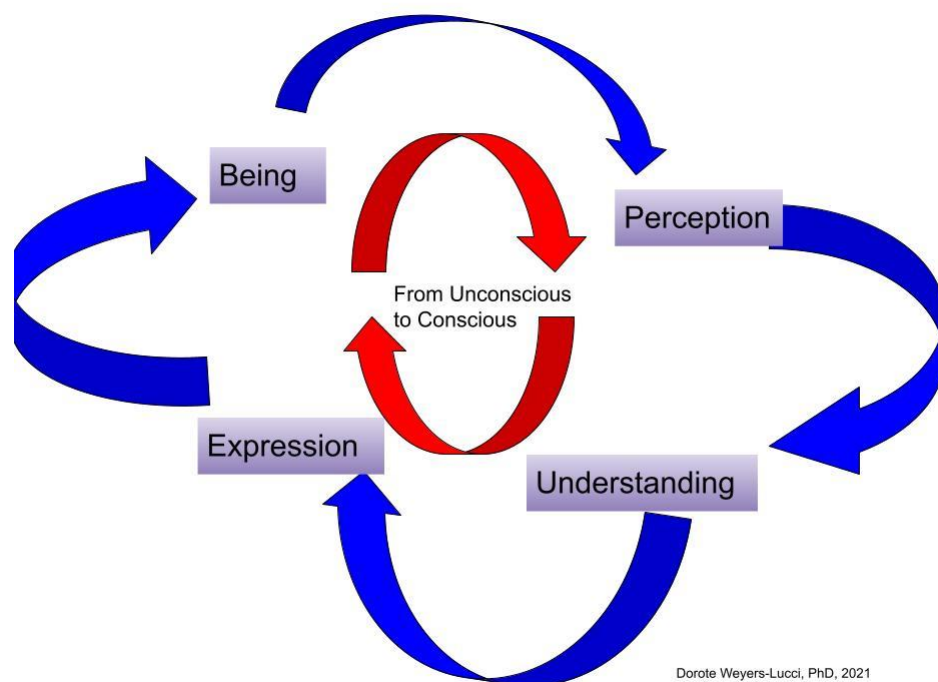


Figure 1. Perceptual Shift Flow.

Steps in the PSR and Applied Transformative Teaching

The perceptual shift transformation is a process that involves a change in an individual's perception of the world around them. Various experiences, including personal growth, exposure to new ideas, and changes in circumstances, can trigger this process. The following steps are involved in the perceptual shift transformation and how this process can lead to personal growth and transformation.

Step 1: Exposure to new ideas and experiences:

The first step in the perceptual shift transformation is exposure to new ideas and experiences. This can come from reading new books, attending lectures or workshops, or interacting with people with different viewpoints and experiences. Through this exposure, an individual begins questioning their existing beliefs and perceptions and opens themselves up to the possibility of change.

Step 2: Discomfort and uncertainty:

As individuals encounter new ideas and experiences, they may feel uncomfortable and uncertain. This is a natural part of the process, as the individual is being challenged to consider new perspectives and ways of thinking. The individual needs to embrace this discomfort and uncertainty, as it is through this process that personal growth and transformation can occur.

Step 3: Reflective thinking:

To fully embrace new ideas and experiences, the individual needs to engage in reflective thinking. This involves thinking about and processing the new information encountered and considering how it fits with one's existing beliefs and values. Reflective thinking can be facilitated through journaling, discussion with others, or simply sitting with and contemplating new information.

Step 4: Integration and application:

As the individual continues to engage in reflective thinking, they may begin integrating the new ideas and experiences into their existing belief system. This process may involve modifying or discarding certain beliefs and adopting new ones. It is also vital for the individual to consider how they can apply the new ideas and experiences in their daily life to incorporate them into their worldview fully.

Step 5: Personal growth and transformation:

As individuals integrate and apply new ideas and experiences, they may experience personal growth and transformation. This may result in increased self-awareness, improved relationships, or a greater sense of purpose and meaning in life. Ultimately, the perceptual shift transformation can lead to significant personal growth and transformation as the individual expands their perspective and understanding of the world around them.

Transformative teaching involves guiding individuals to experience personal growth and transformation through a perceptual shift, which is achieved through exposure to new ideas and experiences, reflective thinking, and integrating the learning into their lives. This leads to a deeper understanding of the world and a higher quality of life.²² Immersive practices and addressing challenges to learning increase the effectiveness of transformative teaching, resulting in personal transformation no matter the subject being taught.

TRANSFORMATION THROUGH IMMERSION

Transformation through immersive learning is an innovative approach to education that leverages interactive, experiential, and technology-driven environments to enhance learning outcomes, skill development, and personal growth. This approach is rapidly gaining popularity, changing the traditional view of learning and development. Immersive learning environments, whether digital or non-digital, provide a highly engaging and interactive experience that can increase retention and understanding as learners actively participate in the learning process. They can also be customized to suit individual learner's needs and goals and accessed remotely, making them accessible to learners who may not have access to traditional classroom-based education.

Immersive learning environments can be customized to suit individual learners' specific needs and goals, making them an effective tool for personalizing education and training.²³ This can be particularly useful for learners needing help with traditional classroom-based learning methods.

Finally, immersive learning environments can be accessed remotely, making them an ideal option for learners who may not have access to traditional classroom-based education. This can be particularly beneficial in rural or underserved areas, where access to education may be limited or to reach busy business executives.

The Virtual Reality (VR) intervention in the above mentioned study demonstrated a marked improvement in personal transformation,²⁴ with significant reductions in stress and anxiety and an increase in openness to experience compared to an online workshop. This is attributed to VR's immersive nature, enabling learners to engage and fully immerse themselves in the learning experience fully.

Furthermore, VR accesses the unconscious mind where assumptions and beliefs reside, enabling reevaluating these and leading to a shift in perception - a transformative experience. Whole-person pedagogy through immersive learning is a practical and effective educational approach. It provides a holistic and immersive experience that addresses the entire individual, resulting in deeper understanding, personal growth, and meaningful change.

Whole Person Shifts—The Transpersonal 3 Centers in Transformative Teaching

Transpersonal psychology is a branch of psychology that focuses on the spiritual and transcendent aspects of human experience.²⁵ One key concept in transpersonal psychology is the idea of the “three centers,” which refers to three different aspects or centers of the self: the ego, the heart, and the spiritual.²⁶

The ego center is the aspect of the self that is focused on one's identity, self-image, and ego. The heart center is the part of the self-related to emotion, empathy, and relationships with others. The spiritual center is the aspect of the self-focused on spiritual growth and connection to a higher power or purpose.

In transpersonal psychology, each of these centers is believed to be essential and can influence each other. For example, the ego center may influence the heart center by shaping an individual's emotions and relationships with others. In contrast, the heart center may influence the ego center by influencing an individual's sense of self and personal identity.

Transpersonal psychology seeks to integrate these three centers and help individuals develop a sense of balance and harmony among themselves. This can involve various immersive techniques ranging from meditation, spiritual inquiry, and self-reflection, which can help individuals develop a greater understanding of themselves and their place in the world. This approach leads to whole-person transformation and refers to a process of personal growth and development that goes beyond the individual self and encompasses the spiritual and transcendent aspects of the human experience. From a transpersonal psychology perspective, whole-person transformation is often understood through the concept of the heart, head, and gut aligning and transformation, bringing about a fully integrated person.

The heart center is often considered the most vital of the three centers, as it encompasses the emotional and transcendental aspects of the human experience. It is closely associated with love, compassion, and connection to the higher purpose, inner wisdom, or higher self. This center is believed to be the origin of authentic transcendental experiences and the gateway to personal transformation. Nurturing the heart center is crucial for transcendental growth, emotional intelligence, and overall well-being.

Whole person transformation involves integrating and aligning the heart, head, and gut centers. This process involves cultivating the heart center as the primary source of authentic transcendental experiences while balancing the head and gut centers in a way that allows for practicality and understanding. Through this process, the individual may experience a sense of wholeness, authenticity, and connection to their higher self, leading to significant personal growth and development.

Triple learning models meet the three-center focus of transpersonal psychology in that the approach involves three components in the third loop: experiential learning, cognitive learning, and affective learning. Experiential learning refers to hands-on, interactive learning experiences that allow individuals to apply what they have learned in real-world settings. Cognitive learning refers to acquiring knowledge and understanding through observation and analysis, while affective learning refers to developing attitudes, values, and emotions.²⁷

Incorporating transformative whole-person teaching in both triple learning models and experiential learning enhances the impact of these approaches. By encompassing cognitive, affective, and behavioral learning, triple learning models aim to bring about a more comprehensive and holistic change in learners. Meanwhile, experiential learning through hands-on and interactive activities can foster a strong sense of *presence* and engagement, leading to deeper immersion and transformation. Together, these techniques aim to facilitate personal growth and development that goes beyond acquiring knowledge and skills and encompasses the whole person, including their mindset, behaviors, values, and emotions. The immersive and whole-person orientated approach allows for deeper connections between the learning experience and real-life scenarios, promoting lasting impact and meaningful change.

CONCLUSION

In conclusion, the pandemic has significantly impacted individuals' mental health and well-being, highlighting the need for education to focus on whole-person development and positive learning habits. The Perceptual Shift Hypothesis and the PSR propose a holistic approach to learning and teaching that emphasizes skillfulness, content, and independent thinking and feeling in an age of overwhelming information.

Immersive techniques can combine experiential learning with absorption and can support positive transformation and learning. This is because immersion and absorption can boost self-esteem and self-confidence, and minimize stress, resulting in an enhanced learning capacity.

The PSR combines these techniques to guide learners through the triple-loop learning process for embodied transformation and growth. The Triple Loop process and its pedagogy are components of immersive learning and emphasizes hands-on, interactive experiences and the transformation of beliefs, skills, and behaviors, helping individuals gain insight into unconscious thoughts, emotions, and actions to become aware of their patterns and make conscious choices.

The use of immersive techniques and technology, such as VR, as an intervention for personal transformation, has been shown to reduce stress, increase self-awareness, and enhance learning capacity. The results showed changes in self-awareness, connection to others, emotions, and understanding of the self beyond the mind, leading to a deeper understanding of needs, stories, and vulnerability.

Immersion and absorption significantly support the PSR by enhancing focus and concentration, reducing anxiety, and promoting a sense of accomplishment and enjoyment. Immersion and absorption can distract from negative thoughts and activate the relaxation response, decreasing anxiety symptoms and stress. Additionally, immersion and absorption can boost self-esteem and self-confidence and minimize the negative consequences of stress.

The PSR focuses on creating a sense of *presence*, enabling a deeper understanding, and integrating the subject matter to be studied fully. The circular notion of Being, Perception, Understanding, and Expression highlights the interconnectedness of these elements in the learning process and the importance of addressing them to achieve a profound and lasting impact on the learner. The PSR's concept of *presence*, a crucial element in the transformation process, allows individuals to fully engage with and explore their thoughts, feelings, and experiences. While more research is needed to understand the neuroscientific basis of the PSR fully, several theories and findings from neuroscience may help explain the concept. The role of attention, the amygdala, and the prefrontal cortex in perception and presence are some potential neuroscientific bases for the PSR. This approach promotes the development of skillfulness, self-awareness, and self-leadership and helps learners to navigate the fast-changing world with clear cognitive capacities and adaptability.

Since Immersive learning is a form of education that uses interactive, experiential, and often digital environments to facilitate learning and skill development, it can include virtual or augmented reality (VR/AR) environments, simulations, and other interactive technologies. Immersive learning environments are designed to replicate real-world situations and scenarios, allowing learners to practice and apply their skills in a safe and controlled environment. They are also designed to provide support and stress-free flow to maximize the learning load. It has the potential to facilitate transformation in learners through active participation and engagement in an immersive environment. A study found that by utilizing an immersive approach to learning that consisted of one Virtual Reality experience and one online workshop, the participants experienced a significant perceptual shift, improvements in their areas of challenge in learning, and changes in their expression through their artwork, an improvement in their quality of life, and an increase in self-awareness.

The PSR is a valuable model in transformative education that can support learning and integration of any materials while emphasizing skillfulness, content, and independent thinking.

With a focus on transformative teaching, the PSR can be used in a targeted manner to create a meta-learning style that guides learners through the triple-loop learning process. This approach supports embodied transformation and growth, reducing stress, anxiety, and depression and having a profound and lasting impact on learners. It helps individuals navigate the fast-changing world with increased cognitive capacities and adaptability, promoting whole-person growth and development.

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A GLOBAL INTERCULTURAL PROJECT EXPERIENCE (GIPE): REFLECTIONS ON COMBINING ONLINE AND ON-SITE PROJECT-BASED LEARNING ACROSS FOUR CONTINENTS

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INTRODUCTION

The concept of "Internationalisation at Home" has gained momentum¹ with the increasing digitalization of education and limitations on mobility.² Collaborative Online International Learning (COIL) is an innovative, cost-effective instructional method that promotes intercultural learning through online collaboration between faculty and students from different countries or locations.³ The benefits of using COIL courses have been widely recognized,⁴ with learners developing intercultural competencies,⁵ digital skills, international education experience,⁶ and global awareness.⁷

However, multicultural communication in project environments can be complex and demand awareness of cultural variations.⁸ The creation and development of effective cross-cultural collectivism, trust, communication, and empathy in leadership is an important ingredient for remote project collaborations success.⁹ This is an area that has been least explored in research on communication in virtual teams.¹⁰

The GIPE projects are mainly carried out as so-called Collaborative Online International Learning (COIL) events. However, to gain a "real world" experience abroad in an intercultural team, students from all partner universities can participate in the Spring School being held for two weeks in Germany and the German students present and hand-over the results in the country of the partner university. The main objective of this research was to examine the experiences of students participating in the GIPE project and to evaluate the effectiveness of the project in enhancing intercultural competencies and fostering collaboration among students from different continents. This paper will also explore the implications of the GIPE project for Education 2.0 considering the COVID-19 pandemic and the future of education delivery and administration transformation.

METHODOLOGY

A mixed-methods approach was employed for populating the contents of this paper. The mixed methods included both qualitative and quantitative data collection with analysis methods. The data collection methods used in this study include:

- **Surveys:** An online survey was administered to the participating students to gather information about their experiences and perceptions of the GIPE project at the end of the Spring School. The survey included questions on the student's perceptions of the project's effectiveness in enhancing intercultural competencies, fostering collaboration among students, and the challenges faced during the project.

- **Interviews:** In person interviews were conducted during the Spring School in Germany to gather in-depth information from students about the project. The interviews were conducted in person during the Spring School in Germany.

- **Document analysis:** Project documents such as project plans, meeting minutes, and reports were analysed to gather information about its execution and implementation.

The data collected through the surveys and interviews was analysed using descriptive statistics and thematic analysis, respectively. The results of the quantitative and qualitative data analyses were then integrated to provide a comprehensive understanding of the project and its effectiveness towards Education 2.0.

OVERVIEW OF THE GIPE PROJECT

The Global Intercultural Project Experience (GIPE)¹¹ funded by DAAD provides students with the opportunity to work together in an international context to promote mutual collaboration between academics and cross-cultural working groups of students from Namibia, Peru, Indonesia, and Germany. This project also aims to enhance the skills and knowledge of students to foster a better understanding of different cultures. The project is open to students from the participating universities, with up to 8 students from each university receiving a DAAD scholarship to cover their mobility costs to attend the Spring School or the Hand-Over to the client, respectively. Non-mobile students can also take part in the project and benefit from international teamwork. Additionally, students can receive corresponding credit points (CP) on successful participation and will receive a certificate.

A quadrilateral partnership was conceptualised, building on long-term individual staff and institutional bilateral collaborations of the Westfälische Hochschule with its partner universities in three continents. The program builds on previous successful bilateral student software development projects and aims to provide equal learning opportunities for all students. The program incorporates travelling, client selections from the partner countries, and an emphasis on interdisciplinary projects.

Thus, the main objective of GIPE is to provide students with state-of-the-art skills and knowledge while working in a distributed multicultural and multidisciplinary team, to strengthen collaboration among its partner universities and promote intercultural exposure through 'internationalisation@home' activities.

The overall framework

The DAAD established its program "UAS.International" in order to strengthen internationalisation efforts at German Universities of Applied Sciences. Within this program, GIPE received a four-year funding from 2019-2023. In the beginning, representatives from all four partner universities congregated in Germany to plan the implementation of the framework. A German representative then visited all partner universities to promote GIPE and to ensure institutional commitment and support.

At the core of the GIPE framework are the annual student projects running from February to June/July, preceded by a client and project selection, evaluation of students' applications, awarding scholarships as well as requirements gathering and detailed project planning with the selected client (see Figure 1).

The annual projects consist of four phases:

- 1. Online collaboration preparation:** A virtual global kick-off event brings all stakeholders together. Through targeted training, students join the project in intervals depending on their universities' lecturing schedules.
- 2. Two-week face-to-face phase:** All participating students and one university representative meet at "Spring School" in Germany for team building, intercultural exposure, and mixed-team-setup.
- 3. Online collaboration:** The students continue working on their project tasks in mixed teams using various online collaboration tools.
- 4. One-week project-touchdown and hand-over:** The German students travel to the client situated in one of the partner countries.

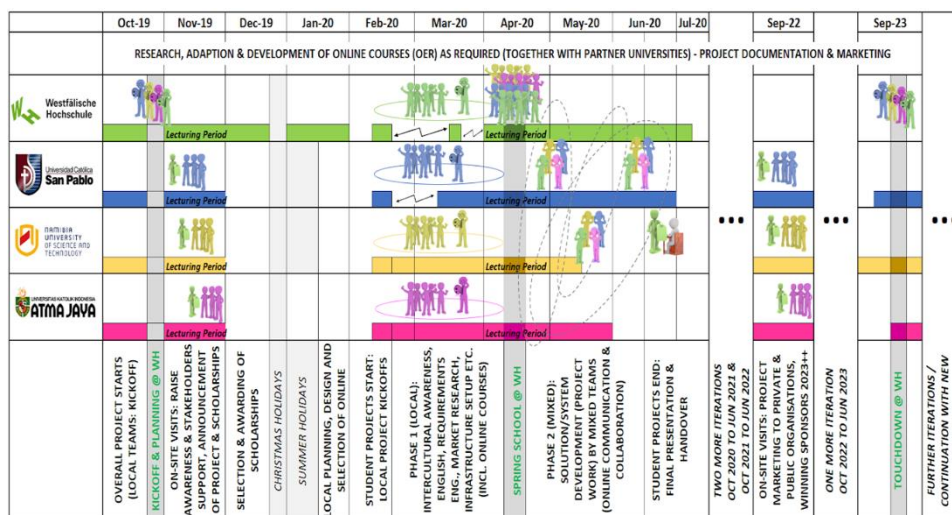


Figure 1. The Masterplan for the GIPE Framework 2019-2023.

REFLECTIONS ON COMBINING ONLINE AND ON-SITE PROJECT-BASED LEARNING

Colegio San Juan Apostol, a private school in the outskirts of Arequipa, Peru, was chosen as client for the GIPE 2022 project which was a well-organised and successful endeavour, thanks to its clear structure and effective use of technology.

The project was divided into five sub-streams (Virtual Teaching; Personal Data Infosystem; Cultural Heritage, SW Backbone, and Network Infrastructure) providing a clear and organised approach to the work at hand. The use of Zoom other online collaboration tools helped to facilitate communication and collaboration between students and faculty from different countries before Spring School. The Spring School itself was a positive experience for students, as they were able to learn from each other, build relationships, and gain a deeper understanding of different cultures. The project was able to overcome the challenges of language and cultural barriers to create an inclusive and collaborative learning environment. Since the entire project was based on a mobile application, another challenge was to find solutions that could be implemented with the existing infrastructure. Limited access to technology among students at the Colegio San Juan Apostol also posed a real problem. Only 30% of the students had access to a laptop, and there was only one low-range or mid-range Android smartphone per family. Additionally, most of the 800 students lived 2-3 km away from school, making it difficult for them to access the Internet.

Ultimately, the project was able to meet its objective which was to create a holistic application, wherein children can access learning materials online, parents can view important information about

their children without physical presence in the school, and teachers can view timetables and communicate with parents.

Lessons learned from the Spring School in Germany

The aim of GIPE is to provide a collaborative platform for students, clients, and facilitators to work on a project together, learn from each other, and form friendships. Participants found the experience academically and culturally very rewarding and were personally enriched by the program. Figure 2 quotes some testimonials. They reported having learned new skills, gained work experience, and understood different perspectives. They also enjoyed meeting people from other countries and learning about their cultures. Additionally, they all express that the experience of working with an international team was challenging but rewarding, and that they have a lot of positive memories from the experience. Many of the students also report that they have grown professionally and personally because of the program.



Figure 2. Some Selected Student testimonials per region.

The benefits of incorporating guest lectures as an add-on to local classes was noted as a best practice, which can be incorporated in future projects. The Spring School also provided inspiration for re-designing curricula in partner universities, specifically project-based learning in Namibia. Further research is needed to address and measure the effects of the intercultural learning experience. Additionally, the Spring School revealed a missing link to social sciences towards effective evaluation of the GIPE program.

The Spring School also emphasised the importance of onboarding and team building as essential components of the program. The focus on incoming students and leisure time activities helped create a positive and inclusive atmosphere. However, it was noted that a few responsibilities among the students were unclear during the final project phase.

The GIPE 2022 project provided valuable learning opportunities for students in a cross-cultural and international work setting, which helped to expand their global perspective and understanding. The use of COIL as the main mode of project collaboration allowed students to work together in a virtual environment despite time differences and language barriers. The blend of online and on-site project-based learning was effective in providing them a comprehensive learning experience. The Spring School helped strengthen students' collaboration and intercultural empathy.

Comparison of online and on-site project collaboration modes

Based on the following four themes, we evaluated the positives or negatives of the online and on-site project collaborations.

Technical

From the technical perspective, the GIPE 2022 project was well-managed, with connection issues being resolved leading to more productive project meetings onsite. Time differences were not an issue as the participants were all in the same time zone, unlike in earlier online schools. For troubleshooting technical difficulties, alternative solutions were availed such as access to onsite computer labs and more stable Internet connectivity which helped students research solutions well and progress on delivering project milestones.

Social

The social aspect of the GIPE 2022 project was favourable for the project's success, the environment and atmosphere provided by the host was conducive for motivation, group dynamics and concentration. The morale support from peers was also an important factor in the project, during offline modes, peers shared challenges seamlessly and project guides could extend help for complex encounters. Small experiences like celebrating birthdays in person helped teams bonding together. Interpersonal skills such as teamwork, leadership and social skills are easier to build in offline modes compared to online settings. For students that work best in groups, they draw energy towards completing tasks when they have a team around them. Thus, the Spring School provided a conducive environment to build student camaraderie.

Didactic

The didactic approach of focus and dedication of the GIPE 2022 project was conducive to productivity. The presence of facilitators and guides made it easier to assign tasks, facilitate the work, ask for assistance, and explain assignments. Evaluation of the project can be done online, but personal growth, development, and group dynamics is better evaluated offline. The project interconnections were easily managed, technical issues could be resolved spontaneously, and coordination between big teams is easier to manage offline.

Intercultural

The GIPE 2022 project provided an intercultural experience for students, both online using Zoom and in-person through the Spring School in Germany. The experience of staying together 24/7 provided opportunities for students to explore the cultural differences and similarities. However, the intensity of the intercultural experience can be immersive when students interact physically. The issue of language barriers was overcome using translation tools and the support of multilingual facilitators, blending the different cultures within the team to come up with a cohesive project.

GIPE Specific

The GIPE project brought together students and faculty from four different countries to work on multiple subprojects. The credit-driven approach helped partner institutions to integrate their semester courses into the running GIPE project, providing everyone with a unique opportunity to learn and collaborate in a cross-cultural setting. The Spring School provided a valuable learning experience, giving students and guides access to the host institution's teaching facilities and allowing improved

interactions between students and faculty. This experience not only helped to improve the GIPE project but also laid the foundation for further engagements beyond.

Impact of GIPE on Education 2.0

Education 2.0 entails the use of technology in education to enhance the learning experience¹² and provide more flexibility and accessibility.¹³ It emphasises online learning and remote instruction,¹⁴ and often incorporates interactive and multimedia elements, such as videos, simulations, and virtual reality.¹⁵ The delivery formats for Education 2.0 ranges from various platforms,¹⁶ such as online courses, webinars, and mobile apps,¹⁷ and can be accessed by students from anywhere with Internet connection.¹⁸ Anchored around the goal to provide more personalised and adaptive education,¹⁹ Education 2.0 can help to improve student engagement and outcomes.²⁰ With the rise of COVID-19 pandemics, Education 2.0 became more prevalent as many schools and universities shifted to remote learning.²¹ This was the same scenario the GIPE projects for 2020 -2021 fully operated under. The GIPE 2022 project made use of both worlds – online and offline.

GIPE has had a positive impact on education by promoting cross-cultural understanding and collaboration among students. A major benefit of GIPE allows students to gain first-hand experience of different cultures, which can help to broaden perspectives and develop a more global mindset especially for students without the opportunity to travel or study abroad. Another benefit of GIPE is that it encourages teamwork among students. By collaborating on projects either online or offline, students learn how to communicate effectively with people from different backgrounds and cultures, an important skill in an increasingly globalised world.

The GIPE model has had a significant impact on Education 2.0 in Namibia, particularly considering the COVID-19 pandemic. The first client, the National Commission on Research, Science and Technology (NCRST), testified that the GIPE model was an efficient and cost-effective approach. As a result, they explored the model to implement their regional ICT centres in collaboration with three universities (NUST, IUM, UNAM). The GIPE model presented to school leaders at the Windhoek International School, received much interest for further exploration with learners predominantly in low resourced and urban schools. These present an excellent opportunity for sharing resources, as well as promote peer-to-peer social and technical skills transfer and cultural experiences among learners.

CONCLUSION AND RECOMMENDATIONS

GIPE has provided a valuable opportunity for students from Namibia, Peru, Indonesia, and Germany to work together on a real-world project, fostering mutual collaboration and intercultural competencies. Projects completed from 2020 to 2022 were effective in enhancing intercultural competencies, fostering collaboration among students, and providing a valuable learning experience.

The Spring School program provided a complementary approach, addressing some of its fully online shortcomings and bringing a new perspective to Education 2.0. An offline mode allows for effective packaging and adjustment of learning content, also guided by body language and addressing interpersonal limitations such as lack of morale and comprehension challenges. Additionally, team building for intercultural groups is more effective in an offline setting. However, it is important to consider the environmental impact of an offline approach, as the “going green” campaign favours an online mode in terms of reducing carbon footprint and the associated financial obligations. Despite this, it's worth noting that adjustment periods for time differences still play a role during the Spring School program as students may find it difficult to adjust to a new time zone. These points should be taken into consideration while making decisions on future implementations of the program.

In conclusion, the continued success of GIPE projects so far has created a reference model for building similar collaborative initiatives. It also points towards education delivery and administration transformation in the future. The results of the study can provide valuable insights for educators and administrators in developing similar international collaborative projects and addressing the challenges that may arise during their implementation.

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NOTES

- ¹ Beelen and Jones, 'Redefining Internationalization at Home'.
- ² Phùng and Phan, 'Higher Education in Vietnam and a New Vision for Internationalization at Home Post COVID-19'.
- ³ Kiegaldie et al., 'Implementation of a Collaborative Online International Learning Program in Nursing Education: Protocol for a Mixed Methods Study'.
- ⁴ DeWinter and Klamer, 'Can COIL Be Effective in Using Diversity to Contribute to Equality? Experiences of IKudu, a European-South African Consortium Operating via a Decolonised Approach to Project Delivery.'
- ⁵ De Castro et al., 'Collaborative Online International Learning to Prepare Students for Multicultural Work Environments'.
- ⁶ Jie and Pearlman, 'Expanding Access to International Education through Technology Enhanced Collaborative Online International Learning (COIL) Courses.'
- ⁷ Ceo-DiFrancesco and Bender-Slack, 'Collaborative Online International Learning: Students and Professors Making Global Connections'.
- ⁸ Ochieng and Price, 'Managing Cross-Cultural Communication in Multicultural Construction Project Teams: The Case of Kenya and UK'.
- ⁹ Ochieng and Price, 'Framework for Managing Multicultural Project Teams'.
- ¹⁰ Mukherjee et al., 'Organizational Identification among Global Virtual Team Members: The Role of Individualism-collectivism and Uncertainty Avoidance'.
- ¹¹ A detailed description of the GIPE project ("GIPE framework") and discussion of lessons learned from the first two student projects in 2020 and 2021 can be found in Meyer et al., 'GLOBAL INTERCULTURAL PROJECT EXPERIENCE (GIPE): A Distributed Interdisciplinary Project-Based Learning'.
- ¹² Castro and Tumibay, 'A Literature Review: Efficacy of Online Learning Courses for Higher Education Institution Using Meta-Analysis'.
- ¹³ Kasim and Khalid, 'Choosing the Right Learning Management System (LMS) for the Higher Education Institution Context'.
- ¹⁴ Kaldoudi et al., 'Problem-Based Learning via Web 2.0 Technologies'.
- ¹⁵ Ehlers, *Open Learning Cultures*.
- ¹⁶ Redecker, 'Review of Learning 2.0 Practices: Study on the Impact of Web 2.0 Innovations of Education and Training in Europe'.
- ¹⁷ Bhargava et al., 'Radiology Education 2.0—on the Cusp of Change: Part 1. Tablet Computers, Online Curriculums, Remote Meeting Tools and Audience Response Systems'.
- ¹⁸ Tirziu and Vrabie, 'Education 2.0: E-Learning Methods'.
- ¹⁹ Peng, Ma, and Spector, 'Personalized Adaptive Learning: An Emerging Pedagogical Approach Enabled by a Smart Learning Environment'.
- ²⁰ Collaço, 'Increasing Student Engagement in Higher Education'.
- ²¹ Dhawan, 'Online Learning: A Panacea in the Time of COVID-19 Crisis'.

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THE USE OF VR IN TASK-BASED TEACHING FOR MANDARIN CHINESE

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INTRODUCTION

The technology and theoretical approach to language learning has undergone many innovations in the last few years, especially during the COVID and early post-pandemic periods. Most notable has been the fact that students have lacked the opportunity to go on study-abroad programs to China and in-person communication with native speakers was significantly reduced. With the recent restrictions there is a rising need to transform the vehicle for foreign language acquisition with more task-based and experiential learning using Virtual Reality, which provides an immersive learning environment for learning Chinese. This mode of learning can also give students the ability to experience language, culture, and history better than a solely relying on 2D videos which has been the focus in the past. Imagine having the ability to have students travel through time and around the world without physically going there. The system also has the ability to utilize voice recognition to assist with learning new languages that is an important part of learning Chinese. This study will focus on providing suggestions on the actual implementation of VR applications in Chinese teaching and learning. More specifically, how the VR technology will integrate with the curriculum design at Lehigh University.

Virtual Reality in education

Virtual Reality (VR) is an artificial environment which is experienced through sensory stimuli (such as sights and sounds) provided by a computer and where one's actions partially determine what happens in the environment.¹ There are 3 primary categories of virtual reality simulations used today: non-immersive, semi-immersive, and fully-immersive simulations with the use of Head-Mounted Displays. In this study, we used the fully-immersive Oculus Quest 2 Headset, which is a standalone, all-in-one wireless headset.

The virtual reality environment activates learners' multiple senses through visual, auditory, and tactile stimuli that enhance students' understanding of abstract concepts in a realistic way.² VR has been widely used in science related disciplines, such as biology, chemistry, physics, engineering, architecture, and medicine.³ Lehigh University's Visualization Lab provides technical support for using VR in the classroom. It primarily focused on science and engineering disciplines in the past but are now reaching out to other disciplines as the benefits to students have been realized in recent years.

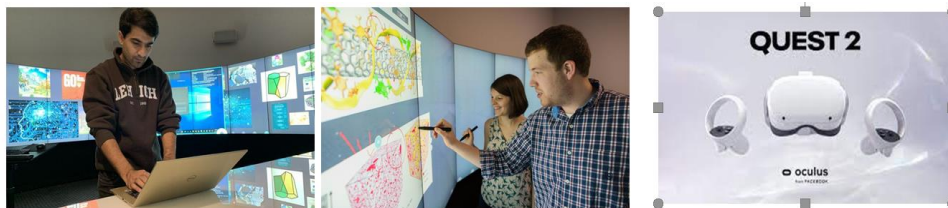


Figure 1. Lehigh Visualization Lab and VR headset

Virtual Reality in foreign language learning and teaching (benefit VS pitfalls)

Over the last few years, a number of new VR applications have been developed or pre-released for trials and researchers have started to examine VR technology for use in foreign language acquisition. However, those teaching the classes have not fully incorporated this technology. As recently as 2021 Blanka Klimova stated that VR is not used in non-native language learning and teaching (NLLT) as much as in natural sciences, which only makes up about 4% of the post-secondary market. After comparing two applications: Virtual Speech VR and Mondly VR, she concluded that the described apps seem to focus on individual learning rather than allowing students to interact with each other.⁴ Her later research on a systematic review of VR states that the current VR shows a positive impact on L2 acquisition when compared to traditional learning methods. However, she believes that only listening and reading skills play a role in the acquisition of L2 using virtual reality.⁵ Other research also indicates that VR focuses on lower-level cognitive skills while higher-level cognitive skills are being slightly neglected.⁶

Another paper by Svitlana Symonenko et al concludes that virtual reality benefits foreign language learning by emphasizing students' ability to socialize in everyday and more professional situations. The study selected the six most popular applications (Mondly, VRSpeech, VR Learn English, Gold Lotus, AltSpaceVR and VirtualSpeech) and compared the main features used for foreign language teaching and learning. Out of this group Mondly rates pretty high in regards to the study's five categories: vocabulary acquisition, grammar learning, speech recognition, real-life situation, and speaking.⁷ At the start of this study, some popular apps such as "Language Lab", "Dino," "VRchat," "immerse me," and "Mondly" were tested out by Lehigh University's Visualization lab. It found that some are promising apps but either in development and or in pre-release. As stated in other research, Mondly, as of right now, is the best rated VR app available on any platform for language learning but it also has limitations.

These studies, while useful, looked specifically at students learning European languages, mainly in EFL learning and do not take into account the specific complexities involved in learning Mandarin where the written (characters) and spoken (Pinyin) forms must be approached differently. It is worthwhile to know how the unique characteristics of Chinese linguistics will impact the rating of the "Mondly" app. Therefore, with the support of Lehigh center for innovation in teaching and learning, this pedagogical research was started aiming to confirm VR as a novel vehicle for task-based Chinese acquisition. This will be shown by comparing the established App Mondly with self-authoring platforms such as Uptale (Figure2).

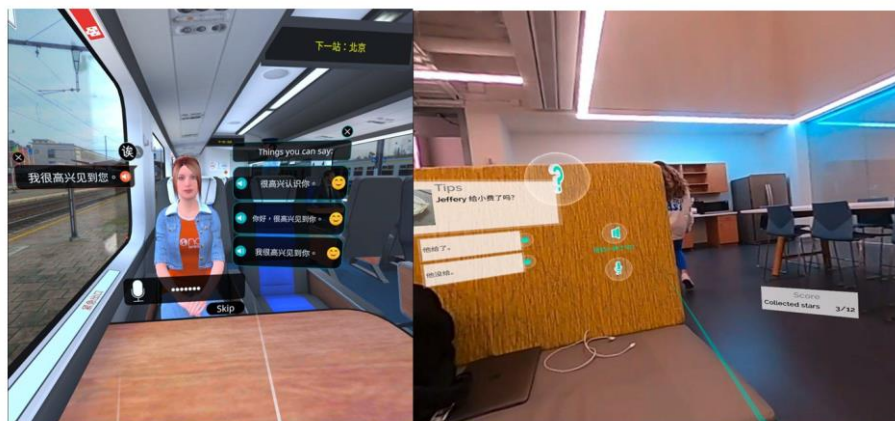


Figure 2. Mondly VR vs Uptale Videos

Figure 2 shows a visual screenshot from the two applications. Mondly App operates 33 different languages, offers two choices between vocabulary and conversation practice. For the vocabulary practice, it contains the following themes: Intro (6 animals), Space, Fruit, Animals, Vegetables (1), and Vegetable (2). In terms of Conversation practice, it offers eight scenarios including Hello, Taking a Taxi, getting a hotel room, asking for a different room, Restaurant, Shopping for clothes, Making appointments, Buying train tickets, etc. Learners choose from three difficulty levels: Beginner, Intermediate and Advanced, to interact with the Avator in each scenario in Mandarin Chinese. It does provide help through hints if you are not sure how to respond.

The second VR application that this study will focus on is Uptale. This application was released in 2022 and has not yet been part of a formal study for foreign language acquisition. It is an Immersive VR authoring platform, which can transform 360 videos into VR experience by self-editing interaction icons. Educator could provide students a real-life scenario where they can be fully immersed in the target language environment, to respond to the questions embedded in the customized VR video. That customized feature provides the possibility to transform in-class presentations or role-plays into an immersive experience. The VR experience that is created can be easily adapted to whatever textbook the class is using to offer another interactive learning environment outside a traditional classroom.

VIRTUAL REALITY (VR) AND TASK-BASED LANGUAGE TEACHING (TBLT)

TBLT pedagogy is a core framework of the Chinese curriculum at Lehigh University with a focus on language in use instead of a focus on form in isolation. It believes language is a tool of communication, the syllabus design features psycholinguistically sequenced communicative tasks that drives learning, teaching and assessment. As shown in Figure 3 below, the key features of TBLT and VR technology are closely connected.

Key features in common	VR	TBLT
Immersion	Contextual environment closest to real-life	authentic language in use in real-life situation
Engagement	Multi-sensory stimuli	Two sensory input (Listening and Reading)
Autonomy	A significant effect on the improvement of students' autonomy	Learner-centered, problem solving.
Goal	Communication goals in each scenario such as ordering food, finding directions.	enable learners to develop implicit, functional knowledge for communication

Figure 3. VR vs TBLT

They both show immersion matters: VR places students in an immersive contextual environment closest to real-life where they would receive language input. The most important principle for TBLT is exposure to the target language. Teaching is about creating authentic conditions for learning. Both TBLT and VR enhance learners' engagement in the language task and encourage learner's autonomy. Learners are in charge of their own learning to achieve the functional communicative goals.

METHODOLOGY

Research Design

In this study both quantitative and qualitative research methods were involved. Since it didn't random samplings of all Chinese learners, it targets one particular intermediate level class, quasi-experimental research was used. Participants included 10 students from the Lehigh University 2nd year Chinese class with ages ranging from 18 to 21. Within this group there were 4 heritage learners and 6 non-heritage learners using the Integrated Chinese Volume 2 textbook.

The independent variable which caused the effect on the dependent variable was VR- facilitated TBLT design, and the dependent one that was being measured was the Chinese learners' language proficiency and pragmatic competence. For the quantitative research part, the Simulated Oral Proficiency Interview (SOPI) rating scale was adopted as an instrument (see Appendix).⁸ In 1986 the Center for Applied Linguistics (CAL) developed SOPIs for Chinese,⁹ it is an alternative format when a face-to-face Oral Proficiency Test (OPT) is not available or desirable.¹⁰ It is a tape-mediated test that ask testers to perform speaking tasks based on pictures, topics, or situation items. Since one of the situation sections in the SOPI elicits learners' functional use of language and measures how learners perform social functions according to the specified context while measuring their oral proficiency, SOPI can be also an instrument to measure learner's pragmatic competence.¹¹ In this study, instead of providing students audio-taped instructions or written stimuli, during the VR video viewing procedure, students responded to pop-up simulated questions in the video while it is paused for a brief time. The questions are pedagogically designed based on real-life scenario contextual situations in the video. Students first answered those questions orally then answered a multiple-choice option through reading comprehension. This VR facilitated immersive environment provides an ideal situation for the SOPI test take place.

In the qualitative part, this research compared students two stages of Virtual Reality facilitated immersive learning experiences, Mondly vs Uptale. This study was held during 2022-2023 school year. It lasted for 10 class periods, 50 minutes each class, and covered two real-life scenarios (Dining and Directions).

Procedure

Students utilized two VR programs aimed at language learning: Mondly and Uptale. Mondly is an application where students engage with an avatar in situations. Uptale uses videos that students create for specific real-life situations (dining, weekend activities, family, etc.). The Uptale videos are customizable and focused on what we are doing in class. Mondly is a set program and cannot be customized for the vocabulary and other aspects of the textbook. In the Uptale VR experience students answer pop-up questions created by the instructor that focus on the video's content. Prior to using the Mondly and Uptale programs students take a pre-test in class using the SOPI scale. Prior to and after viewing the Mondly VR experience students fill out a "Critique" form to evaluate the proficiency and pragmatic competence. While students are viewing the Uptale customized videos, their response to the pop-up simulated questions were evaluated using the SOPI scale and a follow up Google survey which contains the same set of questions as the pre-test. This provided data for the

comparison of students' proficiency and pragmatic competence. A survey also included the feedback of students' experience using the two apps to evaluate the student experience of incorporating VR apps into Chinese teaching and learning.

VR TECHNOLOGY FACILITATE THE PEDAGOGIC TASK DESIGN

In the past, for 2nd year Chinese class each chapter was taught in five teaching days, each day is 50 minutes, students were introduced to textbook provided 2D videos on Day 2 of a chapter. On Day 3, students were asked to retell what happened in the textbook video using some textbook provided questions. After student-led discussion on Day 4, students were ready to create their own role-plays to present in front of the class to accomplish the final target task which is able to communicate in real-life scenarios.

In this study, the revised Lesson 12 TBLT design has two sessions or stages focused on “Dining Out.” The total teaching time is still 5 teaching days and each day is 50 minutes. Session one is to introduce words, expressions, brainstorm how to ask questions and interact with restaurant staff. All of the activities are scaffolded to complete a target task in session 2 that is “ordering in a restaurant in a real-life situation” and some are asked to record the role-play with a Go-pro 360 camera. All the pedagogic tasks in this study are sequenced based on the cognitive complexity of the tasks. Per Robinson's *Cognition Hypothesis*,¹² the pedagogic tasks should be sequenced incrementally for learners based on the cognitive complexity of the tasks.¹³



Figure 4. Stage One of Lesson 12 tasks design

In Stage one (Figure 4) the sequence of these three pedagogic tasks reflects a gradual increase of the complexity. Task one starts with an easy introduction of words and expressions related to a restaurant setting with fewer elements involved, targeting sounds/character recognition, basic word-order of new grammar structure, without much reasoning needed. In sub task one students are asked to interact with the avatar in the Mondly Restaurant scenario, at the same time they critique each question and response generated by the program. If they agree with what Mondly designed, they put down what they agreed with. If they disagreed, students write down their preferred way of phrasing the question and/or response in that situation. In this sub task the resource-directing attributes of the task are getting complex, more recalling what happened in the VR scenario, identifying and describing the main ideas with given sentence structures they are exposed to. As more elements are involved there is more reasoning and more prior knowledge needed to respond to the avatar.

In sub task two, the Jigsaw Mondly critique activity further increased the task complexity, students engage in group discussion, select, compare, and reason different ways of raising a question and respond in a more appropriate pragmatic manner in the restaurant setting. They have to combine the information on the critique form, then later present to the class. All four skills (Speaking, Listening, Reading and Writing) are involved in this Jigsaw activity. From the resource depleting dimension, more planning time and prior knowledge was needed to accomplish the task, the overall cognitive process demanding is much bigger compared to the first two tasks.

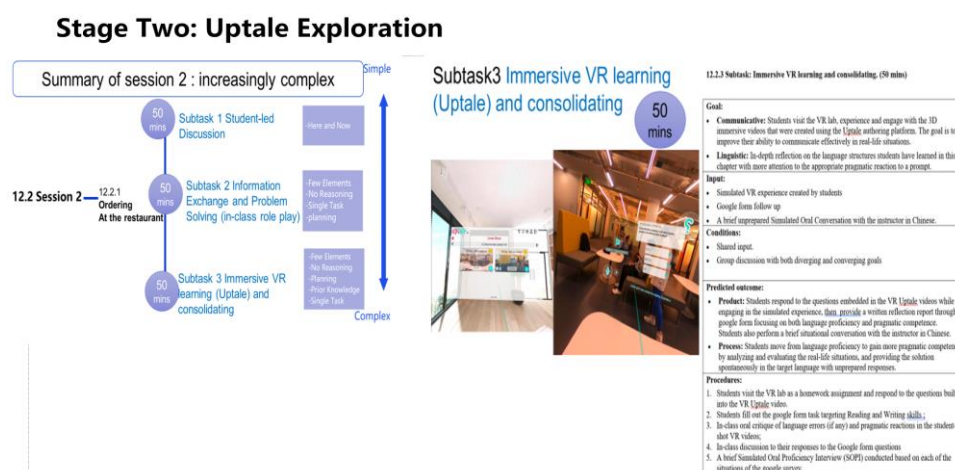


Figure 5. Stage Two of Lesson 12 tasks design

In Stage Two in Figure 5, three tasks are also sequenced based on the complexity level, the cognitive requirement for the learners was much higher than session one. The ultimate goal of this session is to further equip the students with more authentic language input, assist them to “successfully dining out”, deal with the issues that may occur in this real-life scenario. Under this target task umbrella pedagogic sub tasks derived from it. Starting from the “Student-led discussion” students watch a textbook provided 2D video, practice the language of dining, continue to enlarge their vocabulary, and learn how to select the appropriate words and structures. The sub task one further exposed students to the problems they may confront when dining at the restaurant (role-play scenarios) such as Dietary restrictions, tipping culture, or how to solve problems in a way that is pragmatically appropriate for the specified context.

In the second sub task, the role-plays made outside the class were presented in class while some students prepared to record a 360-video using a Go-pro camera. During the process of creating the role-play and presenting them involved more elements, more reasoning, team work, more planning, prior knowledge ahead including brainstorming ideas, coming up with the script, learn how to use the 360 camera, choose a shooting location, and rehearse the scenes.

In the third sub task students visited the VR lab, experienced and engaged with the 3D immersive videos that were created using the Uptale authoring platform. Students respond to the questions embedded in the VR Uptale videos while engaging in the simulated experience. They then provided a written reflection report through a Google form focusing on both language proficiency and pragmatic competence. At the end, students also perform a brief situational conversation with the instructor within the “dining” scenario in Chinese. This activity was evaluated based on SOPI rating scale. From both resource directing dimension and the resource depleting dimension, this task requires higher cognitive process, complexity level of the task reached the highest.

DATA ANALYSIS AND DISCUSSION

Language Proficiency

From the data that was collected, it was determined that students' language proficiency improved gradually throughout the lesson. That includes all four language skills: Speaking, Listening, Reading and Writing. Their speaking activities moved from brainstorm in class to orally respond to the Avatar in the Mondly app, critique Mondly, then come up with their own role-play or 360 videos. While engaging in the Uptale videos, they have to answer pop-up questions embedded in the videos orally. At the end, all of the students demonstrated good or near native fluency at the SOPI individual interviews. Their speaking skills progressed from shorter utterances, such as scattered words or sentences, to longer discourse with a good level of accuracy in grammar structures during the SOPI interview.

Their listening skills progressed from listening to the text provided 2D video based on the vocabulary provided, to comprehending and responding in the Mondly VR app, then to view in-class skits presentation or self-made Uptale videos. Eventually, they were able to comprehend the entire VR customized video as extended learning materials which are authentically made, closest to real-life situation, completely novel to them, and complete the corresponding questions embedded in the videos. Based on the data provided by Uptale program, 80% of the students were awarded all the "stars" in the video, showing that they answered the questions correctly. All the participants reached 90% accuracy on the pop-up questions.

As for Reading skills, all the listening comprehension questions were designed in Chinese characters, which means when the students look at prompts or click on hints for responses they will see the sentences in Chinese while hearing it at the same time. That feature clearly helped them to connect the sounds with the characters that is critical for Chinese learning since the Chinese pronunciation and writing system are separated. As far as Writing skills, when they critique the Mondly Video, they are encouraged to use Chinese handwriting to construct the sentences. When they respond to the questions in the google form, they are required to type Characters since at that stage, they are very familiar with the pinyin sound, and are able to select the right characters while doing the writing prompt.

Cognitive Process

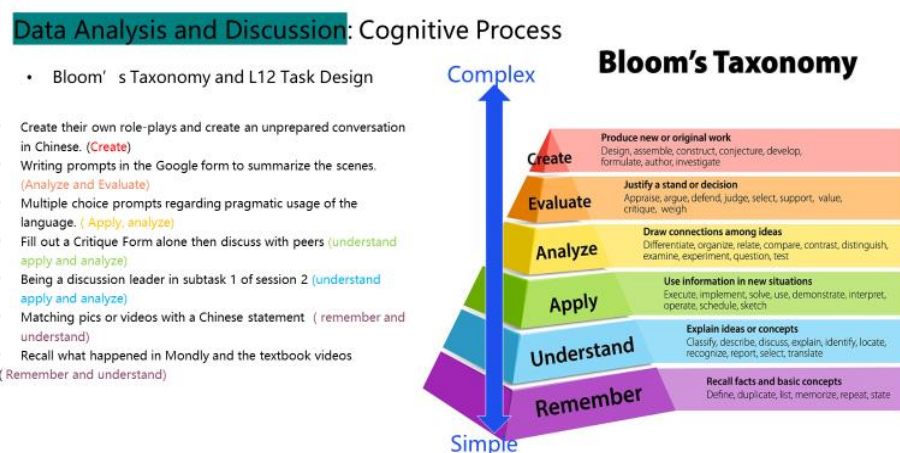


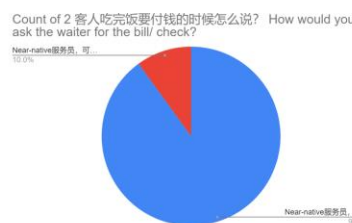
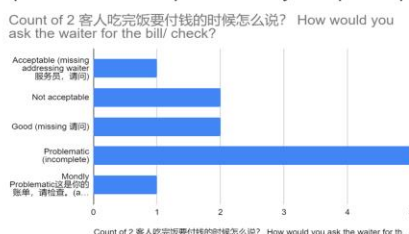
Figure 6. Cognitive Process: Low to High

In this study, the Bloom’s Taxonomy model¹⁴ was used to assess the cognitive process during the L2 acquisition. Throughout the scaffolded Task-Based curriculum design, learners’ cognitive process progressed from the lower to higher level. Figure 6 shows that each of the task design on the left matches with the corresponding cognition levels on the right. In the two sessions of task design mentioned earlier, cognitive process started from recalling from short term memory, selecting or paraphrasing information from the provided language input, to understand the language in the specific context, to negotiate, analyze and apply to the situation, and eventually solve the problems in both spoken and written forms of the target language. At the end the “Final product” that students produced (role-plays) reached the “Create” level which is top of the pyramid according to Bloom’s taxonomy.

Pragmatic Competence

Data Analysis and Discussion: pragmatic competence

- Comparison between post-Mondly VS -post Uptale.



- Comparison between pretest vs post test on SOPI

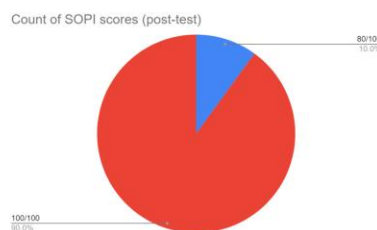
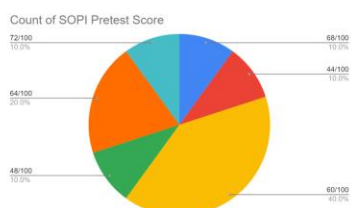


Figure 7. Pragmatic Competence has gained

Other than language proficiency, student’s pragmatic competence progressed throughout the task sequence by analyzing and evaluating the real-life situations and providing the pragmatic appropriate response in the target language with an unprepared speech. Figure 7 shows the comparison between pre- and post-test data in both Google form response (written form) and SOPI interviews (spoken form). For the question (count of 2) that evaluated what is the most pragmatic or appropriate way to ask the waiter for the bill/check, students showed a better response after the Uptale VR experience. Before watching the Uptale video, none of the students got the near-native answer to the question, half of the students were not sure about it, score at “problematic” level. While after viewing and practicing in the Uptale video, 90% students reached near-native level in the following up Google form responses. The same results show in the pretest and post test on the SOPI procedure, only 10% of the students scored 72/100 in the pretest, and 90% students scored a 100 on the post-test.

Mondly VS Uptale

Student experience using Mondly and Uptale was also interesting to look at. After using both apps, they filled out a survey to compare their experience using and interacting in the Mondly app and Uptale self-made VR videos.

In terms of the Difficulty level for learners, students felt that Uptale was more appropriate to their level of difficulty with 44% supporting Uptale compared with only 22% for Mondly. All of the students, 100%, believed that the customized Uptale videos reinforce the classroom materials better than Mondly, No one selected very challenging for Uptale but it was also not too easy as the number of students choosing “somewhat challenging”, but they got more out of Uptale videos.

In terms of students’ preferred interactions the survey responses were positive but overall seemed to prefer the Uptale interactions. In Mondly, 76% of students liked hints while answering with the microphone, 69% of the students believed the microphone recording was a nice feature but it did not recognize pronunciation at times, and 53% of the students like interacting with an avatar instead of responding to an established dialogue. In the Uptale experience, all the participating students enjoyed the multiple choice answers to respond to a question, 85% of students prefer hints appearing while answering with the microphones, and 93% of students like the “replay” function in the scenes. More than half of the students like listening and responding to an established dialogue instead of interacting with an avatar and they thought the bypass option for a hard question was another good option. Overall, the Uptale immersive experience had more interactions that students prefer, such as the self-shot customized videos, multiple choice questions over the voice recording, and the “replay” function of Uptale over the “skip” function in Mondly.

When they were asked to compare their experience with a VR Immersive Experience vs. Textbook 2D Videos, students felt that the VR experience provided a more distraction free environment, that they engaged more with the material by answering pop-up style questions, they liked the ability to directly respond to the scene, and that it activates more of the learners’ senses through visual, auditory, and tactile stimuli. Overall, the VR experience supports students’ autonomy with regard to self-guided language learning.

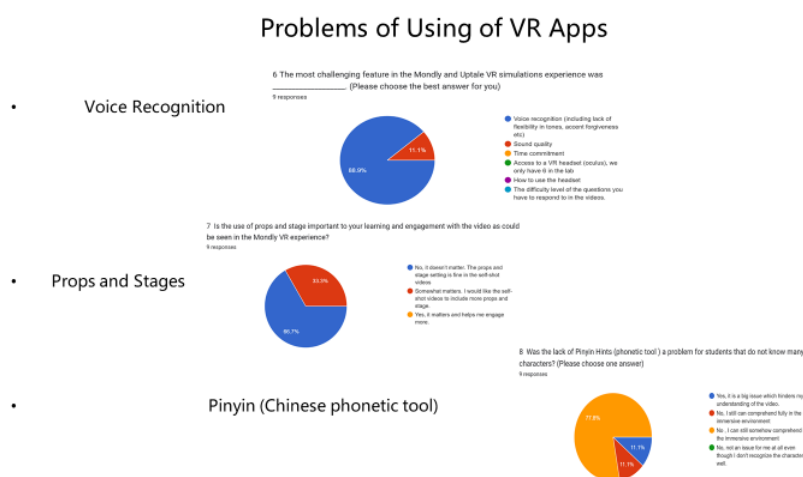


Figure 8. Problems of Using VR apps

In regards to the Problems of Using VR apps in figure 8, it was found that the voice recognition capability of the VR apps was the most challenging feature for language students. For Chinese the lack of accent forgiveness and flexibility in tones was an issue. However, it is also interesting to note that students focused on the learning experience/content rather than the props and stages in the scene. It seems that the lack of Pinyin as a phonetic tool didn’t hinder students’ comprehension of the video in

the immersive environment. In the regular classroom teaching, learners usually rely heavily on Pinyin support to improve fluency. For Chinese language this finding is quite significant.

It is worth noting that some feedback from the students who actually made the 360 videos were collected. Overall, those students think shooting the 360 videos enhanced their own mandarin learning and was less anxiety inducing than presenting in the classroom even though it took much longer to prepare and shoot the video. More than half of the students think shooting the video was a fun experience overall.

CONCLUSION

Through this study the effectiveness of the VR technology in promoting Chinese language acquisition was confirmed. VR technology can be a powerful vehicle/tool if it is given a designated pedagogical goal. It has to be embedded in the scaffolded curriculum design and cannot be used by students alone. Language instructors will have to provide students the clear scaffolded pedagogical tasks that will help to guide them through the VR immersive learning in order for them to accomplish the final target task. VR facilitated TBLT enhanced language proficiency covering all four skills not only listening and reading. During the VR viewing process, their listening, reading, and speaking skills were improved. The other pedagogical tasks before VR viewing and after-viewing target more reading and writing skills.

Secondly, VR facilitated TBLT curriculum design maximizes learners' engagement. The novelty of a VR headset experience and surprising skit directed by their peers aroused curiosity and improved attention when compared to just watching a video.¹⁵ Students are more likely to be focused on their performance rather than the language forms. Therefore, their chances of entering into a heightened flow state is much higher which is "ultimate stage of engagement" to develop fluency.¹⁶ The curiosity-driven engagement in the immersive environment leads to developing problem-solving cognitive skills. Throughout the scaffolded task design, more advanced cognitive process involved in this learning journey, not only targeting lower-level cognitive levels.

Lastly, the immersive environment provides a good alternative for students who cannot go abroad to gain language proficiency as well as the pragmatic competence. Particularly through the study, the advantage of using the Uptale platform and self-shot 360 videos was revealed. It provided a better link with the topics covered in the classroom because they can be customized. It allows instructors to add pedagogical interactions into the video to better serve the communicative and linguistic goals. Compared to a study abroad program, it is also easier to implement pedagogical tasks and assess students' language performance. However, unlike most of the study abroad programs where students are fully immersed in the target language for a duration of time, how frequently students can be immersed in the VR environment can be vital for the continuation of improvement on language proficiency. This is, of course, closely related to the accessibility of Chinese learners to the VR lab.

There are also some issues that emerged from the study that instructors should be aware of. The first, which was noted in the previous paragraph, is that students won't be able to have access to the VR headsets 24 hours a day like study abroad program. The other issue related to this is the lack of headsets which are expensive and, therefore, usually limited in their availability at an institution. Meanwhile, more technology training is required for both students and instructors. This includes using the 360 cameras and for instructors to build the Uptale customized videos which very time consuming to ensure a good pedagogical design. Lastly, as of right now, it is hard to find a well-built VR app that works ideally for characteristics of Chinese educational linguistics. Mondly is decently rated but it needs improvements on some of the hints during the interaction with avatar. It also doesn't always

have the flexibility every instructor might like. For both the Mondly and Uptale apps, the voice recognition is a final issue for Chinese learners.

This study aimed to shed light on how to select the VR application and how to incorporate into the curriculum. Regardless of the technical challenges and logistical constraints, VR technology has great potential for facilitating foreign language teaching and learning. It is hoped that more studies like this will encourage more faculty to incorporate a VR immersive experience into their curriculum and that developers will produce better VR apps which are more compatible with educational Chinese linguistics.

APPENDIX

SOPI Appropriateness Rating Scale

0 Not ratable

Making no response; responding with utterances that are extremely hard to comprehend, or with language that has no connection to the scenario.

1 Not acceptable

Responding with language that fails to communicate target functions; with utterances that may potentially offend the hearer, or with inappropriate choice of pragmatic strategies for the context.

2 Problematic

Responding with language that somewhat communicates target functions; with pragma-linguistic errors that cause misunderstandings, but of a less serious nature; with certain language so strange or unexpected that causes awkwardness for the hearer.

3 Acceptable

Responding with language that communicates target functions; with utterances that are mostly appropriate for the context, but may contain grammatical/lexical errors that do not interfere much with appropriateness.

4 Good

Responding with language that fully communicates target functions; with utterances that are pragmatically appropriate for the specified context, but may still sound non-native-like in terms of register, length, intonation, etc.

5 Near-native

Responding with clear and appropriate utterances that fully communicate target functions, close to native responses.

NOTES

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² Solomon Sunday Oyelere, Nacir Bouali, Rogers Kaliisa, George Obaido, Abdullahi Abubakar Yunusa, and Ebunayo R. Jimoh, “Exploring the trends of educational virtual reality games: a systematic review of empirical studies,” *Smart Learning Environments* 7, 31 (2020): 15

³ David Hamilton, James McKechnie, Edward Edgerton, and Claire Wilson. “Immersive virtual reality as a pedagogical tool in education: A systematic literature review of quantitative learning outcomes and experimental design.” *Journal of Computers in Education*, <https://doi.org/10.1007/s40692-020-00169-2>, (2020):21-22

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⁵ Blanka Klimova et al “A Systematic Review of Virtual Reality in the Acquisition of Second Language” *International Journal of Emerging Technologies in Learning (IJET)* (2022):43,50 <https://doi.org/10.3991/ijet.v17i15.31781>

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⁷ Svitlana Symonenko et al, “Virtual reality in foreign language training at higher educational institutions,” *CEUR Workshop: proceedings 2nd International Workshop on Augmented Reality in Education*, 22 March 2019, 2547 (2020): 45.

⁸ Li Yang, Chuanren Ke, “Proficiency and pragmatic production in L2 Chinese study Abroad,” *ScienceDirect System* 98 (2021): 102475 www.elsevier.com/locate/system

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¹⁰ Charles W. Stansfield and Dorry Mann Kenyon, “The Development and Validation of a Simulated Oral Proficiency Interview,” *The Modern Language Journal*, Summer; 76(2) (1992): 348.

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¹² Peter Robinson. “Task complexity, task difficulty, and task production: Exploring interactions in a componential framework.” *Applied Linguistics*, 22 (2001b): 27 – 57 and Peter Robinson, (2005). Cognitive complexity and task sequencing: studies in a componential framework for second language task design. *International Review of Applied Linguistics*, 43, 1-32. and Peter Robinson. “Criteria for grading and sequencing pedagogic tasks.” In M. Garcia Mayo (Ed.), *Investigating tasks in formal language learning* (pp. 7-27). Clevedon, UK: Multilingual Matters, 2007a.

¹³ Kun-Wan Philip Choong, “Task Complexity and Linguistic Complexity: An Exploratory Study Teachers College,” *Columbia University Working Papers in TESOL & Applied Linguistics*, Vol. 11, No. 1, pp. 1-28

¹⁴ Benjamin Samuel Bloom. *Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain*. New York: David McKay Co Inc, (1956)

¹⁵ Scott Aubrey, “Inter-cultural contact and flow in a task-based Japanese EFL classroom,” *Language Teaching Research* Vol. 21(6) (2017): 719,720. and Gayle Gregory & Martha Kaufeldt, “The motivated brain: Improving student attention, engagement, and perseverance,” Alexandria, VA: ASCD (2015): 150-161

¹⁶ Jennifer Philp and Susan Duchesne. “Exploring engagement in tasks in the language classroom.” *Annual Review of Applied Linguistics* 36(2016): 50–72.

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INSTA-EDUCATION. SOCIAL MEDIA CHANNELS AS AN AMPLIFIER OF THE EDUCATIONAL AND LEARNING EXPERIENCE

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INTRODUCTION

Digital social communication is increasingly defining itself as a significant element not only for the staging and narration of all creative systems not only as a guide for new processes of visualisation, promotion and storytelling of the design system. Still, it is also capable of creating new relationships between teachers and students, who in this new digital educational sphere are no longer just spectators of the creative phases but are increasingly involved in processes of 'co-creation of value' and 'cooperative investment'. Instagram, specifically, seems to offer an unmissable opportunity to implement innovative hybrid and interdisciplinary learning models. A learning system linked to different educational models, mediated by digital and aimed at managing those undefined solutions and problems that contemporary life poses as new challenges. A paradigmatic change in the typicality of individual experiential dimensions where the study of new pedagogical approaches and the renewal of the delivered contents become essential actions. In this context, communicating to teach and to learn becomes both the means of teaching and the end of learning. And to achieve correct and effective communication, it becomes crucial to consider the 'multidimensional' nature of communication-related to the cognitive structures of today's learners. The article presents the results of ongoing design course experiments using Instagram as a support channel for teaching activities. Experimentation stimulated student learning and facilitated teaching through dialogue, engagement and interaction.

FASHION, NEW MEDIA, SOCIAL MEDIA AND EDUCATION

Fashion as a manufacturing, cultural and creative industry¹ is increasingly defined as a complex interaction system between products, communication and services. A system that has continuously evolved until the beginning of the new millennium, in recent years, has faced a series of changes that radically redefine its production, creative, communication, representation and "staging" processes. The new paradigms introduced with industry 4.0 have defined new production and distribution methods and generated new interactions between the brands and customers. New visualisation, promotion and narration processes of the fashion products system, driven by digital transformation, have been developed.² The traditional product, communication and service system has been redesigned according to an approach that defines a new phygital space. Companies and consumers

move rather than process hovering between the physical and digital worlds. New demands for knowledge and skills open further scenarios for university training.

In today's globalised and digital context, new challenges arise for implementing tools, methods and processes necessary to enable sectors such as Fashion - characterised by intense cultural and creative content - to realise their full potential. We have increasingly witnessed the pervasiveness of social media, which have taken on the role of personal communication channels, but above all, as tools capable of defining engaging modes of interaction between companies and consumers, institutions, and users. In the different areas of creativity,³ “visual” social media (especially Instagram) have increasingly consolidated their role both as sharing channels and a tool that allows cooperation to create new ideas, entering the sphere of technological communication tools, typical of active approaches.⁴ Moreover, the educational system is increasingly seen as a field of experimentation for multi-channel knowledge transfer modalities. The role of educational systems evolves in the contemporary,⁵ thanks to new technologies, creating conditions for developing innovative methods and tools for knowledge transfer. There is an increasing shift from the teacher “operator” paradigm to that of the teacher designer,⁶ from content design to the design of learning experiences through new forms of content and activities, tools and channels. In the contemporary context of new tools and methods for staging and enhancing the Aura of Fashion assumes an increasingly significant role, the definition of tools and methods for the training of hybrid figures capable of managing the complexity of a project that moves on different levels (in the real world as in the physical) and the transversality of the disciplines involved,

Education assumes a fundamental role in understanding needs (expressed and unexpressed by the market) for defining precise training methods to fill the current skill gaps.

Besides Fashion, education is also entering the fourth technological wave⁷ by implementing and exploiting tools, interactive models, and fundamental communicative strategies to transmit information, notions, and creative stimuli. Even the education sector, we could say, is going through a phase of mediatization,⁸ defining innovative forms of digital education that, under the needs generated by Covid-19, have implemented new forms of information sharing and new forms of teaching, which define “at a distance”, is reductive. In addition to supporting video conferencing channels (such as Zoom, Teams and Webex), asynchronous distance learning (such as MOOCs, Massive Open Online Courses), experimentation with teaching through Instagram was also implemented, here construed as a digital form of an augmented classroom and workgroup. Education has always passed through the communicative processes⁹ that regulate the relationship between teacher and learner, allowing the transmission from the former to the latter of cultural contents, behaviours, and ways of reasoning, which is the natural outcome of an educational and social relationship. The relationship between didactics, communication tools and technologies is inherent in education because any communicative relationship between subjects with different degrees of competence can be educational.

In this sense, “the transformations that have occurred in the processes, tools and forms of communication also have repercussions in the field of education, where there is a weakening of the functions performed by traditional institutions and a greater investment of the new generations in the media”.¹⁰

The image communicated through Instagram activates, in this sense, new forms of “thinking with the eyes” that allow us to examine, notice, detect and consequently discriminate, distinguish, and select.¹¹ The visual form of Instagram thus constituted a starting point to generate a series of reflections and implement a series of actions¹² that could field a visual didactic methodology that could not only transmit information but also translate the design phases and stimulate the creative process through analogical or metaphorical procedures, stimulating divergent thinking” or “lateral thinking”,¹³

stimulating the eye (and mind) to continuous actions of analysis, reading, and understanding of images, but above all to their recomposition in new creative forms, in the attempt to stimulate actions of “bricolage”. It seems appropriate to think of technologies as potential agents of change, capable of influencing the educational setting and, ultimately, the learning process. New technologies need to be integrated with extra technological conditions that need to be set up for this to happen. The introduction of technology is bound to dry up in the short term, and technology should be seen as a resource capable of bringing out new forms of didactic planning. As Calvani¹⁴ states, the conquest of higher levels of reflection represents one of the essential contributions technologies can provide to learning.

It thus becomes essential to understand that to establish good carry-on dialogue, it is necessary, even if not sufficient, to know how to use multiple modes of communication, allowing both the teacher and the learners to implement a “mix” of communicative exchanges. The teacher should be able to train the student's communicative competence, whose learning is closely linked to the behavioural and communicative model used.¹⁵ Considering the above, therefore, digital technologies and channels can offer multiple possibilities to:

- improve and increase the communication modes between teachers and students;
- create a circular system of interaction between teachers and students;
- stimulate the active participation of students in the learning process;
- implement new modes of design and creative stimulation.

The visual (through the use of Posts) and interactive (through the use of animated Stories, polls and quizzes) have defined a real educational palimpsest in which the use of the image, its selection, and composition in the framework of the visual social media grid, becomes fundamental. As a particular case of human communication, educational communication is characterised by two processes, teaching and learning, and generally asymmetrical and intentional.

Digital technologies (fluid and multifunctional) can be considered more effective tools to support teaching and learning. They allow faster interaction between teachers and students and among peers. Still, they offer multiple solutions to enrich educational activities and potentially define a new meaning to the Net as real support of the learning experience¹⁶. Understanding which resources to use and how to use them is nowadays as fundamental as it is critical. Still, these resources can add value to the teaching experience, impacting the course and developing digital skills and competencies that could be applied in working environments. Thus, following what Roberto Casati expressed, we have not considered that form of progress when we first look at the use and then look for the right technology to support or assist it. Digital and social media, and Instagram in particular, in this context, can represent an interesting field of experimentation of an undisciplined form of didactics¹⁷ to test ways and processes capable of defining a form of self-transcendent¹⁸ knowledge. Consequently, the teacher and the student, potential Digital Masters who give life and build content through technology, are increasingly important.¹⁹

INSTAGRAM AS A DIGITAL SOCIAL CLASSROOM

In this context, during the first semester of the academic year 2021-22, experimentation was implemented within some classes of the fashion design course of the School of Design of the Politecnico di Milano. The experimentation implemented has involved two courses (Meta-design for Fashion which involved 56 students in the second year of the Bachelor, and Textile & print design for Fashion which involved 31 students in the third year of the Bachelor's) total of 87 students. The experimentation was structured starting from the assumption that in the contemporary world, not only the new generations but more and more designers and fashion brands use social media (and Instagram

in particular) as a channel for sharing information through posts, stories, IGTV, videos and surveys. More and more immersive and strange interaction between brand/designer and consumer is created through constant information conveyed through personal devices. Engagement through social media defines a better awareness of brands by the public. It constitutes the starting point for an initial reflection on the possibility of exploiting the same modes of interaction offered by Instagram to involve students more in their learning activities. From these assumptions coming from distant fields (education and branding), we started to structure experimentation of a pedagogical model that would exploit the power of images and the pervasive and interactive capacity of the digital medium of Instagram. The experimentation consisted in the implementation of two types of augmented classroom channels: a channel called "Course" managed by the faculty and that follows, from the point of view of content, the structure of the course and the frontal lessons delivered to students, and a channel called "Group" managed by the different student workgroups, and that was used as a place to share information and stages of progress among the group members, between the group and the teachers, between the group and the other students of the course. We did implement several actions related to implementing the notions and information presented during the lessons and related to the project reviews. The "Course" channel was not structured only as a "message board" of the course and reproposal of lesson contents, but as a channel of continuous creative stimulation, providing visual insights and stimulating interactions (through quizzes, polls, feedbacks, comments and direct messages) between teachers and students and among students. The "Course" channel has been structured according to a real palimpsest built to deepen didactic contents (implementing additional examples to those presented in lessons), to communicate the contemporary (reposting information and news related to the contemporary fashion scene), and above all to stimulate the design process and creativity. The constant stimulus, each time structured in a different form (post, carousel, video), from the data collected, has been a helpful tool to keep alive the attention and the focus on the project, on the one hand, and to open and stimulate new design and creative solutions, on the other hand. In the context of social media-assisted teaching, the teacher can thus consider social media as an additional tool for structuring more effective and persuasive didactic actions and, at the same time, for stimulating more active participation by the students in the different project phases. Considering the increasing pervasiveness of digital communication in the educational sphere and various design fields, social media has become not "the" solution but an opportunity to be exploited. Therefore, teachers need to understand and manage the potential offered by social media to use them effectively, borrowing and transferring some of the characteristics and strategies typical of the activity of a social media manager within the educational process.

The teacher becomes an ever more key player by developing engagement strategies, producing content, analysing usage data, and facilitating the different stages of class learning.

Thus in addressing a course using social media, it becomes crucial for the teacher to be able to:

- Develop creative and engaging social media strategies;
- Manage the course's social channel periodically;
- Periodically supervise group or class channels;
- Plan and deliver effective content for different project phases;
- Create engaging multimedia content (and/or outsource it effectively);
- Manage and facilitate the classroom and students by responding to social media posts and developing discussions;
- Monitor, track and analyse the results of any quizzes or surveys and the various interactions implemented across the course and group channels;
- Keep up to date with the latest trends and techniques to find new ways to engage students

- Educate the class on the conscious use of social media;
- Encourage collaboration among students (inside and outside the social platform).

On the other side, from the student's point of view, the student also expands the range of actions and skills they must implement and manage in social media-assisted teaching. On one side, in the interaction with the course channels (managed by the teacher), students realise the typical dynamics of followers. On the other side, when students actively manage the group or class channel, they implement skills specific to the figure of the Content Creator, someone responsible for defining the content and presenting it in the most appropriate and effective form.

To summarise, in addressing a course using social media, in addition to defining the project required by the course, the student implements the following actions:

- Develop the communication project, defining the recipients, the objectives, the type of language, the contents, the graphics and any multimedia contributions, etc.;
- Coordinate textual contents and images defining the visual identity of the project;
- Periodically update the contents according to the teachers' requests and project phases.

CONCLUSION

The results obtained show a general satisfaction with the experiment (89% of students believe it worthwhile to implement an Instagram channel of the course, 89% consider it useful support to deepen the contents presented during the lessons, 93% consider it useful for the understanding of the design process and 84% consider it useful as a design and creative stimulus). Positive answers to which some criticalities related to technical problems emerge (due to the nature of the channel, created not to be used by more than one user simultaneously) and to the media exposure of the works that, in some cases, has been experienced as forcing. This research assumes that social communication is defining itself as an increasingly significant element not only for the staging and narration of all creative systems. The digital transformation drives new visualisation, promotion and storytelling processes of the design system, defining new relationships between physical and virtual spaces in which users are not just spectators of the creative phases but are increasingly involved in processes of "value co-creation" and "cooperative investment". Within this framework, the digital channel seems to offer an opportunity not to be missed for implementing innovative hybrid and interdisciplinary learning models.²⁰ Thus, it is essential to highlight that the effectiveness of the various actions depends on the correct use of social channels and the definition of the content by the teacher-social media manager. Regardless of the subject, the design, planning and organisation of specific learning activities supported by social technologies become central.

Regardless of the learning environment, it is essential to remember that people learn best when actively involved. It is, therefore, necessary to structure the different activities according to a flow that can support effective learning. Furthermore, the implemented learning sequences and structures must be constructed to be easily repeated, shared, reused and implemented later and in other contexts. It is, therefore, essential to:

- define which tools to use according to the teaching purposes;
- plan a proper workflow;
- structure the different activities, contents and resources needed;
- schedule a timetable in such a way as to be able to involve students effectively;
- verify the process implemented for possible modifications and improvements.

Thanks to the web spread in extensive networks, social media and social networks highlight social and collaborative character. It is also a place that erases the space of the here and now by extending the places, methods, tools and times of learning.

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THE VALUE OF ART IN EDUCATION, A SPACE TO PERCEIVE.

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INTRODUCTION

Education as a fundamental value of society is of the utmost importance. Its value and basic needs that sustain human life should be understood as paramount. In a broader spectrum, transitional factors are an inherent part of the passage of time. Pointing to the present as transitory limits to understanding a more global vision is considered adequate when discussing education. The challenge is about a cumulative present of past experiences that inform a future, which we wish to be as fruitful as possible in education and knowledge transfer. As a social entity, the school imprints itself on society. It would be innocent of recommending a solution that radically transforms the way education must be configured through the production of knowledge or the actors who hold that knowledge. What we wish to propose goes beyond the limits of this immediacy. Understanding today as something transitory, searching for an immediate becoming that presents a path for the future, is possibly the main factor of failure when thinking about education. Education cannot be limited only to the institutions responsible for it.

Technology has created social divides that education must address in response to contemporary societies. Alongside this change, as man's mediator with the world, the hand has seen an increasing retraction in this role. We cannot think of education as a process exclusive to the subjects of the academy but rather in a broader context than contains all knowledge of human experience. A single text can not promise the resolution of clear and already identifiable tensions between fields of expertise and their dissemination. However, it may help refine or calibrate the spectrum of issues necessary for the Times of Transition to be Times of Permanence, consolidation, and widespread enthusiasm for humanistic ideals, the fundamental basis of the arts and sciences teaching.

We propose a bibliographical review to understand that the answers we seek today were already outlined in the artistic movements of the 60s/70s of the 20th century. Art sought to emancipate itself from institutions, almost breaking the genesis of the concept that served as the concept of the work. Museums stereotyped the works and their authors to trivialise their intended message. Thus, art left museums, not only for the street but also for the world, to make its message resonate. The Landart movement is an excellent example of this. We want to discuss precisely this intersection between the message and how or where it should be transmitted. At present, it is not only what education can give back to society but what education can today learn from society or even from art.

A statement that may be interesting to start the dialogue is written by the trio Maria Sequeira Mendes (b.1977), Marta Cordeiro (b.1978) and Marisa Falcón in the 2022 book – *O Desensino da Arte*. "We know that an art school that does not rethink itself, that does not improvise, that does not invite different people to talk to its students, that protects a structure turned to the past, not trying to imagine the present, will always be a poor school."¹ This context allows us to rethink the value of education as a fundamental good and extend its structure as an institution. Education is one of the vital pillars of contemporary society and essential for the progress and well-being of individuals and communities. It is also vital for personal and social development and achieving several important social and economic milestones widely identifiable in modern societies. Education tends to democratise opportunities for all individuals, mitigating their social backgrounds and circumstances. It can give individuals the knowledge, skills, and abilities they need to play critical roles in society and help break a cycle of poverty and social disadvantage. In addition to the individual and social benefits, education is crucial for boosting economic growth and development. Individuals with a higher degree of education tend to be more likely to be in more socially relevant roles and, as a result, higher salaries, which can impact the overall prosperity of a society. Education is also critical in driving innovation and progress, as it helps foster a cyclical culture of learning and continuous improvement.

Overall, the value of education as a fundamental value of society cannot be overstated. In comparison, it is essential to recognise that education is a cumulative process that builds on the past and looks to the future. This simple hinge means that our current educational system and practices should be informed by past experiences and designed to prepare students for the future. One of the challenges in education is ensuring that students acquire knowledge and skills that are relevant and valuable in the long term. Therefore, the curriculum and teaching methods must be constantly updated and adapted to meet society's changing needs and expectations. It also means that education should be flexible and adaptable, so people can continue learning and growing autonomously throughout their lives, thus enabling continuous individual development. As a social entity, the school plays a crucial role in shaping the values and attitudes of society. School should therefore be a place where students are exposed to a wide range of assessments and ideas and encouraged to think critically and independently. This can help promote a more open and inclusive society, better equipped to face future challenges.

We understand, first and foremost, the importance of addressing the education issue from a long-term perspective rather than simply seeking immediate solutions. Radical transformations of the education system may not necessarily be the most effective approach, as education is a complex and multifaceted process involving many actors and different investments. Therefore, rather than focusing on immediate solutions, it may be more productive to consider the underlying principles and values that should guide education development. For example, education should be inclusive and accessible to all, regardless of background or circumstance. It should also be flexible and adaptable to meet the needs and expectations of a society in a constant state of transformation, whether by introducing technology in teaching methods, political factors, or environmental emergencies.

As a determining factor, it is crucial to recognise that education is not limited to the walls of the institutions responsible for teaching. Education can and should occur in diverse settings, including the home, communities, and workplaces. In addition, we must be open to exploring new and innovative ways of thinking about education, such as online, experiential, and community-based learning. Overall, the key to successful education is to approach it from a long-term perspective, to be open to new ideas and methodologies, and to involve a wide range of participants in the process. By doing so, we can ensure that education effectively prepares learners for the future and promotes a more inclusive and equitable society.

However, education faces an added challenge today: the digital revolution has escalated in the last twenty-five years. Technology has a meaningful impact on society and has created new social divides that education must address. One of the main ways technology creates social divides is through the digital range, which refers to the gap between those who have access to technology and the internet and those who do not. This divide can have several negative consequences, including exacerbating social and economic inequalities and limiting access to education and other opportunities. Therefore, education must ensure all learners can access technology and the internet, regardless of background or circumstance. This may involve equipping students with the necessary resources, such as computers and internet access, and teaching them the skills to use these technologies effectively. In addition to addressing the digital divide, education should address other social divides created by technology, such as the gap between those with the skills and knowledge to use technology effectively and those without it. This may involve providing students with the necessary training and support to develop the necessary skills and helping them understand how to use technology ethically and responsibly.

Technology has created new social divides that education must address too, to ensure all learners succeed in the digital age. Education can help bridge these divides and create a more inclusive and equitable society by equipping students with the necessary resources and skills. This paper aims to find tools and methodologies in the 60/70s art movements that can serve as a motto for understanding and advancing education today. We will try those tools that allow us to find results and propose their discussion through the literature review. Conduct focuses on the school/teaching model that we wish and believe can meet the challenges of the 21st century, taking the arts in general or the Land Art movement in specific, as a motto.

The 1970s saw several significant European art movements, including conceptual, performance, and body art. Conceptual art, which emerged in the 1960s, focused on the idea or concept behind the artwork rather than the physical object itself. This movement was characterised by language, diagrams, and other non-traditional means to convey meaning. Performance art, which also developed in the 1960s, was a type in which the artist's body was the primary means of expression. This movement was often associated with political and social activism, and artists used their bodies to make statements or challenge social norms. Finally, body art was another movement that emerged in the 1970s and involved using the human body as a canvas for artistic expression. Overall, these art movements of the 1970s were characterised by a focus on ideas, concepts and social issues and often challenged traditional notions of what constitutes art.

The art movements of the 1960s and 1970s were marked by a desire to free themselves from the constraints of traditional institutions and to reach a wider audience. The Land Art movement is an excellent example of this. Land Art, was a movement that emerged in the late 1960s and was characterised by the use of the natural environment as a medium for artistic expression. Land Art artists often created large-scale installations in remote or wilderness areas, using earth, rocks and plants to create ephemeral works to be experienced in the landscape rather than in a traditional museum setting. We should consider the intersection between the message of art, how it is conveyed, and how it has evolved. This barometer can easily be transposed to educational institutions and serve to confront current learning methods.

With the rise of social media and other digital platforms, it is now easier than ever for artists to reach a broad audience and share their work with the world. The same reasoning can also apply to education today. We can see this from the radical transformation that the pandemic state brought about in education, which had to adapt to the circumstances. However, the reality of integrating technology into the modes of teaching is increasingly a topic that should be analysed thoroughly, especially in subjects of a practical or laboratory nature. While the benefits of technology are primarily undisputed,

there is a side to it that, in our view, can be, for lack of a better term, "dispersive" of the teaching focus.

There is a computer on every drawing board today, instead of the classic pair - of paper and pencil. This is representative of the degree of penetration technology has nowadays and naturally influences teaching and teaching methods. We are, nowadays, crossed by the digitalisation of our daily lives: computers, the internet, television, and smartphones, among other means. There is necessarily a loss that comes naturally from digitalising our daily lives, however advantageous it may be. The critical distance must be included to understand what we are and what surrounds us. In essence, we lack the silence or the emptiness that only analogue media, by definition, could assure us. As the writer Peter Handke (b. 1942) puts it, silence is the possibility of being in silence and essentially having the capacity to materialise that silence, or emptiness, into form. Much in the wake of what we can find in the filmography of the Japanese director Yasujiro Ozu (1903-1963), especially in the widely known pot sequence from the 1949 film entitled - *Late Spring*.² The main issue will never be to oppose the two realities, analogue versus digital, but to make it understood that the two should coexist in equal weight. It should be the students who are prepared by the educational system to discern the appropriate tool to solve the problem at hand.³

The relationship of the hand with objects and, consequently, the reflection of this binomial in learning processes impacts the education process in a deeper field than we can foresee. Technology significantly affects how we interact with the world, leading to a decline in the importance of the hand as a mediator in many contexts. One of the main ways technology has changed the role of the hand is through the proliferation of touchscreens and other digital modes of interaction, such as voice, that allows us to interact with devices and systems without using our hands in the way we once did. For example, in the past, our hands were used to write with a pen or pencil or to manipulate physical objects. Many of these tasks can now be done using a keyboard, mouse, or touchscreen. This has led to a failure in the importance of manual dexterity and hand-eye coordination in many contexts, as these skills are now more necessary than before.

While technology has undoubtedly changed the role of the hand, it is crucial to recognise that the hand is still an essential tool for human interaction and expression. For example, many forms of art and craft still rely heavily on the hand, and the hand remains a crucial tool for communication and expression in many contexts. Overall, while technology has undoubtedly changed the role of the hand in many respects, it remains an integral part of human understanding and will persist in being so in the future. Overall, there is much that education can learn from society and art in particular. Art can challenge our assumptions, open our minds to new perspectives, and be a powerful tool for social and political change. By engaging with art from the past and present, we can better understand the world around us and the crucial issues.

Take the example of Reyner Banham (1922-1988), a British critic, historian, and writer best known for his influential writings on modern architecture and design. His work was characterised by an analytical approach that sought to understand the social, cultural, and technological factors that shaped the built environment. We should include Banham's thought because of his interest in the relationship between architecture and culture,⁴ or if we want to leverage the theme to dialogue, architecture as teaching, and culture as art. Buildings should express the values and ideas of the societies that created them. Therefore, he argued that understanding the cultural context in which a building was constructed was essential to understanding its meaning.⁵ In addition, Banham's work was characterised by a solid commitment to interdisciplinary thinking. He saw architecture as a field interconnected with various other disciplines, including sociology, anthropology, history, and technology. This led him to explore the links between architecture and other fields and to argue that

understanding the broader context in which a building was constructed was essential to understanding its true meaning.

In this multiplicity of thoughts of which the 60s/70s have left us an inheritance, another name is essential to aid our thinking. Robert Smithson (1938-1973) was an American artist and writer best known for his contributions to the field of Land Art. An interest in the intersection of art and the natural environment characterised his work. He is credited with pioneering a new form of artistic expression that sought to engage with the land more directly and expressively. One of the defining characteristics of Smithson's work was his interest in the relationship between art and landscape. The landscape represented an artistic expression, and he believed that artists had a unique opportunity to engage with the natural world in a way that was both aesthetically and intellectually rewarding. This led him to create a series of large-scale outdoor installations that sought to engage with the landscape more directly and expressively. In addition, Smithson's work was characterised by a solid commitment to interdisciplinary thinking, as mentioned in Banham. He saw art as a field interconnected with various other disciplines, including science, philosophy, and literature. He believed that understanding these connections was essential to understanding the full significance of his work.⁶ This led him to explore the connections between art and other fields and to argue that art could be a powerful tool for exploring and understanding the complexities of the world around us. An exciting expression Smithson states in an interview tells us precisely this - "It is in a way interesting to assume the identity of a geological agent, where man becomes an interesting part of that process rather than dominating it."⁷ This way of seeing the world is fundamental for us today, as a process linked to teaching when the body undergoes an increasing contraction of its physical space in the world, about which its knowledge is fundamental for its understanding.

One of the main ways of contributing to this process is to promote a broad approach to learning that values diversity and encourages the exploration of a wide range of themes and ideas. This may involve exposing students to various subjects and persuading them to think critically and independently about the world around them. As well as promoting an inclusive approach, education can also help to foster a culture of collaboration and mutual understanding by bringing together students and academics from different backgrounds and disciplines. Furthermore, creating opportunities for dialogue and exchange can help build bridges between different fields of expertise and find common ground to make a more cohesive and practical approach to addressing complex problems and challenges. Overall, while a single text cannot fully resolve the tensions between different domains of expertise, it can undoubtedly help refine and calibrate our understanding of the issues most important for times of transition to be times of permanence, consolidation, and widespread enthusiasm for humanist ideals.

CONCLUSION

The detachment of institutional thinking in teaching, just as art has emancipated itself from museums, implies a complete revision of teaching methods and the relationship with students. The world is evolving, and a new generation of people is being trained for a world that is changing and where we cannot predict future needs. What we seek is, with the awareness that this can be started in the humanities subjects, to make people more prepared for their physical role in an increasingly distant and digitally mediated world. Plurality manifests human diversity, and *amor mundi* is an idea of commitment and responsibility for the world's fate.⁸ In a 1954 essay entitled *The Crisis of Culture*, Hannah Arendt (1906-1975) warned that common culture disappears if we do not care for the world and let people indulge in consumption in the private sphere.⁹ The analogy and relevance of teaching and learning in constructing this common sphere are clear. It is evident the political proposal that

Arendt makes clear in the text. However, suppose we try to extrapolate to the theme of teaching, art as culture, and teaching as responsible for constructing that culture. In that case, we immediately realise the pressing need to rethink it, over and over again, until we build a global conscience that, more than just a period in the life of all of us, is perhaps the most critical period in the formation of the individual as a vehicle for the transformation of future society. Like Arendt, Ernst Bloch (1885-1977) argues that knowledge of tradition, art, history, science, and philosophy is the condition for creating the new, the unpredictable, and the unexpected.¹⁰ Those disciplines can, in education, contribute to the rupture between the past and the future, thus making room for the construction of the new. We depend on education to discover and explore new frontiers. The arts allied to teaching and the humanities will allow us to understand the connections with the past and unveil new paths of a future that we want to be physical, tectonic, and earthly.

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EVALUATING THE FUTURE: CAPABILITY AND KNOWING THROUGH DESIGN LEARNING

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INTRODUCTION

We are in what might be termed the knowledge era, where both students and educators are experiencing increasing complexity, diversification, uncertainty, and change. How we create and shape knowledge, as a capability, is key to learners' resilience, their ownership of 'knowing', and freedom to grow.¹

In this time, learners must be enabled to tackle problems in new ways that make sense in new contexts, to maintain a balance between productivity and creativity, and collaborate across different contexts.² It is necessary therefore to reconsider how knowledge creation is framed, and how that is then applied around learning so that it might create opportunities to re-view the learning experience as part of a bigger 'learning ecology'.³

This paper focuses on the research produced in delivering a Design for remote studio learning. Described as 'A Restorative Learning Thing', this Design was situated in the School of Design at the National College of Art and Design (NCAD), Ireland, during 2020, and has since become a model for a set of large-cohort pilots during 2021/22 as part of a €10 million Government funded Creative Futures Academy (CFA) project. The CFA is a four year coalition of Higher Education Institutions (HEIs) - led by the National College of Art and Design (NCAD) in partnership with University College Dublin (UCD) and Dún Laoghaire Institute of Art, Design and Technology (IADT) – coming together to shape accessible learning for the creative and cultural sector.

This paper aims to connect a new way of framing the learning journey, to support growing reflective practices in remote design studio teaching. It points toward the relationship between the approach to knowledge creation and the use of discursive and participatory design as prompts for sustainable, self-awareness as a learning capability in design education.

The paper presents insights on this structuring, the theory that informs it and thematic directions for applying the Impact Routes that emerged from its analysis. With this, reflexive practices as designerly way of learning⁴ in the remote studio might be further developed, something that can empower learners to see designing as a form of autoethnographic practice and an evaluative skill for their own wellbeing.

INTO THE UNKNOWN

If design is to be a "cognitive, pragmatic and political tool"⁵ then that starts in the Design School. The Design School and design education can future-proof the transformational position that the sector is increasingly being asked to take. By empowering designers with the critical tools and resources to

choicefully approach the complexity of better organisational, social, political and economic design futures⁶ design education can shape the change narrative. Faced with challenges beyond the remit of traditional academic training pathways or disciplinary boundaries, it is pertinent to discuss design education from the perspective of a pedagogical futures imaginary, where an infrastructural and systems view can be foregrounded. In addressing the system, by proxy, the content and products of design learning, the ways they are supported, and the notion of disciplinarity within design, might be reimagined and made ready.

The future story – rooted in the design learning cultures we build – has the ability to place disciplines, communities and practices in dialogue. The imagined educational narrative can encourage and support learners, future designers, to not only question the world, but to make the decisions that are needed⁷ as engaged Communities of Interest⁸ in a changing global narrative. To do that, human capacity, self-awareness and self-confidence are needed. It is fundamental that the self is implicated in conversations about how we address the changing world: individuals have to become selves, strong, open, resilient and critical in their own situations.⁹

In the Design School, in the studio, design learning routes can form resilient, individual knowing, acting, and being. To do this effectively, collectively, requires consideration of design learning as a restorative experience, something that has to be facilitated and supported in different ways.

Creating Capability to Know

The Capability Movement and the ‘Education for Capability Manifesto published by the Royal Society of Arts in 1979 introduced capability as a measurable quality and value advocated for in Higher Education learning during the 1990s as part of a government funded Enterprise in Higher Education programme. In essence advocacy for capability is driven by seeking to better equip learners for the challenges they face in a modern world. Capability can be understood as the power or ability to do something or to perform a certain role,¹⁰ it represents “the real opportunity that we have to accomplish what we value”.¹¹

In 2020, during the global COVID-19 pandemic, when education faced some of its greatest challenges, undefined, uncertain and risky forms of pedagogical participation became more possible, and resilience and restoration became paramount. The research discussed, and the Design referenced in this paper, ‘A Restorative Learning Thing’,¹² was run in autumn 2020, located in a new Thematics module at Level 8 in the [then] optional ‘Studio Plus’ year between 2nd and final 3rd year of undergraduate studies where students from across the Design School came together - with Erasmus exchange students - to work in a remote, transdisciplinary, research-led studio for the first time.

Restoration is a term ordinarily applied to sensory things that hold users in the present moment, uplift spirits or create a safe space. In the context of a new learning model for a cross-disciplinary cohort, in a disrupted wider environment, in a remote, studio for the first time, a restorative approach was vital. The design, delivery and analysis of this Restorative Learning Thing entailed moments of not knowing, and uncertainty, which were only overcome by an active transformation of the situation; the unpredictable design of the learning experienced by students, and the knowledge taken from that, is itself a design process.¹³

How knowledge is created and shaped, as a capability, is key to resilient learning, to ownership of ‘knowing’, and informing individual, organisational and disciplinary growth. To acknowledge the human as knower, may be considered a fundamental position, but it is also an ontological position on learning¹⁴ where knowing might be described as happening in relation to change, in three senses. The most elemental is ‘learning about’ which corresponds to situations in which information is stable and unlikely to change. The second is ‘learning to be’, which is about enculturation in practices that allow

for participation and learning how to learn. A third sense emerges out of a context of rapid and continual change, and is described as a ‘sense of becoming’.

In relation to the changes taking place across the world during the COVID-19 pandemic when this Design was first delivered, learners, staff and institutions held the same ontological positioning; each party was learning to become whoever or whatever was needed to perform in the ongoing, unknown unstable scenario.

The design studio is characterised by acting, participating and knowing, and can be described as being a state or site of flux. In this sense, ontologically, a design learning experience requires both teachers and learners to be or become reflexive; to be continually responsive to the transitory progression.

EVALUATING THE DESIGN

The development and delivery of this Design follows an Inductive research approach, grounded in an Action Research methodology. It applies experiential and virtual educational scaffolds to support learners developmental growth and needs: mirroring educator Eliot Soloway’s learner-centered design (LCD) theory which was initially developed to address the challenge of designing online platforms and software to assist traditional educational delivery models.

In its analysis, the Design was evaluated to identify ways to sustainably stage reflexive learning practices in design, by design. The evaluation undertook a series of steps that followed Participatory Research and Discursive Design methods and led to the creation of a set of impact routes. These translate into future ways for enabling students to value themselves as the storytellers and authors of their knowledge, thereby introducing an autoethnographic lens on studio teaching and learning. The situated research produced by the delivery of the Design illuminates methods and tools for participants self-validation of knowledge within the context of the school and studio environment, with the potential to influence their lived, everyday lives.

The cross-boundary impact of empowering learners to own their knowledge, centres on a notion of ‘being and becoming’ as set out in a holistic model of learning by educational theorist Colin Beard,¹⁵ where the learner holds the potential to engage in the less tangible, to be comfortable with formlessness, which then directly relates to their being able to understand and act on change for themselves.

The layers of experiences, methods, tools and journeying applied within the Design, build toward an image of capacity, resilience, and self-knowing, which can evidence capability. This evidence is anchored in understanding the relationship between the framing – its tools, directions, prompts and supports - and the participants learning experience. Capability lies in the ambition of framing to connect and empower.

DESIGNING THE FRAME

The ‘framing’ of the learning, but also the teaching, introduces reflexive practice as a designerly way, of learning, as knowing.¹⁶ Putting the knowing-acting-being model¹⁷ into action, it uses dialogue, discussion, and conversation to support the making but most importantly, the thinking, and becoming, through design.

In ordinary circumstances, in design studio teaching, the individual member of staff delivers learning in a manner and approach that they have honed, that has become their style in a continuation of their own creative practice. However, this style often develops from a ‘folk pedagogy’ perspective where they first learn from experienced colleagues and then continue to show others how they learn, and so on; it is not grounded in theory or pedagogical learning, but in copying habits or practices that others have copied. In remote studio learning, in 2020 there were fewer precedents in situ and models for delivery were widely drawn from workshop facilitation approaches, which use Participatory Design in Service Design scenarios. Here, following that approach, the shape of a knowledge experience allows

for open, flexible movement and is ready to adapt to participants needs as they move through the scenario. It might be described as a framed space which is programmed by action. Now, knowledge is non-linear and non-routine, more intuitive, opportunistic, networked,¹⁸ it is less driven by a pre-determined path or mindset. Applying this as an approach to framing encourages teaching and learning to become something to be moved through. In this Design, the frame (Figure 1.) is open to the outside, to interpretation and most critically, it is mutable, and can be assembled in different ways. This Restorative Learning Thing, and the knowledge it generated, has allowed a prototype model to be built as shown in Figure 1. which provides adaptable components that could be applied to different teaching and learning contexts. The structure of the ‘design of teaching & learning’ and the ‘learning activity and delivery’ frames, as well as the execution of the learning thing, nest inside one another with cross-influences that pull theory, sectoral needs and creative direction through both frames.¹⁹ The approach to building and shaping a dissonant learning space using a ‘learning into, through and as dialogue’ approach draws on notions that explore the relationship between design research practice and design theory, and puts critical methodologies into play in the remote studio space.²⁰

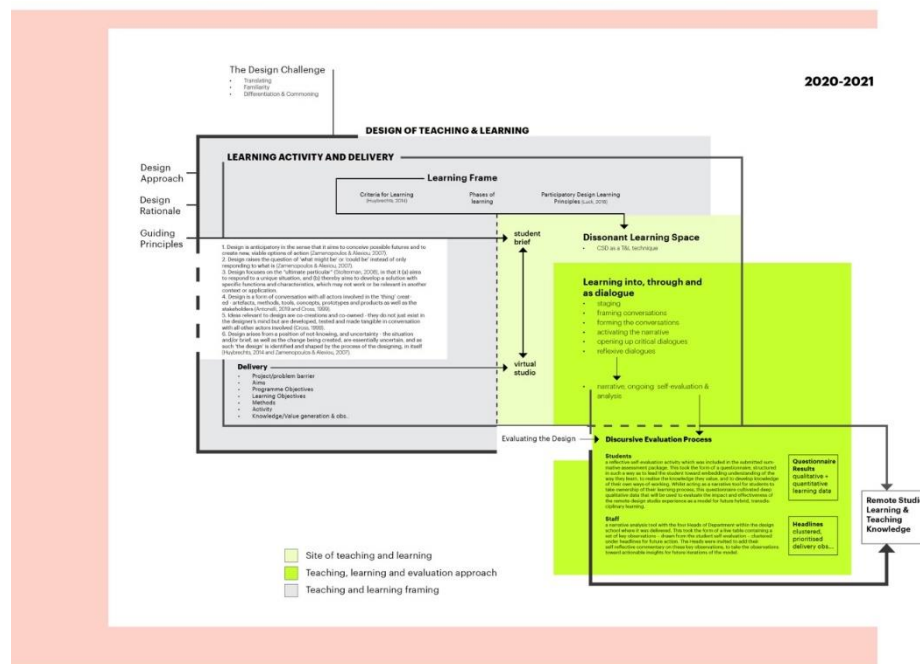


Figure 1. A Dissonant Learning Model evolved from the development and delivery of learning and teaching in this module (2020/21) which has since been tested as a model for remote/hybrid studio delivery.

The Dissonant Learning Model developed from delivering this Design prioritises providing learners with the tools to define their own learning needs, and thereby to produce modes and methods of social and individual meaning-making within their ways-of-working. The overarching frames around the learning experience as shown in the model are treated as distinct from the frames learners can build within it for themselves once they have the language and confidence to understand what they need. The learning narrative is positioned in a Constructivist Epistemological space. In Constructivist theory, knowledge is said to be mutable and acquired through activity, interpretation or internalization, it is constructed on prior experience, which leads to the social constructivist position where this prior experience acts as scaffolding for knowledge generation.²¹ It is critical for a learner to shape an

understanding of what knowledge is and how it is developed alongside the knowings necessary for being in the world and planning strategies to prepare for the future.²²

Inside that theoretical frame sits the Methodological framing which is rooted in Participatory Design²³ and employed within the studio space as Critical Speculative Design²⁴ with emphasis on Dialogic and Discursive methods and tools.²⁵ This second set of interconnected frames relate to the approaches to delivering the learning experience, the methodology to support the design learning experience and running across all is the practice of storytelling. Following theorist Bauman²⁶ storytelling effectively communicates between two domains of embodied (working knowledge used in everyday situations) and codified (abstract and symbolic type gained from books, reports etc.) knowledge.

Theorist Voros²⁷ states the output of any narrative journey is to ask ourselves what we might need to do, and to develop a strategy of what and how we will do it. It could be described as a participatory format, an effective plotline for transformation in a fictional or real-world context.²⁸

IDENTIFYING IMPACT ROUTES FOR CAPABILITY CREATION

The evaluation process (Figure 2.) is undertaken specifically to identify opportunities for future development of the Design and to assess its viability to become a model for wider application. Reflective analysis of the learning and teaching delivery developed from observations made in real time by staff, guests and learners, which built into stories aligned under key Participatory Design ‘lenses’. These stories are coded according to Marsick & Watkins²⁹ ‘characteristics of a learning organisation’. The Heads of Department from across the Design School were invited to review the insights generated – the coded headlines and accompanying stories – and to sense-make the narratives, adding a further layer of knowledge, contextual information or detail to each story. From this process, the opportunities are categorised and formed into routes for impact, with a set of value recommendations for future learning delivery.

Activity	Details and process	Lenses, tools or criteria used
Analysis		
1. Categorised Headlines Observations developed from reflective analysis of the delivery, build into stories which are aligned under identified ‘lenses’ for supporting participatory designing.	Informal observations catalogued throughout the delivery of the module, enhanced through regular ‘surgery sessions’ with learners about the design of the learning, a mid-point reflective activity and from the discursive learning space of the remote studio.	(A) Leadership as Knowledge Broker (B) Sense-making (C) Reflection-in-action as part of Situated Design (D) Mutual-learning
2. Coding Marsick & Watkins ‘characteristics of a learning organisation’ (2003) are applied to code the stories produced from the observations.	Using a set of criteria developed to describe the characteristics needed to create and sustain a learning organisation allows categorisation of missing characteristics and identified characteristics within each story and headline observation. This provides the knowledge gathered greater potential use.	1. Create continuous learning Opportunities, 2. Promote inquiry and dialogue 3. Encourage collaboration and team learning 4. Create systems to capture and share learning 5. Connect the organisation to its environment 6. Provide strategic leadership for learning
3. Critical Perspective Input and insights on the stories/headlines are gathered from Heads of Dept. within a structured approach to add contextual depth and knowledge.	Informal contextual grounding of the observations from leadership in the school shaped a hierarchy for the impact routes with regards to the situated need, relevance, and application.	Headlines and stories are allocated to different Heads of Department for input on relevance, evidence of it in practice, notes on their experience of the activity and sense-making. Stories were allocated based on disciplinary and professional expertise areas.
Discursive Evaluation		
4. ‘Reflection Reaction’ learner self-evaluation activity An ungraded questionnaire format completed and submitted as part of the summative assessment package.	An activity developed for learner self-evaluation to embed understanding of their own learning process, learning strengths and areas for improvement. It provides a moment for learners to think about their ways of working, encouraging understanding of what can be taken forward into future projects.	The format has been developed and tested across a decade in different institutions, levels and disciplinary learning. Open questions, structured to build self-reflection and awareness of themselves as the author and owner of learning in the context of the module.
5. Narrative, informal ongoing learner self-evaluation Reflexive ways of designing and learning design coupled with the delivery of learning and teaching shaped a culture of informal evaluation and communication within the remote studio.	In the dissonant, remote studio, discursive design approaches enabled greater self-evaluation and critical discussion of the processes of designing. In particular, activities such as bringing in a guest speaker to live chat within the group Miro boards enabled more dynamic feedback and discussion loops.	Tools used include: open surgery sessions group calls thematic studio discussions Miro text chats Miro in-board comment thread
Dissemination / Output		
6. Opportunity Categorisation From the above steps, informed by theoretical research and the experience of designing and delivering the learning, a set of impact routes and value recommendations for future development are defined.	Building routes for future learning impact from the analysis creates action from the research - it allows the processes and learning to be adapted to suit different delivery, learning and teaching.	The Impact Routes have informed the development of thinking toward a suite of Level 8 modules and informed a new Creative Futures Postgraduate programme to be delivered in 2023/24.

Figure 2. Analysis process followed to evaluate the teaching and learning delivery within the new module and its impact.

Within this evaluative analysis, a deep understanding is developed around the connection between types of dialogues students have, discursive teaching approaches, and how this helps embed reflexive

practice as designery practice.³⁰ Capability can be observed within these connection moments, but clearly identified, from a learner perspective, in the responses to a reflective evaluation activity submitted at completion of the module (Figure 3.) Critically, these connections can be supported by active consideration of the Impact Routes (Table 1.) something that has since been tested during 2021/22 when developing pilot modules in NCAD for the Creative Futures Academy project.



Figure 3. Learner self-evaluation activity, 'Reflection Reaction' sample responses.

Connecting	Playful, informal and conversational communication enhanced the learning experience by making it accessible to all. The learning material attempted to generate a common language infrastructure, promoting accessibility through familiarity.
Experiencing	Providing a visually-led infrastructure (to both the designing and the learning progress) that felt tangible, was critical to the impact of new, multidisciplinary and virtual learning. Rooting learning in a physically experienced exercise anchored it to something real, which was important to the success of the virtual delivery.
Collaborating	Co-working, discussing and co-creative thinking are not necessarily things that every learner can do easily, therefore support structures and prompts are needed to scaffold the process of working together, in new ways, and with new people.
Iterating	Creating a learning structure that follows the learner (in the first iteration) encourages it to be responsive to needs, and therefore, through an evolving approach to development, a restorative experience. Basing a learning structure on actual experience of learning is critical to success.
Adapting	A fluid approach to the learning structure, and direction, allowed for opportunities to address blocks that came up, or readiness/ability to progress with the programme. Generating weekly briefs, issued during the programme created pace, but also the ability to re-focus, recap or redress elements of the learning experience.

Table 1. Routes for Impact with a key action that might shape interpretation.

Understanding the themes around those routes is critical to shaping an environment for learning capability. The thematic directions which support the Impact Routes can be briefly signposted as follows:

1. Action is staged; the learning space is a set for performance.

Learning can only be realised through the decisions and actions of the individual. Following Covey³¹ “between stimulus and response there is a space. In the space lies our freedom and power to choose our response. In those choices lie our growth and happiness”. Schon³² suggests a new approach to educating professionals that recognises a need to actively respond to uncertainty, instability, and uniqueness through a combination of intuitive processes described as “knowing-in-action”, “reflection-in-action” and “reflection-on-action”.

2. Reflection is instrumental; teaching and learning connect through common tools.

Design tools, as instruments of inquiry in exposing the unapparent³³ play an important role in the design process, they help designers to manifest future solutions, they filter and prototype thinking. Bringing in reflexive techniques, as design practice, encourages self-reflection and self-evaluation which can help learners to understand both the design situation and problem at hand. However, tools are not only for providing an end-solution but affect our perception and understanding of the world, they help us make sense of it as it is experienced³⁴.

3. Learning is an autoethnographic act; discussion shapes reflexive action.

Autoethnographers reflexively explore their experiences and their interactions with others as a way of achieving wider cultural, political or social understanding³⁵. Ellis, Adams & Jones position³⁶ informs consideration of autoethnographic practices as a means of offering opportunity to challenge dominant narratives, and that through ‘narrating’ their personal perspectives, uncover nuances in cultures or cultural thinking. Following Shulman, development of learning, shaping of pedagogical tools, infrastructures and ways-of-working, is a form of discursive designing³⁷.

4. Knowing requires a self-regulated learning mindset; motivation creates value.

Self Regulated Learning (SRL) is a when individuals control their own learning experiences³⁸ by establishing conducive work environments, resources; employing cognitive and metacognitive learning strategies, being able to adjust behaviours and emotions during academic tasks, and believing in their capabilities and the value of learning. Self-regulated design learning helps design educators create efficacious personalised learning events and environments by complimenting design learning with SRL.³⁹

5. New contexts need sense-making; discursive designing builds deep understanding.

Learners must be enabled to tackle problems in new ways that make sense in new contexts, to maintain a balance between productivity and creativity, and collaborate across different contexts.⁴⁰ Sense-making originated within the communications field where practitioners were searching for new approaches to gain a deeper understanding of communication, through communication-as-dialogue.⁴¹ For implementation, from the perspective of having put the Impact Routes into action during the CFA pilots in 2021/22, these thematic directions act as the start-points for development of approaches to the overarching learning task – it may be that only one is needed as a focus, or it may be relevant to apply multiple thematic directions for the module/course. The Impact Routes then fall under these themes, where relevant, and the key action provides a headline for blocks of learner activities within that learning journey. When they are applied in a learning vehicle, additional layers of knowledge, activities, methods, tools etc. are added to enrich the routes, and build a generative model for teaching.

CONCLUSION - FORETHOUGHT INSTEAD OF FORESIGHT

With remote design learning, and the remote design studio, engagement, expectation, worth and motivation are things that have to be considered differently. A student does not engage in tasks or set goals and plan or work strategically if they are not motivated by strong personal agency. The way a student experiences a situation and the potential for learning in that situation are strongly influenced by their orientation of thinking and doing. To activate this fully requires the traditional, linear framing of knowledge creation, teaching and learning to be reimagined to support transitory, changeable spaces for occupation.

It is thought that learning is nurtured through action, in a space between stimulus and response⁴² which aligns to thinking that the process of creating and dealing with situations is rooted in self-regulation.⁴³ Modelled as three phases, a process of self-regulation is seen as representing capability through a sequence of: forethought (planning and decision-making), action/performance (integrating and applying) and reflection & meaning-making (thinking, comparing and attributing). The research and analysis of the Design discussed in this paper demonstrates that self-regulatory process in both its execution and the practice of evaluating it to understand the future opportunity of the model it generates.

The next chapter in the story of design learning, in a Pedagogical Futures imaginary, requires the system to understand where capability meets knowing, in the learning experience, as much as it requires disciplinary re-thinking. Foresight and Design Futures researchers Candy and Dunagan⁴⁴ note that foresight scholarship has moved to articulating, mapping and communicating images of the future in a wider range of mediums and approaches as part of the expansion of the field into more experiential research. If design education is framed differently, it might routemap that future narrative. If we can take discipline off the stand and look at building a more robust design learning infrastructure, there is a stronger chance of design being capable of a future.

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CAN YOU SHARE YOUR SCREEN?: LOOKING AT STUDENTS' NEW LITERACIES OF ONLINE RESEARCH AND COMPREHENSION AND REDEFINING TEACHERS' ASSESSMENT

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INTRODUCTION

It has been observed that new social practices, new ways of communicating, new ways of disseminating information, and new ways of teaching and learning strategies are being established. We also know that we are at an advantage since technology, especially the Internet has already been existing since the 1950s.¹ Technology has greatly affected not only the development and globalization of our country, but also the transformation of literacy.² Democratization of our country, economic development, social and cultural changes among other are just some of the factors that also transformed the nature of literacy.³

New Literacies

Previously, literacy is the ability to read and write simple sentences.⁴ Now, it is the ability to read and write, together with the person's ability to use digital technology.⁵ From this definition came the construct of new literacies. It doesn't mean new as in newly discovered as it has been established since the 1990s.⁶ In this study, new literacies are the strategies, skills, and dispositions required to utilize the Internet and be able to learn, communicate, and comprehend online.⁷

New Literacies of Online Research and Comprehension

A specific focus under this theory and research is the new literacies of online research and comprehension. A lot of researchers studied the new literacy skills regarding the teacher disposition and strategies,⁸ students' participation,⁹ integration of the Internet and ICT,¹⁰ and the differences in terms of online and offline reading,¹¹ but studies about the assessment practices of the new literacy skills of online research and comprehension appear to be scant, where this should be one of the central aspects of new literacies research because classroom assessments inform instructional methods.¹²

Another impetus of this study is the 2019 Program for International Student Assessment (PISA) results.¹³ Overall, the ranking among 79 partner countries of the Organization for Economic Cooperation and Development (OECD) showed that the Philippines is at the bottom rank for reading performance and second lowest for mathematical and science performance.¹⁴

It is also worth noting that previously developed assessments of the reading skills needed to comprehend printed texts do not sufficiently capture the complex and unique comprehension processes required to read the information on the Internet.¹⁵ Also, it is worth reiterating that some students may think that online learning will be easier compared to traditional learning.¹⁶

If we continue to disregard the gap between the students and the new literacies of online research and comprehension, a misalignment of reading achievement between the rich and the poor may continue to exist.¹⁷ To achieve optimal learning in this new setting, students need to learn about the new and required literacy skills to be effective online readers and online researchers.¹⁸

Furthermore, the issues presented are the impetus of this study. If we lack studies regarding online research and comprehension, we will also remain uninformed of pedagogical practices that are integrated with new literacies.¹⁹ While assessment is not the only important aspect of teaching and learning, without valid and reliable assessments that integrate the new literacies of online research and comprehension, teachers may not be able to produce students who are prepared with the next skills required by the globalized community.²⁰

Having that stated, this research aimed to answer the following questions: what are the new literacy skills of online research and comprehension evident among college students?; what are the new literacy strategies of online research and comprehension evident among college students?; and what are the assessment practices that incorporate the new literacies of online research and comprehension of college students?

INTEGRATED THEORY OF ONLINE EDUCATION

The Integrated Theory of Online Education guided the researcher in this study.²¹ The theory was chosen as the research problem revolves around the online learning environment and online pedagogical practices hence, the framework needs to revolve around an online learning theory. It is integrated because it combines the lenses of the established theories in education: learner-centered, knowledge-centered, assessment-centered, and community-centered.²²

The framework is sufficient for looking into the online learning environment since it is the knowledge or the content that is the major component,²³ which directly parallels the study's objectives as illustrated in *Figure 1*. This framework was also used by some researchers²⁴ who explored learning in an online context.²⁵ From search and retrieval, tutorials, simulations, and games, as well as virtual labs and e-books, the researcher modified it into information from the Internet to accurately fit the study's context.

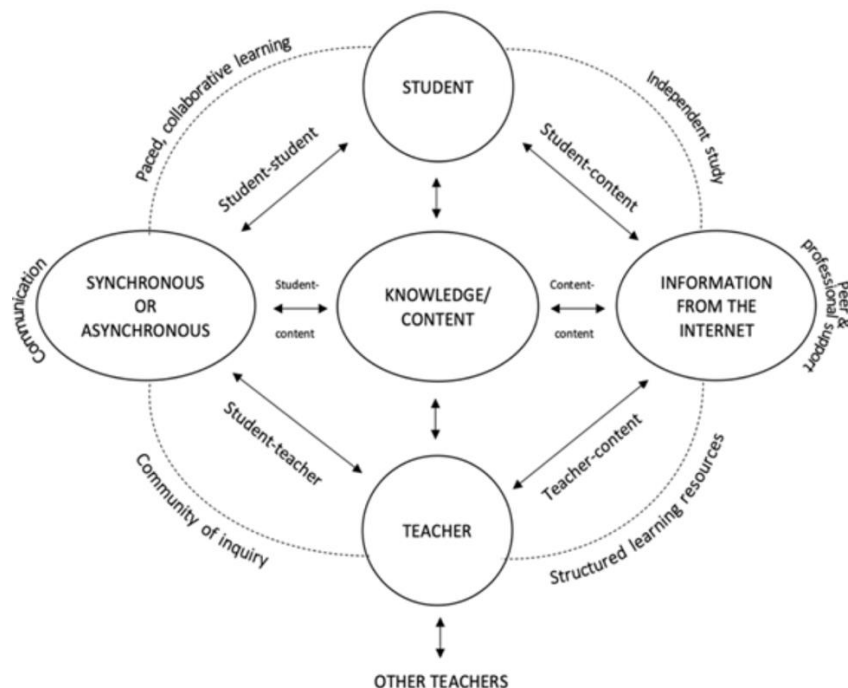


Figure 1. Integrated theory of online education.

One of the explorations under the lowercase theory of the new literacies is online research and comprehension. New literacies of online research and comprehension include several new practices which are: “identifying important problems, locating information, critically evaluating information, synthesizing information, and communicating information”.²⁶

METHODOLOGY

Qualitative Action Research was the design of the study. The researcher was involved in a series of “planning a change, acting and observing the processes, and reflecting”. Online action research was the best methodology for this study as the researcher aimed to conduct an in-depth examination of the new literacies in online research and comprehension in a purely synchronous learning environment.²⁷

RESULTS AND DISCUSSION

To answer the first and second research questions, a coding procedure was done to the data gathered from think-aloud and retrospective interviews. The steps of thematic analysis were utilized.²⁸ An interesting finding is that majority of the new literacy skills were elicited from the higher-performing students, followed by the average performing, and lower-performing students. Accordingly, the findings reveal that the students were able to elicit new literacy skills under each process of online research and comprehension.

New Literacy Skills

At the same time, the majority of the skills are found under the process of communicating answers, followed by the process of identifying important problems, then critically evaluating the information process, and lastly, locating the information process. Findings also show that there were distinct new literacy skills that only students from average and higher performing groups were able to elicit. It appears that these new literacy skills were relevant as to why the students from average and high-performing groups were able to get high or even perfect scores.

These new literacy skills are reading directions on Canvas, understanding the rubrics, searching and navigating information on Google, judging the relevance of the information, writing an essay, creating a mind map, creating a presentation, paraphrasing, and proofreading.

Meanwhile, findings also reveal that students from high-performing groups were able to elicit new literacy skills that belong under the higher-order thinking skills. It is said that the new literacy skills are automatically applied,²⁹ hence, we could see how the higher-performing students could elicit more automatic actions, compared to lower-performing students and average performing students. This clearly implies that in teaching and learning new literacy skills, both teachers and students should be engaged in full efforts.³⁰

New Literacy Strategies

Participants frequently elicit the new literacy strategies of using Canva, utilizing the templates on Canva, using MS Word, searching keywords on Google for additional information, using of online sites to organize references, and using blog sites. Findings reveal that majority of the new literacy strategies elicited from the participants belong under the process of communicating information. Hence, this gives a clear indication that students do not just read and answer questions on the assessments, they are also required to put any effort into creating and submitting an output by integrating technologies into it.³¹ This is in line with the study that students are not only required to read, they are also required to perform the new literacy strategies to research and comprehend.³²

These findings create a teaching implication where the teachers should start integrating technology and ICT in their online learning environment and assessments and start seeing the new literacy strategies as a central aspect of teaching and learning, instead of looking at it as a mere tool and teaching new literacies for the sake of awareness.³³

Another interesting finding is that the students were able to elicit new literacy strategies distinct from each other. These include formatting of style, using Paint 3D, searching pictures on Pinterest, using Snipping Tool, using of online dictionary, using of Google Drive and OneDrive, using LibGuides as a guide for references list, searching and reviewing the CIB on Canvas, using of Google Scholar, using Chrome extensions, and utilization of split screen.

Conversely, a study revealed that students are found to be more technologically savvy outside of school, but not for academic purposes of the technology.³⁴ The current findings in this study revealed that the participants were able to utilize and elicit different technologies and ICTs in order to finish their tasks and assessments very well. A possible explanation for this is that the nature of the assessments in the other study did not require the students to think deeply and there were no mini activities integrated into the tasks.³⁵ Moreover, it was found that several activities like mystery photos, inquiry baskets, and making of digital products, and it was found that the students were able to elicit new literacy skills and strategies while conducting the activities.³⁶ It seems likely that the assessment practices play a crucial part in learning new literacies.³⁷

The use of blogs, news articles, and journal sites to find additional information was also revealed in this study as the new literacy strategies that students elicit. Interestingly, one student's new literacy strategy is to find additional information on brainly.ph, an online forum where anyone could write their own opinion about a certain issue. One of the important processes under the online research and comprehension is to locate information, which is a crucial step in order to critically evaluate the information present online.³⁸

Another unanticipated finding that emerged is that students from higher-performing group were the ones able to elicit the greatest number of distinct new literacy strategies. The multimodality of online research and comprehension could allow the student to either keep up with its nature or lose their

motivation in exerting effort.³⁹ Moreover, it seems like the students from higher-performing groups were able to perform and keep up well. A similar study found that multiple and multimodal representations in learning have an effect on the student's critical-thinking skills.⁴⁰ This could suggest that students who use or exert various new literacy strategies allow them to be more critical in solving tasks or problems online.

Assessment Practices

Contrary to expectations, findings reveal that a single assessment cannot incorporate all of the new literacy skills and strategies. There is no individual that can keep up with the rapidly changing nature of the new literacies.⁴¹ Hence, the most important learning students could acquire is to become lifelong learners so they would be able to adapt to the rapidly changing nature of technology and literacy.⁴² This result matches one study where teachers are found to be having a hard time integrating the new literacies in learning.⁴³ Thus, this suggests that as teachers, aside from focusing on integrating the new literacies of online research and comprehension, it is important to teach our students to become lifelong learners. The assessment practices are character map of the self, reflective essay and giving of feasible solutions essay, jeopardy game, five slides five minutes, and problem-solving organizer.

The redefined assessment practices were evidently shown to parallel the framework as was evaluated by the experts. Consequently, in order to incorporate the theoretical concept, the researcher added hyperlinks into the redefined assessments, as it was proven that hyperlinks correspond well to how the human brain works.⁴⁴

Accordingly, hyperlinks could give the students an opportunity to learn the skill of automacy in knowledge construction.⁴⁵ This could suggest that creating hyperlinks on the assessment practices could help them see and learn the connections of the ideas gathered from the Internet.

CONCLUSION

Based on the indicated findings, the following conclusions were drawn. First, the new literacy skills and strategies of online research and comprehension are considered paramount in the 21st century. Moreover, the results provide a basis that new literacy skills are important to teach to students at an early age as it would take time and effort to master them.⁴⁶

Second, this study provides information that there are new literacy skills and strategies that should be taught explicitly and implicitly, as there are skills and strategies that students are not aware, they have acquired. Some students were not knowledgeable of the valid and reliable sources, some are even hesitant to search anything online. Hence, this confirms that teachers have to constantly remind their students about locating information as an important part of the online research and comprehension process.⁴⁷

Third, aside from teaching and incorporating the new literacies of online research and comprehension, the technology, and ICT, it is also important to teach our students and help them develop their sense of agency⁴⁸ and this study provides a basis that organizing the lessons for teaching the new literacy skills and strategies, as well as developing other competencies might be useful in teaching literacy.

Fourth, students will always be subjected to a lot of distractions online and this could become a turning point for the students to become complacent and plagiarize.⁴⁹ Thus, teachers and students should become more conscious of the process of online research and comprehension to avoid unnecessary actions. The students were found to be knowledgeable in terms of the technology, ICT, and digital tools which makes the teachers' roles more rigorous than before.⁵⁰ Hence, it is important

that teachers are also ready and have enough knowledge of the new literacies as it might be one of the challenges teachers have to face when teaching literacy skills.

Fifth, students are technologically savvy,⁵¹ therefore they might know digital applications and websites that teachers might not know about. Moreover, think-aloud session is still the best way to teach students about the new literacies. With that said, it is important to trust our students and give them several options when conducting the online research and comprehension activity. More importantly, the researcher concludes that the new literacy skills and strategies could not be integrated all at once in a single assessment. Incorporating new literacies, both in teaching and the assessments, is a process that teachers and students should not ignore.⁵² Therefore, it should be known that teachers cannot all at once teach these new literacies altogether.

NOTES

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FOCUS ON PEDAGOGY: THE ARCHITECTURAL DESIGN OF ENGINEERING MODERN JAPANESE SECOND LANGUAGE ACQUISITION CURRICULUM WITH ON-LINE ASSESSMENT UNDER THE PANDEMIC

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INTRODUCTION

Historically, “Global Curriculum” disciples have adhered to John D. Rockefeller’s philosophy of “*I don’t want a nation of thinkers; I want a nation of workers*”.¹ Tragically, the Japanese former prime minister Shinzo Abe was assassinated with a home-made gun and died on 8 July 2022.² The shooter was ex-Maritime Self-Defense Force educated Tetsuya Yamagami, who was arrested at the scene of the crime. Yamagami’s motive was in revenge for his mother’s cult indoctrination by The Family Federation for World Peace and Unification’s (also known as the “Unification Church” or the “Moonies”), conspicuous coercive “Affinity fraud”.³ Mr. Abe’s family, for three generations, stood sentinel enthusiasts of the cult’s notorious founder Sun Myung Moon who was “fleecing the flock” of deceit to dispose “thought” while the Japanese government was infiltrated and “unified” under the “worker’s creed”. Investigators still seem to be baffled to why Yamagami had shot the former prime minister instead of the head of the cult, ignoring the destruction of his mother’s free will and volition, leading to Yamagami’s “Paradise Lost” fall under the cult’s doomsday scenario.⁴ Meanwhile, Japan’s pandemic havoc spreads disrupting the harmony of “business as usual”, with a façade of normality within the complexity of reality. The double-sided “Global Curriculum” can give birth to innovation or indoctrination. This paper is based upon the author’s previous papers, as a modern tutorial for Japan’s “Second Language Acquisition curriculum design” focusing on the promotion of transformative critical-thinking pedagogy while establishing progressive on-line assessment that reflects upon the historical educational influence of the American psychologist, John L. Holland’s “Theory of Vocational Personalities and Work Environments”, also known as “Holland’s Codes,”⁵ as well as Mr. Abe Shinzo’s 2006 “Enactment of the Revised Fundamental Law of Education” to unify Japan.⁶

TRANSFORMATIVE SYNERGETIC CURRICULUM DESIGN

“The fact is that given the challenges we face; education doesn’t need to be reformed – it needs to be transformed.” A quote from Sir Ken Robinson.⁷

An original definition of “Transformative Synergetic Curriculum Design” is a transformative architectural system designing the innovative Global Curriculum for manufacturing human resources

in the “Global Hierarchy”⁸ while promoting progressive citizen inclusion for reskilling and upgrading future entrepreneurs as the new trend.⁹

“Very often, organizations are inflexible because there is too little communication between functions; they are too segregated.” A quote from Sir Ken Robinson.¹⁰

Organizations have a tendency to build vertically upward like the “Tower of Babel” utilizing mass persuasion through political influential assessment of communities with a selective two-sided competitive view of good or evil. These two sides in a coin or the “heads and tails” are a façade and the coin has a third dimension that sustains the “heads and tails” called a cylinder.

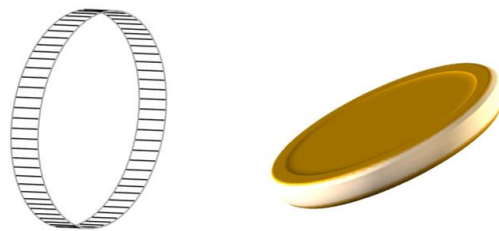


Figure 1 Two sides in a coin including the cylinder in three dimensions, originally designed by Hirona Matayoshi

According to educationalist Sir Ken Robinson, “School systems should base their curriculum not on the idea of separate subjects, but on the much more fertile idea of disciplines...which makes possible a fluid and dynamic curriculum that it is interdisciplinary.”¹¹

The two-sided coin analogy represents the “eject button” that breaks the fall with a parachute with a smooth landing. Without the third-dimension, citizens would be taken advantage of in violation of human rights. Unfortunately, education has a history of focusing upon decentralizing “thought” and centralizing “loyalty” toward elite apathetic psychopathic CEOs to comply with the “Holland’s Code”, that will be discussed in this paper.¹²

PEER PRESSURING JAPAN

Japan has a cult-like historical systematic tradition of manipulating citizens with the following mass persuasive proverb:

Japanese: 出る杭は打たれる

Pronunciation: Deru kui wa utareru

English: The stake that sticks out will be hammered down.

Translation by Hirona Matayoshi¹³

The 2021 Nobel Prize Physics laureate, meteorologist Professor Syukuro Manabe, explains this philosophy as “peer pressure” (in Japanese 同調圧力, pronounced *Douchoatsuroku*). Professor Manabe left Japan to become a U.S. citizen, like many other Japanese laureates, for better prospects due to his criticism of Japan based upon the cultural harmonious compliance in the “unified subordination” rather than facing “transformative diversity”.

The following Professor Manabe’s quote best demonstrates his criticism:

*“I’m not capable of living harmoniously”.*¹⁴

Professor Manabe is a true savior for academia because his assessment represents the citizens of Japan questioning the government due to Yamagami's motive while politicians and CEOs are on their toes, so to be speak. Professor Manabe taught "thinkers" to twist the dimension of the two-sided coin to transform the third dimension for infinite change.



Figure 2. Mobius Strip designed as wings with a twist of a coin designed by Hirona Matayoshi

HISTORICALLY PRIMED

The "Bad Seeds"¹⁵ of Japanese history in the 20th century is imperialism and nationalism leading to Enola Gay's payloads.¹⁶ We can see how propaganda influenced Japan by reviewing Eaton's book, *"Circulars of Information of the Bureau of Education. No. 4-1885. Education in Japan"*.¹⁷ This book was published in 1885 by the Department of the Interior, Bureau of Education Government Printing Office in Washington D.C. According to the book, the US was concerned with Japanese education since 1885. What was really intriguing, was the curriculum was normal with a variety of language skills including English until 1943 due to war propaganda when English was taken out of the curriculum. According to Professor Kumiko Torikai at Rikkyo University, in 1933, 98.2% of the students were taught the English language. Between 1888 to 1936, the Japan Ministry of Education sent 33% of Japanese army cadets to study in nationalism influenced Germany, 17% studied in France, 15% studied in Russia, 13% studied in China, 12% studied in the UK, and only 9% went to the US.¹⁸ In other words, there was a shift from 1933 to 1936¹⁹, which is only 3 years from normal to "unified and primed" in collective behavior toward war.²⁰ Those 33% Japanese army cadets returning from Germany, at the time, were a powerful mass persuaded entity with a one-sided view of the world disturbing the harmony and balance of diplomacy in collapse.²¹ The irony behind this is that historical rhyme "does" repeat itself in a rhythm with Mr. Abe Shinzo's 2006 "Enactment of the Revised Fundamental Law of Education" to unify education under the rising sun just like his grandfather's legacy in consort with infiltration through indoctrination.²² The rhyme's rhythm influenced the maritime cadet Yamagami family's downfall exposed the cult-infiltrated Liberal Democratic (Conservative) Party in Japan. Yamagami's Juvenalian satire proved Professor Torikai's theory with Holland's Code (that will be discussed later), Professor Eaton's research, and correlates with combining Professor Miller and Professor Merton's research, with the author's research including Professor Manabe's criticism. However, what is really sad is that it took a young man's "One Flew Over the Cuckoo's Nest" to make the nation question Japan's political educational curriculum.²³

SYNCHRONOUS & ASYNCHRONOUS MOBIUS TWIST AS AN ANTIDOTE

The father of philosophy Aristotle once said,

“It is the mark of an educated mind to be able to entertain a thought without accepting it.”²⁴

As an “Effective Citizen Education Strategy”, psychologist John L. Holland explains how collective personalities can apathetically exclusively shifted within the Holland’s Code that demonstrates personality conflicts.²⁵

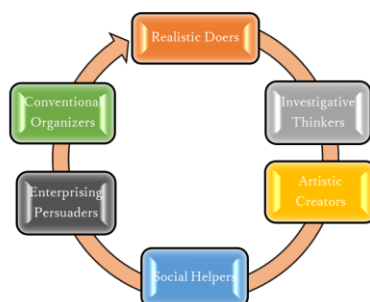


Figure 3. Holland's Balanced RIASEC Vocational Personalities²⁶

When looking at *Figure 3*, you can see the balance of all six personalities with a harmonious environment. The abbreviations RIASEC, represent each personality which are Realistic Doers, Investigative Thinkers, Artistic Creators, Social Helpers, Enterprising Persuaders, and Conventional Organizers. Within Holland’s model, there are two basic types referred to as S (for teachers) and R (for military) typed personalities and when combined, in a shift, together than the balance is destroyed. Refer to the following *Figure 4* and *Figure 5* to see the shift in balance. As you may see, “I” and “A” types tend not to follow crowds due to individual creativity as “thinkers” instead of “doers”.

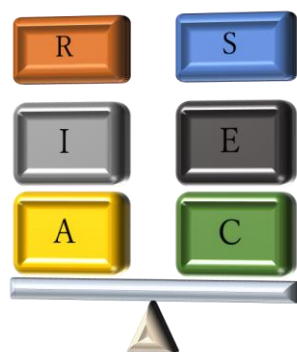


Figure 4. Abbreviation of Balanced RIASEC Personality Theory²⁷

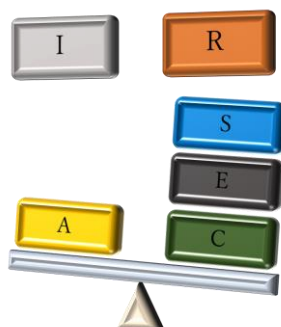


Figure 5. Original Figure Designed by Hirona Matayoshi Based upon Holland's Figure²⁸

Unfortunately, political charismatic extremists, who don't want thinkers but want submission to fulfill corporate cult-like expectation, will manipulate “complying SR Types” to exclusively deny “evolution” to enjoy the “foundation of heritage” with convenient amnesia. This brings us to the question of how could the design be revised to empower AI types to reverse the influence of SREC types for Japanese vocational inclusion possibilities?

Traditional education can be transformed into a “Diagnostic Assessed Customed Personalized Transformative Synergetic Curriculum” to break Holland's Code,²⁹ to overcome obstacles by removing blind spots to gain insight with the “Synergy Effect”³⁰ for student vocational goals by centralizing flexible content delivery. Technology such as the LMS (Moodle), ZOOM (Google TEAMS), and “UD Talk” platforms are an interactive design that features enriched social learning to empower the teachers and students with a variety of solutions in an effective asynchronous atmosphere. Synchronous on-line learning provides the sense of responsibility by narrowing gaps for nourishing confidence in achievement with negotiable methods for a technical transformative renaissance rather than a revolution. Tradition locks compliance leading to catastrophes of derailed and disgruntled employees. A twist toward a “Personal Customized Transformative Synergetic Curriculum” can provide content and coexisting cognitive opportunities in creativity through inclusive synergy which is demonstrated by Sustainable Development Goals.

NOT STANDARDIZED EDUCATION BUT A PERSONALIZED EDUCATION: TRANSFORMATION & CUSTOMIZING TOWARD A SYNERGETIC CURRICULUM

“The answer is not to standardize education, but to personalize and customize it to the needs of each child and community. There is no alternative. There never was.” A quote from Sir Ken Robinson.³¹

Like Robinson says, there is no progression in tradition. The following *Figures 6 and 7*, shows teachers are complex building blocks that can transform traditional curriculum into a flexible Personal Customed Transformative Synergetic Curriculum in each block of discipline. Disciplinary expertise spreads innovative knowledge connecting global communities like a puzzle in sustainability with “economic schemes”.



*Figure 6. Traditional Local Education as a Core for Information and Technology
Designed by Hirona Matayoshi Influenced by Sir Ken Robinson³²*

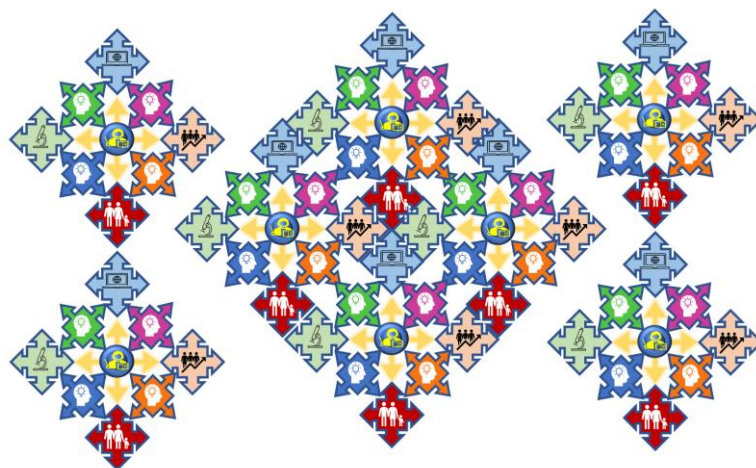


Figure 7. Transformative Shift to Global Personal Customized Synergetic Curriculum. Designed by Hirona Matayoshi Influenced by Sir Ken Robinson³³

ON-LINE ASSESSMENT PROCEDURES

Assessment needs to be clear as well as productive. To revive technology, the Japanese government made a twist to allocate more than 476 billion yen³⁴ to hire engineers in Kumamoto to strengthen Japan's semi-conductor industry with TSMC.³⁵ Taiwan has handed over their data to the U.S. government to secure the world's "chip supply chain" through the power of Personal Customized Transformative Synergetic Curriculum to reskill education as a renaissance in Japan. Moreover, Yokohama National University was "ordered" to promote evaluation of student extra-curricular work using on-line assessment to provide clear assessment of extracurricular activities for the purpose of second language acquisition education. Referring to the following author's curriculum development map in Figure 8:

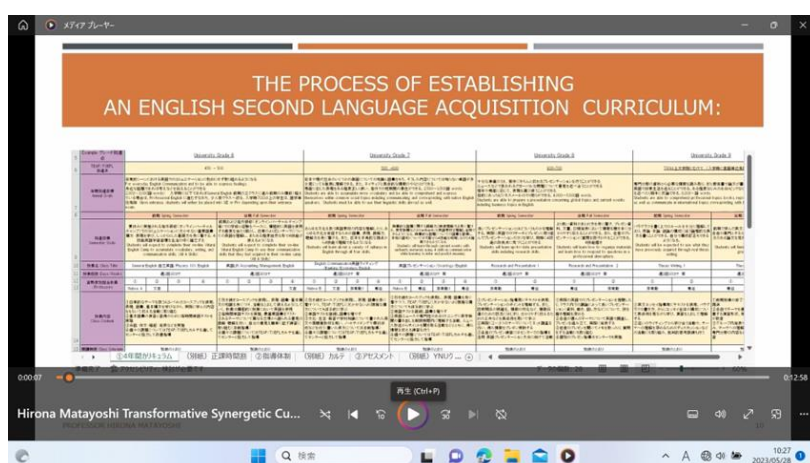


Figure 8. Building the Curriculum on Excel as a Visual Map or Tree Designed and Structured by Hirona Matayoshi

CONCLUSION

The goal of Personal Customized Transformative Synergetic Curriculum is to question, reskill, and upgrade citizens with effective assessment strategies to prevent antisocial personality behavior in the system for better solutions in the Global Curriculum, like Japan's reviving semiconductor manufacturing industry, and all it takes is a twist in the plot of a coin to hammer a new dimension.

NOTES

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SUPPORT TEAMS FOR INNOVATIVE TEACHING PRACTICES IN HIGHER EDUCATION DURING THE PANDEMIC AND BEYOND: A CHILEAN CASE

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INTRODUCTION

The Covid-19 pandemic impacted classrooms around the world. The situation in Chile and at our university was no exception. It highlighted a phenomenon that numerous studies had arguably reported on educational technology: schoolteachers and higher education faculty require more transformative and creative practices with digital technologies.¹ This is necessary to harness the learning possibilities of ICT. With the closure of universities to ensure educational continuity,² most educators rapidly moved their syllabi designed for face-to-face teaching to a remote emergency modality without making significant modifications. This situation left profound lessons leading our department to create a team that supports faculty in the challenges they face concerning future practices. In addition, we visualized a shift in the ways in which educative practices would be held and sustained over time. Therefore, it was necessary to foster reflexive processes,³ among faculty that would allow them to design and implement their practices consciously and adapt them to the conditions of our current times.

This article discusses a teacher professional development (TPD) experience in a department at a Chilean university. The experience was born in 2021 as a response to the challenges imposed by the pandemic. Its primary purpose is to promote innovative practices through holistic, reflexive processes that allow faculty to bring together the theories underlying their practices, the institutional policies and the immediate reality they face with their pupils.⁴ The innovation team seeks to be the catalyst that helps them integrate the three areas described above.

Context

This department develops a one-year duration program. Since 2005 it has offered an alternative entrance to the university. In Chile, most young people enter higher education if they approve of a national standardized test. Many students who did not achieve their expected outcomes in this measure usually prefer this program and enter their destination careers after approval. The program prepares its students to perform successfully in their professional careers after completing it. The department works with 43 faculty members who teach 28 subjects. The curriculum is divided into core and disciplinary subjects, depending on the student's major. The faculty's work has a solid propaedeutic character, helping students strengthen their skills to perform their future higher education studies successfully. For this reason, it offers core subjects transversal to the specialized

disciplines, such as Critical Thinking, Written Communication, Oral Communication, Anthropology, Philosophy and History. Thus, even if a student desires to pursue higher studies in Engineering or Medicine, he or she must take and approve these subjects during the program.

This situation demands highly trained faculty to teach intellectually and socioemotionally challenged students. The issue described above has deepened with the pandemic. Learners have experienced the complexities that the absence of adolescent-age school socialization has created for them,⁵ in addition to the implications of an emergency remote teaching that cannot take full and equal responsibility for providing quality and authentic learning experiences for all.⁶

Before 2021, the program had made decisions regarding TPD. There was already a person in charge of providing technical support in using the online platform offered by the university. For years, the department has been promoting blended practices among teachers. The department aimed that faculty use the platform not only as a repository of material for students but also as an environment to integrate assessments and other interactive activities that enhance learning into daily teaching practices.

Concerning pedagogy, since 2015, the department has been working with the Constructive Alignment framework.⁷ The aim is that the syllabus of each subject is designed consciously; therefore, it is oriented towards articulating the proposed learning outcomes, the declared and implemented teaching strategies and the assessment methods. To this end, there is a role in supporting the staff in constructing their assessment instruments and ensuring alignment. In 2021, both roles, supporting the virtual platform and pedagogical matters, joined the Innovation Committee (IC) with the academic and the program directors.

Reflexive practice as innovation and TPD

Reflexive practice⁸ constitutes a necessary professional framework for our living period.⁹ The sanitary crisis imposed by the Covid-19 pandemic revolutionized classrooms around the world. It also revealed a hidden reality regarding pedagogical innovation and the use of digital technologies in teaching. While these technological tools and resources have a strong potential to promote authentic and quality learning, there needs to be more real pedagogical transformation when technologies are used for educational purposes.¹⁰

Recent studies on TPD and teachers' digital-technology practices have reported the need to resume reflexion as opportunities of teacher professional development (TPD). It is no coincidence that numerous studies use the concept of 'emergency remote teaching'¹¹ to analyze the rapid transition from face-to-face to online teaching that occurred in response to the closure of educational institutions. A holistic approach to the concept, involving continuous and dialogic professional learning about the implications of teaching practices that consider the diverse characteristics of the context in which they are developed and that may influence faculty decision-making, is a fundamental practice. Although the notion has been widely developed by various theorists, including John Dewey¹² and Paulo Freire¹³, it needs a further application to digital-technology teaching practices. Besides, over the years, its understanding has been fragmented. It is generally interpreted in academia and TPD programs as unique opportunities limited to a specific experience, teaching unit, or technology use. In this article, we propose a holistic view that favours continuous learning about practice and adaptability to the contextual needs of faculty so that the experience becomes meaningful and more relevant for those who teach and learn.

Several authors have developed the concept of reflective practice. John Dewey¹⁴ is considered one of the fathers of the notion. His proposal implies that the professional exercises a conscious practice through the development of cognitive skills, such as:

- systematic and critical research on the decisions made and their implications,
- the comparison and contrast of one's practices with those of other professionals, and
- the constant relationship between pedagogical theories and the actions taken in the classroom reality.

Since the second half of the 20th century, a rather pragmatic perspective prevailed, inclined towards understanding the concept as an iterative evaluation process but limited, for instance, to a particular classroom experience before, during and after the practice. For example, Donald Schön¹⁵ differentiated between 'reflection in action' and 'reflection on action' to keep refining the practice over time.

From Dewey, Schön and other scholars, it is possible to observe that reflexion is iterative. The teacher plans, implements, evaluates, refines or transforms the practices, moving forward and backwards, to contribute to the most relevant ethical aspect of education: pupils maximize their learning possibilities. In the process, the teacher becomes increasingly aware of his or her professional role, transforming the practices with a deep sense of responsibility. The reflexive practitioner becomes a professional learner who seeks to constantly improve the practice to foster a deep understanding of the discipline among students.

By the end of the 20th century, a holistic tradition became more prevalent. Scholars like Bleakly¹⁶ and Freire¹⁷ argued that teachers must critically consider various features, characteristics and conditions of their institutional ecosystem that influence their decision-making process when thinking about their praxis. This perspective starts from the premise that learning -therefore, professional learning- is social, dialogical and situated. This idea means that the conditions and characteristics of different human groups and contexts influence teaching and learning. In this sense, to transform their practices over time and adjust them to the needs and conditions of their reality, faculty must be aware of how various elements and characteristics influence their decision-making. In addition, faculty must know how their choices influence their students' learning. In Freire's eyes, technology, among many other elements and characteristics, constitutes a relevant influence on the choices they make. The IC is inspired by these principles to think of, design and implement diverse kinds of professional learning opportunities for faculty members to seek innovation. Reflexive practice from a holistic perspective that safeguards and increases the faculty's agency has been pivotal to our supporting role within the department.

Figure 1 shows the interplay between three reflexive dimensions. Firstly, the IC seeks that faculty make decisions based on a profound reflexion on the learning needs of their students and the disciplinary and pedagogical specificities associated with the field they teach. Secondly, faculty integrate this reflexive dimension with a broader domain since they can dialogue with other colleagues and members of the IC. They receive technical support on digital technologies, feedback on the construction of their assessment instruments and the constructive alignment framework application. They also are provided with support for the innovation projects they desire to undertake. Finally, the faculty integrates both professional and departmental dimensions with the institutional one by incorporating the university's vision and broad regulations (see policy integration in Figure 1). Behind all, there is a fundamental ethical aspect related to what Dewey¹⁸ and Freire¹⁹ maintain in their theory of reflective practice. Teachers think about transforming their practices to increase authentic and profound learning possibilities. The intersection of the three dimensions increases the faculty's agency (see 'FA' in Figure 1), as they can improve their decision-making from holistic reflexivity.

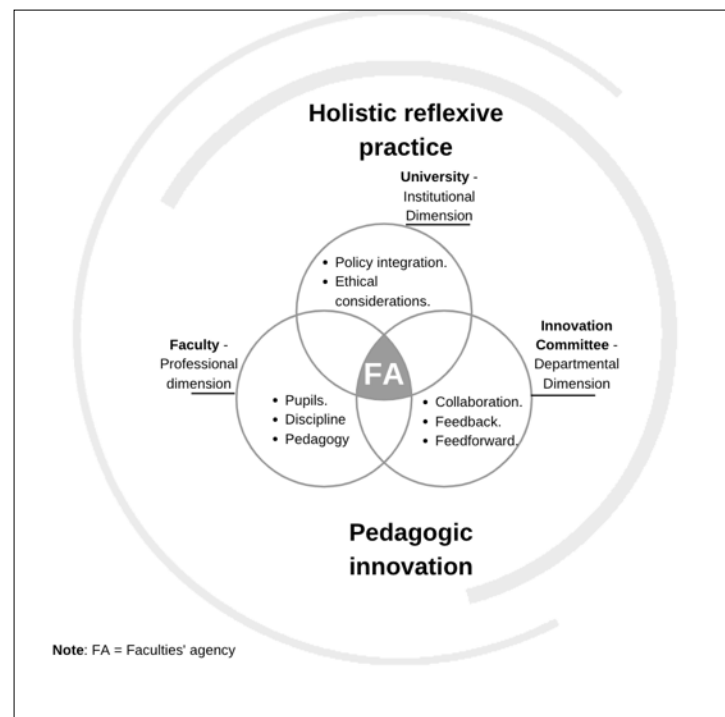


Figure 1 – Holistic reflexivity within the department's ecosystem
Source: Author's own creation.

Adaptability of the Constructive Alignment to the local context

The constructive alignment (CA) framework²⁰ holds that the teacher should strive for, as the framework indicates, an 'alignment' between the learning outcomes, the teaching strategies and the assessment methods. The framework makes sense for our department primarily because the group of students we work with share specific learning needs. They need personalized attention and, simultaneously, to develop higher-order skills. They usually struggle to achieve these abilities fully in school. The CA framework proposes a way to evidence students' comprehension of the subject through the 'structure of observed learning outcome' (SOLO) taxonomy²¹. We use the SOLO taxonomy as the basis for our practice—faculty design their syllabi, assessment strategies and instruments based on the SOLO taxonomy. This year, the IC created a course on the university's LMS platform for the department's faculty. Resources on constructive alignment, types of assessment, successful faculty experiences and teaching support material are shared through a monthly newsletter. In addition, the IC works with faculty and teams to integrate other CA frameworks, such as the flipped classroom.

Figure 2 represents how our department applies the CA framework. This alignment generates from innovative practices triggered by holistic reflexivity. Learning is at the centre of the intersection resulting from the reflexive process discussed in the previous section.

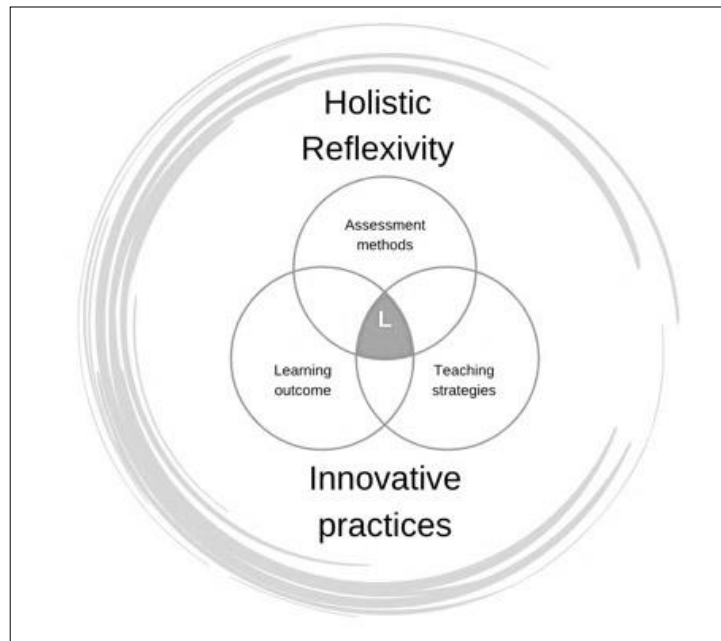


Figure 2 – The SOLO taxonomy in the department's ecosystem

Source: author's own creation.

Note: L= learning

ASSESSMENT AND FURTHER OPPORTUNITIES

Expanding innovation through reflexion: working with teams

The IC has conducted three innovation experiences with three teaching teams concerning pedagogical innovation projects within the courses. Two of them are based on the implementation of the flipped classroom. In a second experience, two faculty members collaborated to foster pupils' more profound understanding and skill development in their subjects. The IC has encouraged assessment of the experiences with the faculty through different sources of information. On the one hand, student progress in academic results throughout the year has been analyzed. In the case of the flipped classroom innovation, faculty have used learning analytics (LA) to make decisions about the videos they share and the teaching strategies they implement in class. In the case of collaborative work among subjects, students' learning achievements have been compared with a survey that measured pupils' perceptions of the intervention. Through reflexive practice sessions, these resources helped staff make decisions for the future.

Throughout these two years, difficulties and challenges have been experienced and addressed through reflexive sessions applied at all three levels (i.e., professional, departmental and institutional). A shared discourse has been consolidated at the departmental level regarding CA. The challenge remains for new teachers to incorporate the framework smoothly and capture the pedagogical purpose behind its implementation.

Sustain staff motivation through permanent support

Time remains an additional challenge. More dialogue and collaborative decision-making opportunities are needed to promote faculty members' enthusiasm towards pedagogic innovation through reflexion. More spaces for thinking deeply about the implications of our decisions and how different features and ecosystemic conditions affect them are necessary to promote authentic and deep learning among our students.²² Evaluating innovation experiences from the design and students' learning viewpoints is

necessary. In addition, an assessment of the support provided by the IC is needed. The systematization of the information is under development. Further research and dissemination of findings become appealing areas to pursue.

Harnessing the LMS platform for TPD

The LMS use for the department's faculty members is still embryonic. We must gather evidence about the faculty's TPD needs and make the most of the platform according to those needs to increase the learning possibilities of our pupils. High-quality teachers result in high-quality student learning.

CONCLUSION

The Covid-19 pandemic has challenged university teaching experiences worldwide. Before the sanitary crisis, we witnessed a progressive educational shift towards the prevalence of digital technologies in education. The pandemic rapidly shaped a radical transformation.

Holistic reflexivity,²³ which considers how different features of the ecosystem shape our decisions and how we shape the ecosystem, is urgent in education. The underlying principle is fundamental: to return to our origins, develop transformative practices over time, and increase the possibilities of authentic learning among our students.

NOTES

¹Peter Robert Albion and Jo Tondeur, "Information and Communication Technology and Education: Meaningful Change through Teacher Agency," in Joke Voogt et al. (Eds). *Second Handbook of Information Technology in Primary and Secondary Education* (Springer International Handbooks of Education, 2018), 1-16; Juan Enrique Hinostroza et al., "Characterisation of teachers' use of computers and Internet inside and outside the classroom: The need to focus on the quality," *Education and Information Technologies*. no 21 (2016), 1595-1610.

²Linda Lorenza and Don Carter, "Emergency online teaching during COVID-19: A case study of Australian tertiary students in teacher education and creative arts," *International Journal of Educational Research Open* 2, no. 2 (2021): 1-8; Clayton Whittle et al., "Emergency remote teaching environment: a conceptual framework for responsive online teaching in crises," *Information and Learning Science* vol. 121, no. 5/6 (2020): 311-319

³Cher Ping Lim et al., "Bridging the Gap: Technology Trends and Use of Technology in Schools," *Educational Technology & Society*. vol. 16, no. 2 (2013): 59–68; Konstantinos Michos et al., "Teacher-led inquiry in technology-supported school communities," *British Journal of Educational Technology*. vol. 49, no. 6 (2018): 1077-1095.

⁴ J. Lowyck, "Bridging learning theories and technology-enhanced learning environments". In ed. Michael Spector et al. *Handbook of Research on Educational Communications and Technology*. (Springer, 2013), 3-20.

⁵Katarina Salmela-Aro et al., "Adolescents' Longitudinal School Engagement and Burnout Before and During COVID-19—The Role of Socio-Emotional Skills," *Journal of Research on Adolescence*. vol. 31, no. 3 (2021): 796-807.

⁶Whittle, 311-319.

⁷Biggs, John et al. *Teaching for Quality Learning at University. What the Student Does*. London: Open University Press, 2022.

⁸The literature has arguably used the concept of 'reflective practice' to discuss education professionals' recounts of their teaching and learning experiences with their students This notion has commonly implied a limited analysis of the practice, referring to a single unit, a classroom experience, or a particular use of digital technologies. This article has adopted a holistic perspective, which involves consideration of the institutional ecosystem when carrying out reflexion. Therefore, it will expose the term 'reflexive practice' interchangeably to discuss faculty's thinking about the implications of their teaching experiences.

⁹Leon Benade, "Teachers' Critical Reflective Practice in the Context of Twenty-first Century Learning," *Open Review of Educational Research*. vol. 2, no. 1 (2015): 42-54; Patricia Briscoe, "Using a Critical Reflection Framework and Collaborative Thinking Inquiry to Improve Teaching Practice: An Action Research Project". *Canadian Journal of Action Research*. vol. 18, no. 2 (2017): 43-61; Christopher Day, "Professional development and reflective practice: purposes, processes and partnerships". *Pedagogy, Culture & Society*. vol. 7, no. 2 (2015): 221-233; John Loughran, "Effective Reflective Practice: In Search of Meaning in Learning about Teaching". *Journal of Teacher Education* vol. 53, no.1 (2002): 33-43.

¹⁰ Peter Robert Albion, 1-16; Juan Enrique Hinostroza, 1595-1610; Andrea Ibieta, "The role of the Internet in teachers' professional practice: activities and factors associated with teacher use of ICT inside and outside the classroom". *Technology, Pedagogy and Education*. vol. 26, no. 4 (2017): 425-438; Martin Tallvid, "Understanding teachers' reluctance". In J. Michael Spector et al. (Eds.). *Handbook of Research on Educational Communications and Technology*. (Springer US, 2014), 503-519.

¹¹Clayton Whittle, 311-319.

¹²John Dewey, *How We Think*.

¹³Paulo Freire, *Pedagogy of Freedom: Ethics, Democracy and Civic Courage* (Lanham, Boulder, New York, Oxford: Rowman & Littlefield Publishers, 1998).

¹⁴John Dewey, "Education and democracy in the world of today". *Schools: Studies in Education*. vol. 9, no. 1 (1938): 96-100.

¹⁵Donald Schön, *The Reflective Practitioner: How professionals think in action* (New York: Basic Books, Inc., 1983).

¹⁶Alan Bleakley, "From reflective practice to holistic reflexivity," *Studies in Higher Education*. vol. 24, no. 3 (1999): 315-330.

¹⁷Paulo Freire, *Pedagogía de la autonomía. Saberes necesarios para la práctica Educativa* (Buenos Aires: Siglo XXI, 2011); Paulo Freire, *Pedagogy of commitment* (New York: Routledge, 2014); Cher Ping Lim, 59–68.

¹⁸John Dewey, *Ethics* (NY, US: Henry Holt and Company, 1914); John Dewey, *Human nature and conduct: An introduction to social psychology* (NY, US: Henry Holt and Company, 1922).

¹⁹Paulo Freire, *Pedagogy of indignation* (New York: Routledge, 2005).

²⁰John Biggs, et al. *Teaching for Quality Learning at University: What the Student Does*.

²¹John Biggs, et al. *Teaching for Quality Learning at University: What the Student Does*.

²²Paulo Freire. *Pedagogy of commitment*; Konstantinos Michos, 1077-1095.

²³Alan Bleakley, 315-330.

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ENHANCE DESIGN UNDERGRADUATES' ENTREPRENEURSHIP, EMPLOYABILITY, AND ENGAGEMENT WITH REAL-WORLD PROBLEM-SOLVING AND INNOVATION

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INTRODUCTION

Entrepreneurship, employability, and engagement with real-world problem-solving and innovation are becoming essential to undergraduate education and yet fulfilled in pedagogy design. More specifically, for design students, these components will help them leverage their design knowledge and contribute to understanding design applications for economic, social, and environmental challenges and their future career development. This research paper presented the author's teaching practice of designing and developing the module Design Enterprise at DJCAD in the University of Dundee during the past two years to address the listed learning aims above and challenges for online teaching during the global COVID-19 pandemic. The curriculum design used the Double Diamond framework (a classic design thinking process framework) as the methodology to guide the teaching development process. The main description in this paper focuses on the workshop design with online teaching methods, supported by lectures, industry expert talks and tutorials. Observation and survey have been adopted to gather students' responses to the curriculum design. Findings showcase positive effects on the identified four categories: understanding meaningful design practice, critical thinking and research, problem-solving and decision-making, and communication and presentation. Moreover, the research identified the importance of inviting students to join the process of curriculum design and gathered experiences and insights on online teaching and blended learning. Further improvement has been pointed out from the survey, which needs guidance for time management and more in-person contacts to balance the disadvantage of online learning. These weaknesses will be considered for the next iteration of teaching development.

RESEARCH BACKGROUND

Missing components in the current undergraduate design curriculum

In this turbulent era, abilities like entrepreneurship, employability, and engagement with real-world problem-solving and innovation are essential for students' to transition from undergraduate status to long-term career development ¹. More specifically, in the design subject, the application of design knowledge and methodologies are expanded to many new areas such as sustainability, policymaking, inclusivity, etc. Employers need designers not only to have excellent design skills, but more importantly, can decode the development trends, clients' requests, and human needs and translate this

key information into the design outcomes.² It challenges the traditional pedagogy for design undergraduates. From the perspective of teaching content planning, studio studies in each of the design programmes equip students with the disciplinary theories and skills which allow students to practice design as a task. However, lack of understanding of the context and real-world situation, learning outcomes will only stop at students' assumptions.³ From the perspective of teaching format, lecture is limited for stimulating students' active learning; made-up projects stopped the chance for students to learn from unpredicted real obstacles.⁴ Further than that, simply adding the teaching units together doesn't prove the curriculum effectively developed students' ability of critical thinking and problem-solving. To unwrap the components of entrepreneurship, employability, and engagement with the real-world, key transferable skills such as information retrieval, critical thinking, problem solving, and communication play significant roles. Transfer is not the natural outcome of education but is thoroughly designed and cultivated through the classroom.⁵ Therefore, the author started redesigning a critical and contextual module to compensate for the missing pieces in design undergraduate education to reinforce and practice the important abilities and transferable skills that students needed.

RESEARCH METHODOLOGY

Action research has been used in this research as a methodology to "practice changing practice."⁶ This research is based on the author's teaching practice in reshaping and developing the module Design Enterprise in Duncan of Jordanstone College of Art & Design, University of Dundee, UK. The module aims to enhance design students' understanding of the different values of design in the business context, and cultivate students' entrepreneurial sense, critical thinking, and ability of design research and project management. Design Enterprise module is delivered in two parts. Part one is offered to level 3 Students. At this stage, they are moving from general training to select professional pathways. It is a crucial transfer period to change their student mindset to a professional mindset. Continue to Part two, students will conduct an independent design research project and write a design enterprise report as their final year degree dissertation. This paper focuses on Part one as it better demonstrates how the curriculum design enables to enhance the key abilities.

The design of the module part one follows three key learning objectives:

- Practising real-world business innovation through teamwork.
- Using design research methods to support critical thinking and strategic presentation
- Identifying and applying one's strengths to identify a meaningful project

Shepherd in his book *Key Skills: Teaching and Learning for Transfer*, mentioned that the typical characteristic of a transfer-friendly curriculum is students and instructors engage in a student-centred learning environment to build new knowledge on past ones through critical dialogue actively.⁷ A similar opinion also showed on Billing's⁸ research paper that a cooperative learning environment can boost students responsibility and level of engagement. Following this principle, Design Enterprise module created team-based projects at the start for students from different design programmes to collaborate and learn from each other. Workshops⁹ as a student-led interactive teaching format is the key in this action research to deliver transferable skills. It matches the key attributes of action research which are practical, theoretical, collaborative, reflective, and contextual. Early research¹⁰ indicated that the design of the teaching tasks is better closely replicated reality therefore, students could have better results of applying the transferable knowledge and skills. Consequently, the workshop design will be based on real commercial and social topics for students to practice theory in the field. Furthermore, this research investigated the effectiveness of the design of workshops in design

Enterprise module part one for level 3 design students in delivering the key transferable skill areas below which building for entrepreneurship, employability, and real-world engagement:

- Research capability and information handling
- Social development and interaction
- Planning and problem-solving
- Communication and presentation

Observation and survey have been selected to be the research methods to collect students' feedback. All data was collected anonymously. How students responded to the designed workshop contents and process in semester 2 2021/22 noted by the author, which will provide evidence for evaluating the design of workshops and further improvements. Survey is a common quantitative research method that can provide research with collective insights to understand a specific target group. A survey has been designed based on the targeted key transferable skills (see Table 1) to gather students' feedback on whether the module design helps them better equip the targeted transferable skills and suggestions for further module design improvement. The survey has been sent to the 2021/22 class and received 33 eligible responses.

The Double Diamond	Skill areas	Detailed tasks for survey question design
Discover	Research capability and information handling	<ul style="list-style-type: none"> • Search for relevant information from secondary and primary sources • Summarise and draw an independent conclusion on the defined problem(s) • Analyse data using appropriate methods
Define	Social development and interaction	<ul style="list-style-type: none"> • Plan and gather primary data for the project • Collaborate with teammates to complete assigned tasks • Contribute ideas and support others in group meetings
Develop	Planning and problem solving	<ul style="list-style-type: none"> • Produce creative and realistic solutions to the target problem based on research data • Decide on the action plan and implement them effectively • Develop a mock-up solution and iterate based on feedback
Deliver	Communication and presentation	<ul style="list-style-type: none"> • Clearly explain the motivation and impact of doing the project • Visually communicate the designed problem solution • Deliver a presentation with a clear logic of how the solution has been developed and designed

Table 1. Survey question design is based on the targeted transferable skills.

TEACHING PRACTICE AND MODULE STRUCTURE DESIGN

Before the author took over the module in 2021, students started three module assignments simultaneously from the beginning. It courses a problem that the students feel stressed by completing the tasks and has no attention to paid to the process and learning contents. Also, students do not know how to apply the learnings to other studies and professional practice after completing the assignment. Therefore, I designed a new module structure with three stages:

Stage 1: training and practising

This stage is the foundation for the overall module study. The first group task is to investigate a brand and make innovations to their product or service. It is the perfect base to introduce key entrepreneurial knowledge and design research practices. Workshop in this stage is critical as it allows students to practice the learnings in class, with instant feedback, students can quickly check their understanding to the content. Lectures in this stage play the role of introducing new concepts and reflect the learnings and practices from the past week. Seminars are focused on academic skills and library search.

Stage 2: elevating and creating

Because the students learned and practised the fundamental knowledge of project development and teamwork through the first group project. The second project allows students to elevate their understanding of business innovation and search for new opportunities based on their team's strengths. The workshop is no longer led by the tutor but by the team themselves. They need to plan a timetable to develop the project. Group tutorials in this stage are to check the teamwork and also provide advice for their project.

Stage 3: reflecting and identifying

Starts at the same time as the second group project, individual student starts to reflect on their learning from the first stage and plan their own project proposal. This assignment is the start of their final year dissertation. The module encourages students to use their dissertation projects to bridge design study to their expected future career paths. Expert guest talks and one-on-one tutorials provide each student with the change to see different professional design practices and discuss their own ideas, students can identify their professional interests and career considerations.

module structure design						Stage 3: Reflecting and identifying assignment 3: report proposal						
	Stage 1: training and practising assignment 1: group project 1					Stage 2: Elevating and creating assignment 2: group project 2						
Teaching format	week 1	week 2	week 3	week 4	week 5	week 6	week 7	week 8	week 9	week 10	week 11	
Workshop												
Lecture												
Seminar												
Expert guest talk												
Group tutorial												
1-on-1 tutorial												

Table 2. Module structure and delivery plan

WORKSHOP DESIGN AND DELIVERY

Online teaching tools

Due to COVID-19 regulations, the university switched to online platforms for larger class ($n > 40$) teaching in year 2021/22. Compared to traditional physical classroom teaching delivery, many things need to be reconsidered and redesigned for this different learning experience. The flip classroom method has been adopted for the module practice that students read the teaching material before the class starts. The main communication tool has been shifted from emails to Microsoft Teams. Teams as an instant communication tool have been beneficial for student interaction. A module group has been created on Teams where all the module updates, new announcements, and teamwork have been gathered there; students can "like" the message to respond. Blackboard Collaborate on MyDundee (university platform) is where lectures and workshops (together with Miro) were delivered and recorded. With all the learning material and recordings in one place, it is convenient for students to preview and review. Miro is a great visual collaboration platform that has been selected to deliver workshops and develop group projects. It allows multiple participants to work on a project simultaneously through an online board, and the endless space can keep all data together compared to the traditional marker, sticky notes, and paper. Finally, Mentimeter is a presentation tool that allows students to interact with questions and polls anonymously in class. Design and delivery of design enterprise workshops in 2021/22 heavily rely on these online teaching tools.

Workshop design

As mentioned earlier in module structure, workshop is the critical teaching format to deliver module content, especially in stage 1 and stage 2. The workshop design used the Double Diamond framework¹¹ as the methodology to guide the learning process. It is adapted by British Design Council to visually describe and introduce the design process for problem-solving and innovation to designers and non-designers. In total, four stages in the framework are discover, define, develop, and deliver. The targeted transferable skills have been integrated to each stage with the relevant design research methods (see Figure 1).

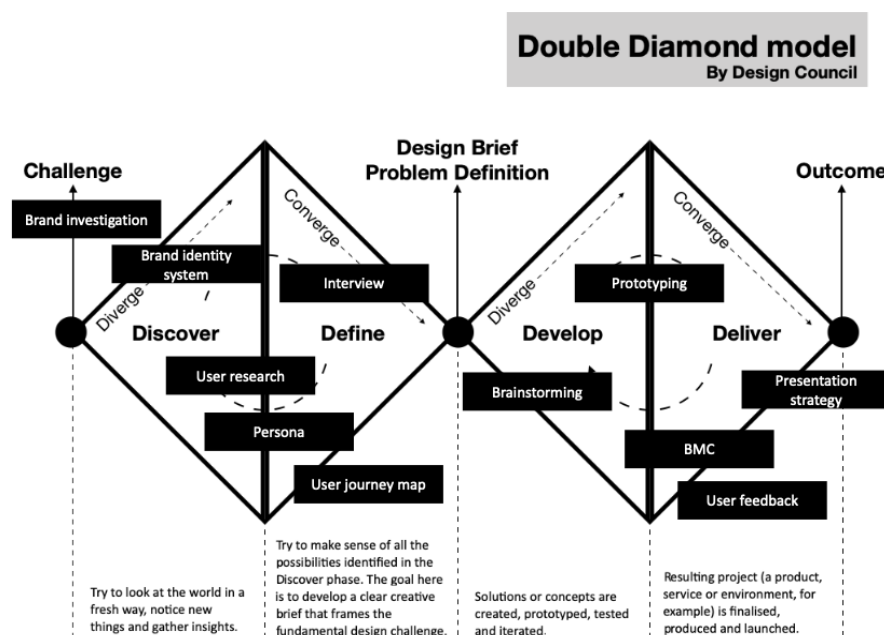


Figure 1. Double diamond framework to guide the workshops and the design methods used in each stage.

Discover: research capability and information handling

Most of the module contents are new and can be very challenging to students. Therefore, the first workshop is designed to understand students' motivation through co-working Miro board. It is a good way to plan the content and students also feel their needs and voice have been considered (see figure 2 left). For example, students responded to question 5 the values of design for business are “being visually eye-catching help draw in customers” and “help a business become more competitive and appealing on the market”. The author can use these answers to confirm students understanding and unfold detailed explanations. The author introduced David Aaker’s Brand Identity System¹² and use it as a framework to guide students’ secondary research to understand the selected brands. Students have to collect sources and summaries and draw independent conclusions for a brand in each category (see Figure 2 right). By doing it, students would develop critical thinking by looking at the brand from different perspectives, such as understanding a brand as a product, brand as an organisation, brand as a person, and brand as a symbol.

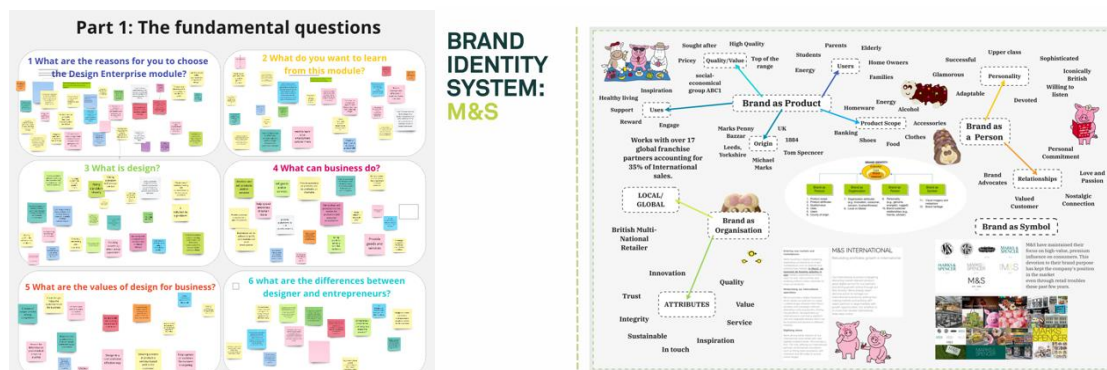


Figure 2. students' response on Miro board (left) and a brand research example Based on the BIS framework (right)

Define: social development and interaction

In this stage, workshop is the space to practice primary data gathering and collective working with teammates to investigate real-world business practices. Design research methods such as observation, interview, and user journey map have been introduced in the workshop. Students got to practice during the workshop, and then each team planned to conduct field research for their studied brand (see Figure 3). Before they go out, it is essential to teach students research ethics. Student groups practised writing research information and consent form in the workshop. The author (tutor) can provide them feedback and guidance to prevent unnecessary.

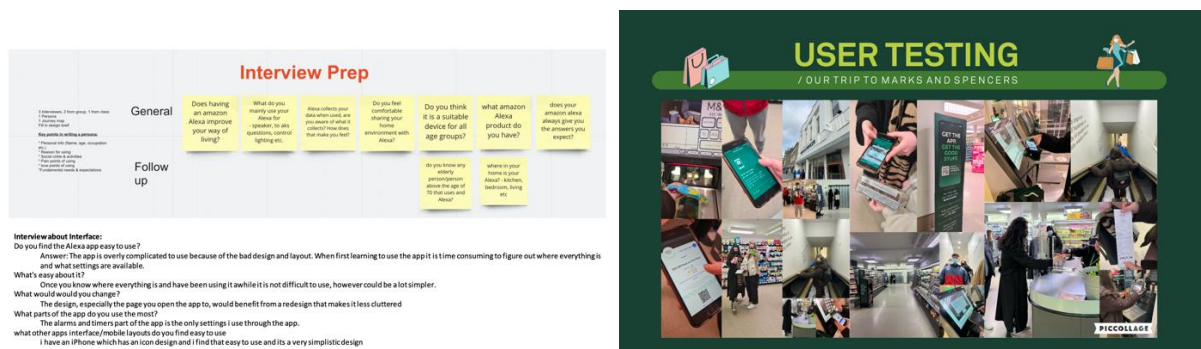


Figure 3. An example of practising research methods in the workshop

Develop: planning and problem solving

In order to achieve the objectives in this stage to produce ideas, decide on an action plan, and develop a mock-up solution (see Table 1), a redesigned Brainstorming exercise helped students to maximise the idea pool. Further than that, after team discussion, each team made their choice of design plan based on their data (secondary and primary). “Fail faster and succeed sooner.”¹³ summarises the purpose of practising rapid prototyping and user Feedback is key to final success (see Figure 4). There are many ways to prototype. The key is to encourage student groups to demonstrate their design visually and show the customer journey. Sometimes it is hard for students to understand right away, therefore, demonstrating an example is helpful.



Figure 4. An example of brainstorming (left) and prototyping (right)

Deliver: communication and presentation

Students often present their work based on a timeline, but it is not always effective in a real business context. Also, they are trying to hide their failures and only present the polished outcome. However, this could be seen as a lack of effort in the client (or examiner)'s eyes due to lack of a comprehensive test with other options. To help students enhance their communication and presentation skills, in the workshop, students practised Business Model Canvas as a strategic business planning and communication tool. Storytelling as a presentation strategy allowed students to clearly explain the motivation and impact of doing the project. As a key skill to design students, visual communication also has been encouraged to present the design solution (see figure 5).

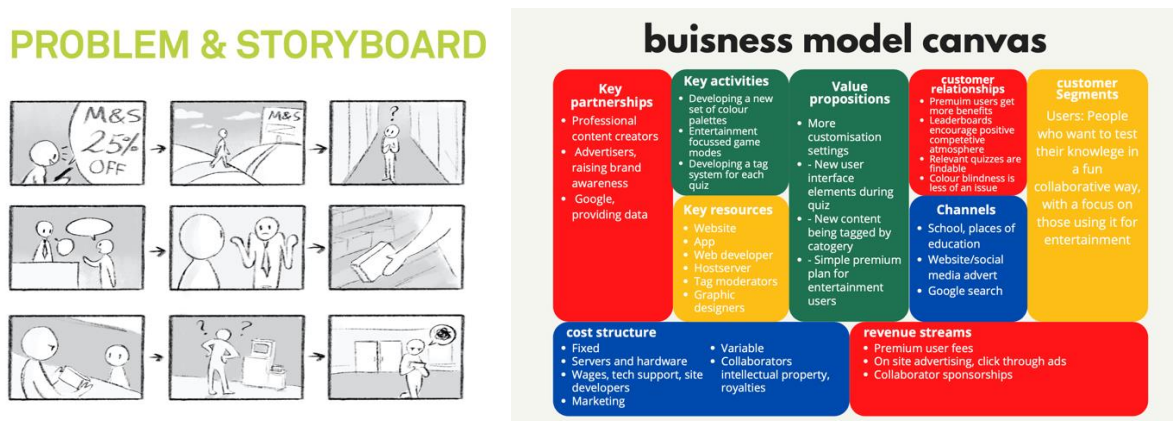


Figure 5. An example of presenting with storytelling and BMC framework

FINDINGS

Effectiveness of curriculum redesign

Based on survey results and in-class observation, in general, the renewed module structure and workshop design have effectively improved the students' ability in four target skill areas: information retrieval and handling, social development and interaction, planning and problem solving, and communication and presentation. 70% of respondents show they are confident in conducting field research and drawing independent conclusions on the defined problems. By completing the research every week in the workshops, students have less stress on the final submission, which results in a better experience of enjoying the process and the knowledge. The frameworks and design research methods that the author have been introduced in the workshops improved students' analytical skills (76%). In terms of teamwork, 76% of respondents show they are confident with teamwork after two group projects. Because each student has their own strengths and weaknesses, working in a team can allow them to take on the task that suits their strengths and learn from each other. 52% of respondents agreed that quick prototyping and weekly in-class feedback helped them develop their projects. The method of 'Fail Faster and Succeed Sooner' is new and challenging to the students. But students also told me that *"it is the right way to do business and design as we have to know what works for users and customers rather than just assumptions"*. Finally, 73% of respondents think they gained communication and presentation skills through the module learning.

Online learning experience

Regarding online teaching delivery, most students agreed that Miro and Teams are good tools to help them build teamwork and communication. Compared to in-person workshop, the online tools are more flexible and limitless for data storage and sharing. Mentimeter enhanced students in class participation due to anonymity. However, on the downside, students can't meet with their classmates and tutors in person creates barriers for them to communicating specific issues and creating bond. Also, not all students are good at online learning and self-directed study. Therefore, students mentioned in survey that we can keep the lectures online and increase in person contact through seminars and tutorials.

Overall, students felt the module enabled them to develop critical transferable skills which enhanced their entrepreneurship, employability, and engagement with real-world design practice. One student even commented, "The module provided me everything I need to know about professional design practice". For further evolvement of the module, one has been highlighted from the survey answers that students could use some of the support on time management to navigating the deadlines between different modules they are doing in the same semester.

IMPACT

The development in the Design Enterprise module part 1 has set an example to embed employability and entrepreneurship in undergraduate design education. Using user-centred design thinking as a method for teaching development is a new way to think about pedagogy design. In the context of education, the user is our students. When educators plan curriculums, we have to consider what are the key components to help students build not only strong professional skills but also a sense of responsibility for their work and society. In this action research, the group project setting allows students to design for social good through business innovation, and the workshop delivery method encourages "learning through practice." The developments in the Design Enterprise module have been recognised in line with the university Enterprise Entrepreneurship and Employability (EEE) strategy and have been commended as "good practice" during the School of Art and Design Periodic

Programme Review (PPR) 2022. By now, many students from the class have successfully found their first job. Two students' business proposals were awarded funding from the University of Dundee Enterprise Challenge Competition and further secured start-up funding from Dundee local business incubators. One business project was launched in 2021 and is now still running.

REFLECTION

Self-reflection is essential in action research¹⁴. professional learning is to find an appropriate way to practice and celebrate what we already know, and also generate new knowledge each time from the practice¹⁵. The author learned from this action research that students should be the centre of pedagogy design. For a very long time, students just follow what the teacher delivers without questioning, and much of our undergraduate teaching is still heavily hypothetical. Students need to have the chance to connect their learning with real-world situations and understand how to work with others. Moreover, increasing the interaction between student's main studies and contextual study is also key to achieving a systematic learning experience. In the past two years, the author has been working on developing curriculums and fulfilling the objective. As educator, we should consider not only students' learning experience but also what education does to their long-term development far beyond their degree.

Entrepreneurship, employability and engagement with real-world problem-solving and innovation are essential but hard to appreciate by the undergraduates' current status. Some students are still in the high-grade-driven mindset and against anything not helping with it. The redesign of Design Enterprise module approved that by keep engaging with students' feedback during the delivery process and explaining the purpose of doing each task, students can gradually understand the value of enhancing transferable skills. The author will take students' suggestions and add time management and increase face-to-face teaching to the next round of module development.

NOTES

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³ Waks.

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EDUCATION IN FUTURE TENSE A “PHIGITAL” EXPERIENCE IN THE FIELD OF ARCHITECTURE

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INTRODUCTION

What Mario Carpo defines as “the second digital turn”¹ represents, for creative disciplines as architecture, an irreversible process. Nowadays, digital tools are a powerful ecosystem meant to progressively change the traditional paradigms of architectural design. Without upgrading his methods, education in architecture turns out to be inappropriate for future scenarios.

From the beginnings of CAD² to the current tools for computational design,³ the main effect of digital-based teaching methods is the displacement of design practice into virtual environments. After more than three decades since the introduction of digital tools in architecture learning programs, a question arises: does working in virtual environments stimulate creativity or does it separate student from reality, pushing him at “thinking in silos”? There is a wide range of literature supporting the negative effects of virtual realities on cognitive processes.⁴ Digital-native students are indeed very familiar with the world of virtuality but often they are not able to “face” physical reality, while architecture belongs to it.

In the digital realm, digital fabrication is a vast ecosystem of techniques and devices. Digital fabrication is a design and manufacturing workflow where digital data directly drives manufacturing equipment. This data most often comes from CAD (computer-aided design), which is then transferred to CAM (computer-aided manufacturing) software. The output of CAM software is data that directs a specific additive and subtractive manufacturing tool, such as a 3D printer or CNC milling machine. Digital fabrication is usually intended as a production process. Indeed, it is employed in many advanced industrial productions. Nevertheless, it can be also seen as a creative design process. In this meaning, designer can quickly and repeatedly “prototype” small-scale samples of the project (or its parts), shifting from the “virtuality” of Cad environment to the “materiality” of physical samples at every stage of the project. This method allows the designer to carry out a “phygital” (according to a recent neologism⁵) design experience, based on the continuous interaction between the “digital” and “physical” world.

The paper presents the result of an experimental teaching program developed at the School of Architecture and Design “Eduardo Vittoria” (SAAD) of the University of Camerino that focuses on: a) digital fabrication and prototyping as innovative teaching methods in architectural design; b) the “fab lab” (a collaborative space equipped with devices for digital fabrication) as a challenging environment where experiencing phygital teaching experiences.

TEACHING THE “MATERIALITY” OF ARCHITECTURE IN THE DIGITAL ERA

Form follows materia

“Form follows function” is a principle that inspired the late 19th and early 20th-century architecture and industrial design. According to this idea, coined by American architect Louis Sullivan, the shape of a building (or object) turns primarily out its function or purpose. “Form follows materia” is, instead, the principle underlying any experience of built architecture: the red thread linking architects and architecture from the earliest forms of construction to the present days. The history of architecture is full of impressive examples which prove this. The Dome of Santa Maria del Fiore, built in Florence between 1418 and 1434 by Filippo Brunelleschi, did not originate from an abstract shape but from a building creative process. Brunelleschi literally “invented” a self-supporting brick structure. Without this system, called “herringbone”, the dome wouldn’t exist as we know it.⁶ Not even Le Corbusier “five points of architecture” would exist without reinforced concrete technology, as well Ville Savoy (1931) - the building-manifesto of the five points⁷ - would be different from how it is. Only by the use of reinforced concrete, the Swiss architect was able to concentrate the structural parts of the building in thin *pilotis*; in this way, Le Corbusier “detached” the envelope from the building structure, designing “free plants” for each floor and “free façades” with horizontal windows.

Considering how also contemporary architecture follows the same principle, we should ask ourselves: how this aspect is treated in university education programs? Still now, in many architecture faculties, we see the “silence of matter”, as Ferdinando Espuelas says.⁸ This means that, according to Antoine Picon,⁹ architectural design is often taught separating cultural and creative aspects from the “materiality” proper of a building process. Instead, “to situate architecture (...), necessarily implies confronting the constant oscillation between the silent obstinacy of matter, its resistance to human endeavors, and the desire to animate it”.¹⁰ This loss of contact with physical reality risks to compromise education in architecture, that is a subject always suspended - according to Italian Engineer Pierluigi Nervi - between “art” and “science” of building.¹¹ For the architect, “the material and its properties” should be “the beginning of every concept”, as always Picon says¹² and as Eduardo Vittoria, a 20th-century Italian architect,¹³ emphasizes when he states that “the matter constraints are the real inventive component of the design”.¹⁴

“Phygital”. A new dimension to teach architectural design

“In today’s fast-changing environment (...), the designer is asked to act as a configurator of an engaging process that sees the interaction between (...) physical and digital processes”.¹⁵ In our courses, instead, digital technologies for design (from Cad to BIM, widely used in many design courses) often risks promoting an idea of design as a virtual practice,¹⁶ freed from the constraints of materiality.¹⁷ How can we reintroduce a materiality-based approach to architecture education? How can we experience, in our courses, what the British anthropologist Tim Ingold defines as the close relationship between “the vastness of imagination (...) and the friction of materials”?¹⁸

“Where the danger is, also grows the saving power”, claimed the celeberr aphorism of the German philosopher Friedrich Hölderlin. If “digital realm is not simply a set of new technologies” but “it also relates (...) to the advent of a culture that reflects a different understanding of materiality”¹⁹, the same digital technologies can help us to join the physical and digital worlds in teaching architecture. This new dimension is now emerging under the term “phygital”, a neologism born in the marketing area, synthesis of “physical” and “digital”.²⁰ But how can this be achieved by offering an educational experience based on the interconnection of so apparently distant worlds?

DIGITAL FABRICATION AND PROTOTYPING AS KEY QUESTIONS FOR A PHYGITAL EDUCATIONAL APPROACH

Digitalization of design processes “has come a long way since the pioneers of Computer Aided Design replaced their pencils with mouse and keyboards in the 1980s”²¹. In few years, a powerful ecosystem of software, machines and methods has been developed. Digital fabrication is a specific digital domain, that some architecture schools are already experiencing with innovative teaching formulas. In some of these, the drawing board and the computer are right next to machines for making, as robots, CNC mills, 3D-printers, water-jet cutters.²²

Digital fabrication is a process that combines 3D modelling or computerized design with additive and subtractive manufacturing machines (Figure 1) to produce physical objects.²³ Through a “file-to-factory” process, you can directly “produce” what you design.²⁴ Design and manufacturing are parts of a single workflow, where digital data directly drive manufacturing equipment.²⁵

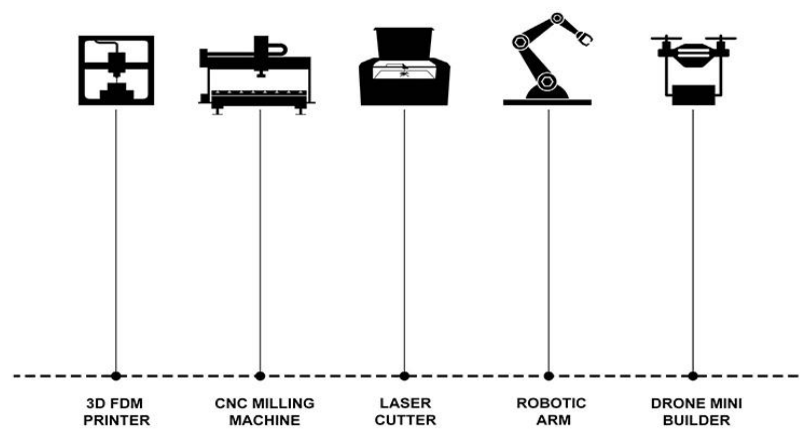


Figure 1. Main devices for digital fabrication

This set of techniques allows the direct production of building components. Some building products companies are already working in this way. Digital fabrication also allows to make scale rapid prototypes. Rapid prototyping allows the faithful scale reproduction of building system (or a part of it). Due to CAD-CAM integration, and counter to the Leon Battista Alberti principle of separation between design and construction,²⁶ a rapid prototyping-based design approach simultaneously allows to “design” and “make”, checking design results thanks to a subsequent sequence of models. As Martin Tamke says, “digital fabrication can be a way to rethink the lineage from design to fabrication as a continuous process of conception testing, simulation, materialisation, and redesigning”.²⁷

Prototyping through digital fabrication could also be the key action of a new learning process based on a “learning by doing” method. “Rather than having a genius idea, you would take your inspiration from something you find while manufacturing something: doing and thinking become a simultaneous operation again” states Tobias Walliser, Professor at the Stuttgart State Academy of Art and Design.²⁸

D_LAB. A “THINK-MAKE-CREATE” LEARNING EXPERIENCE FOR SMALL-SCALE ARCHITECTURE DESIGN

In 2018, the University of Camerino launched an experimental workshop focused on digital prototyping as a learning strategy in the field of architecture. In the current year the fifth edition has been held. The project is called D-lab (Degree Laboratory).²⁹ With D-lab project outcomes students support their bachelor thesis in Architecture Science. The course wants to teach digital fabrication as

an innovative approach to architecture, to change the way we design, and build the space we live. In this context, digital fabrication is not intended as a specialistic, engineering-based topic.³⁰

Learning environment

This experience is carried out at the School of Architecture and Design of the University of Camerino (SAAD), within the SAAD-Lab#Prototype (Figure 2), a fab lab equipped with devices for additive and subtractive digital manufacturing, mainly CNC machines and 3D-printers³¹. SAAD-Lab#Prototype is not a “technology container”, but a place where new forms of creativity and new education paradigms are developed. In this laboratory, prototyping is the focus of a “design method” based on a “design thinking” approach.³²



Figure 2. The SAAD-Lab#Prototype

Design topic

Since its first edition, D_lab has been focused on the design and prototyping of temporary and small-scale architecture. Small-scale architecture, in the modern age, has always been a promising field for experimentation of design strategies. The tiny scale, the temporary nature, and the lack of regulatory constraints allow free experimentation and development of techniques, systems and processes that are too complex and too costly to be designed for larger buildings. The 2021/2022 D_lab edition was entitled “Small scale, big challenge”, where the challenge refers to the possibility of combining the virtual and material dimensions of a design process within a single digital workflow (Figure 3).

Method

This method entails three kinds of design activities: the heuristic phase (where the concept of the project is developed), the implementation of a virtual parametric model, and the prototyping phase with CAD-CAM techniques. Each project is carried out by a single student. After a first “linear” phase” (where the student develop concept, digital model and a first prototype), a circular and recursive process begins: after the first prototypes, the critical aspects of the projects are assessed and questioned; then the project is submitted again to a heuristic evaluation and the digital model is modified; finally, a new prototype is produced. This workflow can be repeated for three time, before every project is evaluated by the teaching team and discussed in open form by teachers and students class. This operating chain implies a continuous shift from the digital to physical environment. Produced ex-post, graphics boards represent just only a complement to the final prototype. The whole process is developed in six steps:



Figure 3. D_lab poster, edition 2022

Step 1_Discussion about design topics

The main topic (small-scale architecture) has been presented and discussed in its cultural and constructive aspects. This step is also focused on three further topics: digital fabrication (and its implications in construction processes); dry and lightweight building systems; circular material for sustainable buildings. The context in which these small artefacts are designed is urban space. With his project, each student must try to answer the question: how can urban space be “enriched” with temporary functions and services?

Step 2_Hand-made maquettes (Figure 4)

Through purely manual actions, hand-made maquettes of the building and connection systems are drawn up. The maquettes are made with conventional techniques and materials (cutter, 1/2/3mm cardboard, wooden or balsa wood profiles, any material available at home, glue).

Step 3_Crash course in the field of digital fabrication

This is a specific teaching module consisting of short teaching units on the use of machines as laser cutting and 3-D printing, and Cad-Cam processes. Crash courses include a specific module on workplace safety and the management of machines and laboratory space.

Step 4_From maquette to digital model (Figure 5)

Adopting parametric design techniques, every student creates a digital model of his project. In this phase, there is no restriction on the use of software currently used in the design field (Revit, Archicad, Sketchup e Autocad, etc.).³³

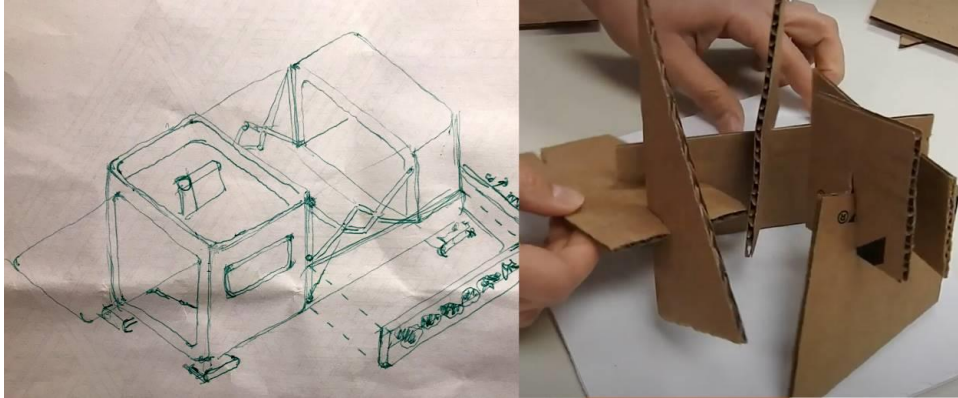


Figure 4. Production of study sketches and handmade maquettes from scrap materials

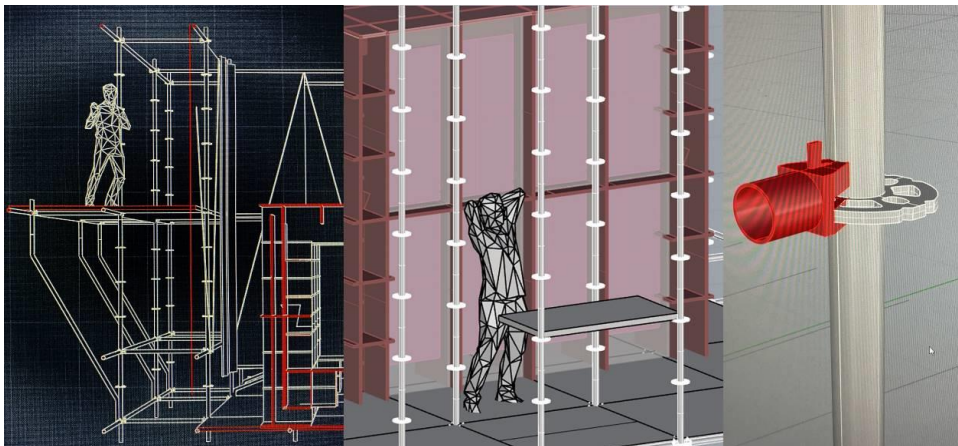


Figure 5. Images from virtual models

Step 5_From digital model to prototype (Figures 6, 7, 8)

The prototypes are produced through the use of CAD_CAM software technologies (RhinoCAM in particular) and produced with CNC milling and 3D printing techniques. Medium-Density Fibreboard panels (MDF) are adopted as the main material for subtractive techniques,³⁴ FDM materials such as ABS or PLA and clay for 3D printing.



Figure 6. Final prototype assembly

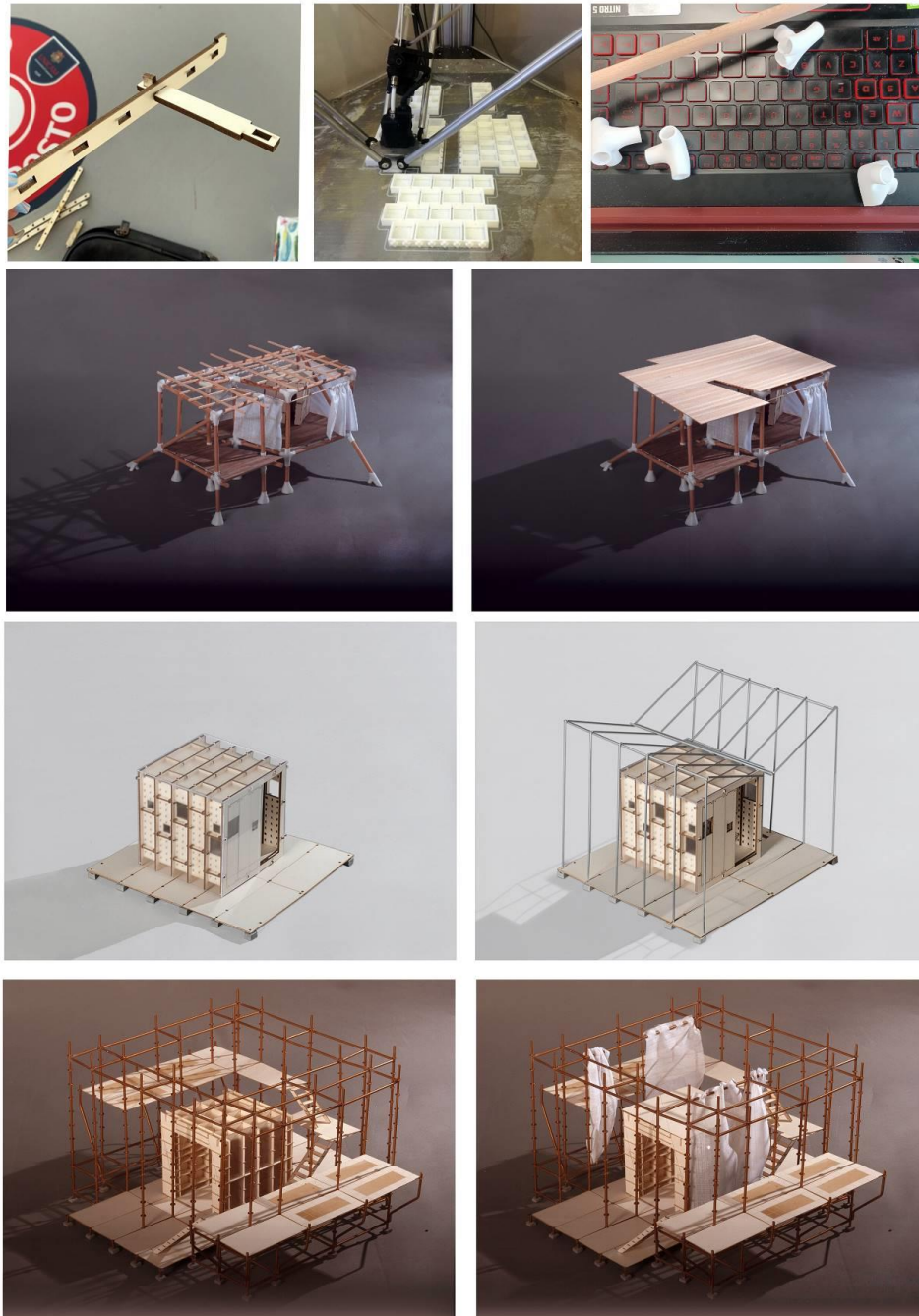


Figure 7. Prototyping results. Some results

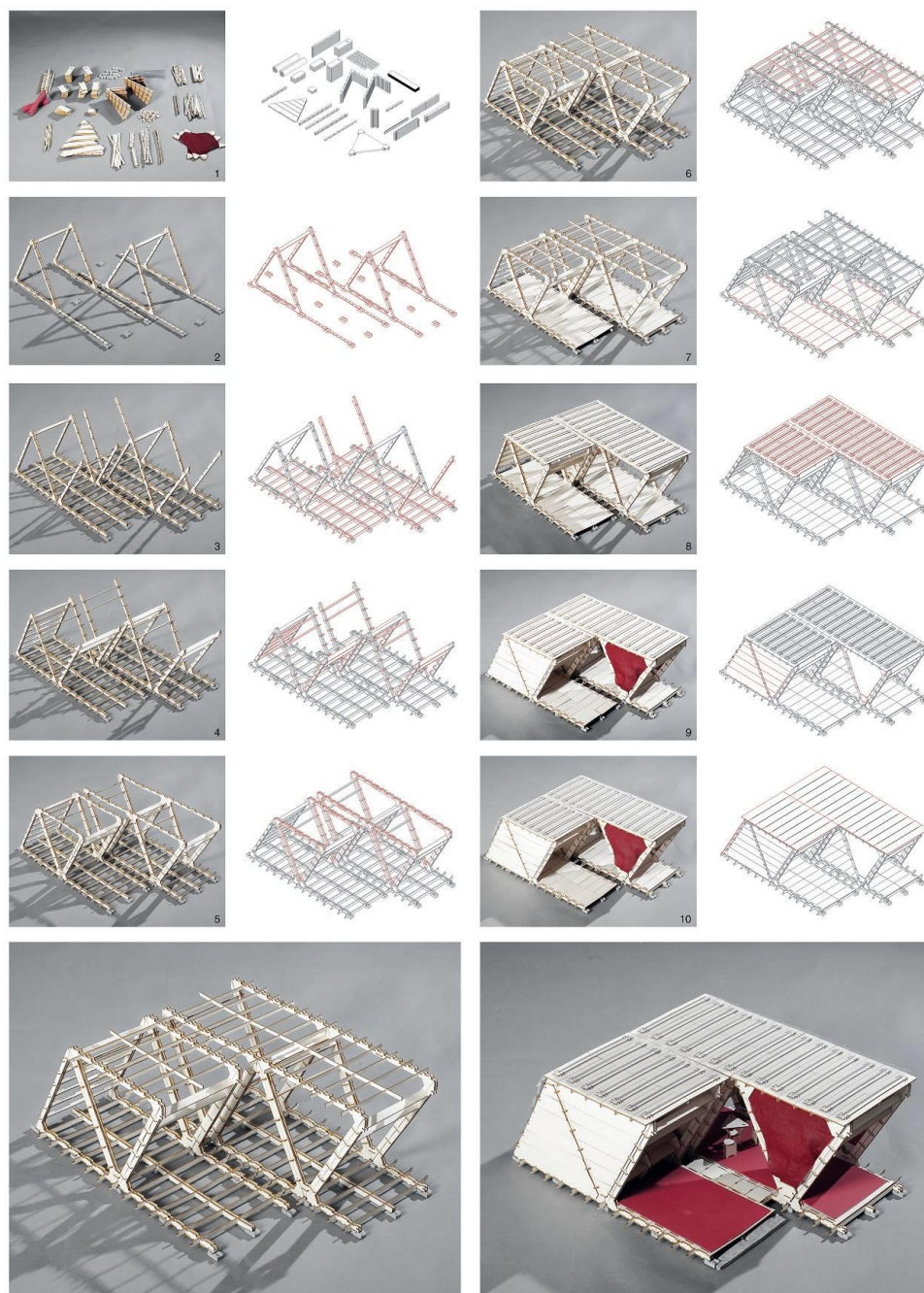


Figure 8. Prototyping results. Some results

Step 6_Drawing, after all (Figure 9)

At the end of a recursive process leading to the final prototype, three A1-format graphic boards are prepared. They refer to three different aspects of the project: a) *Building*, concerning construction aspects; b) *Material*, concerning materials and techniques implied; *Process/Prototyping*, concerning the production and assembly of the physical prototype.

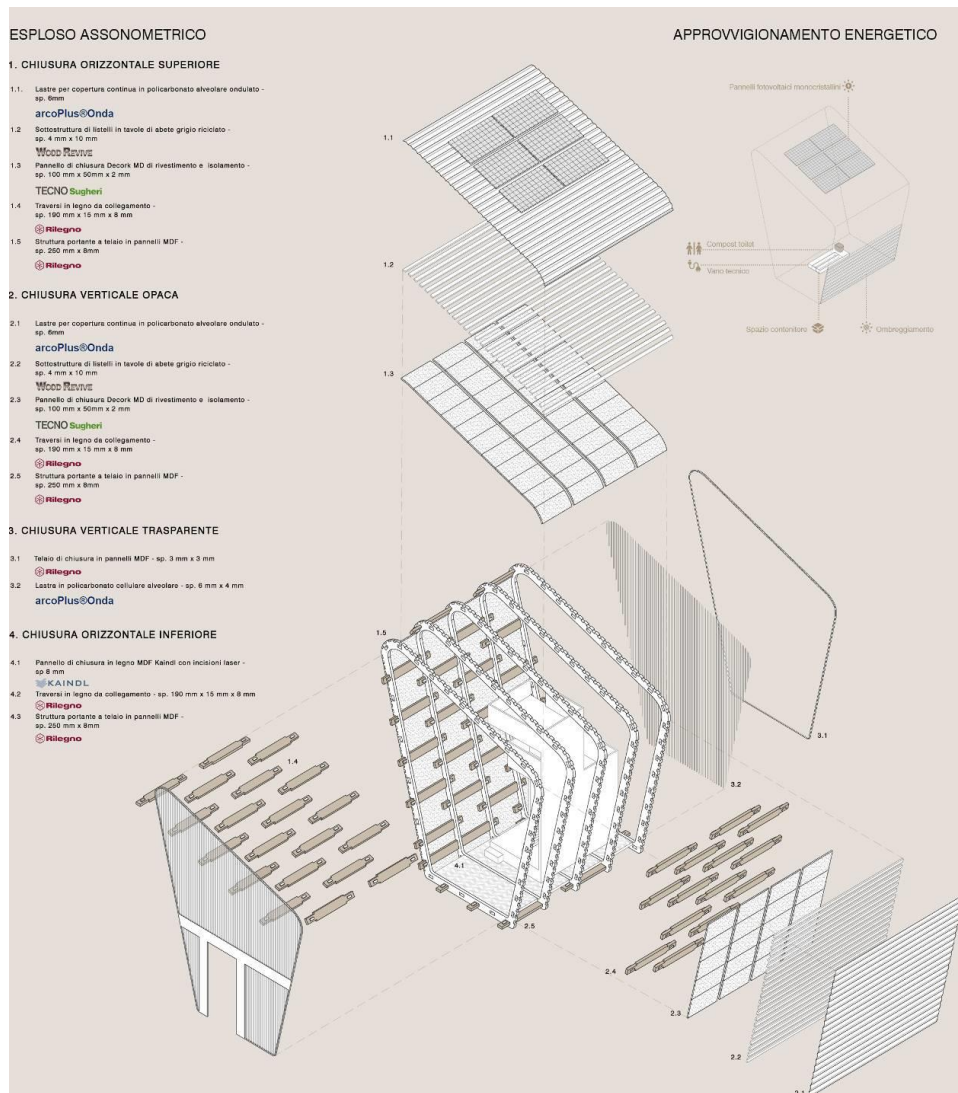


Figure 9. Final graphic outputs. Axonometric exploded view

Design Output

Micro architectures are the final result of this design process. They are the product of an assembling process of customized, discrete, replicable, nonstandard, and scalable components.³⁵ They have different functions, building systems and assembly processes. Just to mention few examples, in the first images of picture n. 7 you see the mobile photographic studio made with wooden pillars and 3D-printed joints. Polylactic acid (PLA) is used for joints production. It is a thermoplastic monomer derived from renewable, organic sources such as corn starch or sugar cane. In the successive pictures of figure 7, a mobile cafe is shown. It proposes a plywood construction system with wood-wood joints (without screws or other metal joints). With the same system but different geometries, in figure 8 there is a pavilion for street food. Many others small architectures were produced, with different level of complexity but with a comparable level of creativity.

Looking at those projects, it is clear how the creativity expressed by students lies not in the final shape of those small architectures, but in the process. This approach is typical of the “design thinking” method as of the industrial design culture where, more than in architecture, design and production processes are so important as the final object.

In D_lab students create their own workflow, aware that design, production and assembly have to be all connected aspects to develop a really creative process. Thanks to the “scalability” of digital fabrication techniques,³⁶ in D_lab students have the opportunity to contemporary “live” all those aspects, experiencing the close dependence between them, included the production process (albeit in a small-scale version). “Scalability”, indeed, is a paradigm proper of digital fabrication, for which one can reproduce an object in different scales, with the same properties and the same techniques, but with devices of different size. The SAAD-Lab#Prototype devices are, for instance, medium and small size compared with CNC milling machines and 3D printer that might be found in building products company or in a workshop equipped to produce customised components; but the functioning and logic remain the same.

Outcome

“To create the ethical and scientific basis to allow the architect to play a leading role in a future that is announced as increasingly “digital”, a radical re-thinking of the educational paths in architecture is necessary”.³⁷ The progressive digitization of design and production processes in contemporary scenario can substantially change established design methods and paradigms as well as stimulate new creative processes. Digital fabrication and rapid prototyping are one of the opportunities that “digital” provide to enable and disseminate this transformative process also in architecture education paths. “If the impact of digital technology is increasingly tied in with production and manufacturing methods”, we have to ask ourselves what role can this change play “in how we think and how we educate digital architects”.³⁸

D_lab experiment represents an attempt to introduce the principles of rapid prototyping in the early years of training. The results achieved have to be commensurate with the hardware and software technologies available at SAAD-Lab#Prototype, a laboratory that is not comparable with those of the above-mentioned schools in terms of size and quality of devices but, because of this, more easily replicable in other university contexts. The “think-make-create” methodology proposed in D_lab represents also a way to break down the barrier, still strong in many teaching approaches, between “thinking” and “doing”, design and building, between the creative and the making process. Allowed by an entirely digital workflow and a file-to-factory approach, the method proposed in D_lab highlights at least three issues to reflect upon for a transformative hypothesis of teaching architectural design in the digital era:

- The D_lab workflow does not allow conceptual separations between an architectural concept and its physical result, between a digital prefiguration and its physical output. This leads to a reunification between the immateriality of the design process and the materiality of architecture. In this sense, this experience teaches that designing in the digital era can be a “phygital” experience and that the entanglement between the digital environment (as a pc screen is) and physical environment (as a fab lab is) can be at the basis of new methods in teaching architecture, today peculiar to some “industrial design” university programs. According to Lluís Ortiga, if “the convergence between the architect and the production system reduces the distance between representation and production to a huge degree, it is precisely in this intermediate space that a large part of the architectural invention (...) takes place”.³⁹
- This approach suggests an idea of design as craft activity. If “the philosopher (...) produces by thinking”, states Tim Ingold, “the craftsman thinks by producing”.⁴⁰ In the craftsman’s method “every work is an experiment (...). Try something and see what happens”⁴¹ is the Galilean spirit that, in agreement with Ingold, animates the proposed methodology.

- If “learning is a matter of understanding in practice”,⁴² the D_lab experience represents a possible direction in which to develop this transformative hypothesis for education in architectural design. The student is pulled into the middle of a “total” experience where he becomes a digital craftsman, experiencing the impact in the reality of what was imagined and then processed in the virtual environment. This is also a “socializing experience”. Sharing laboratory spaces with colleagues and teachers, sharing the powerful experience of producing and assembling the scaled but faithful version of their idea, the student has a cathartic experience that distance him from the PC screen, the “silos” where he often tends to put his brain.

In the 1960s, Tomas Maldonado wondered whether “the fate of the digital technologies is to *detach* us from physical reality and not to (...) enrich our cognitive and ultimately operational relationship with the real world”.⁴³ Learning architectural design in the context of digital fabrication could be a possible answer. If “nothing is more powerful than an idea whose time has come”⁴⁴ (Victor Hugo), behind digital innovation there are many ideas that are come and are coming. We should teach our students (and ourselves) to accept the challenge. “The best way to catch the technological train” and the opportunity inside it, says Italian philosopher Luciano Floridi, “is not to chase it, but to be already at the next station”.⁴⁵

NOTES

¹ Mario Carpo, *The Second Digital Turn: Design Beyond Intelligence* (Cambridge, Massachusetts: MIT Press, 2017).

² The acronym CAD stands for “Computer-Aided-Design”. It refers to a family of software and computer graphics technologies for digital drawing. Since the beginnings of the Sketchpad (an experimental system that allowed drawing on a cathode ray monitor with an optical pen) created in 1963 by Ivan Sutherland at the Massachusetts Institute of Technology, electronic drawing CAD technologies have rapidly spread into professional practice since the 1980s, revolutionizing design methods and processes.

³ Computational design is a design method that uses a combination of algorithms and parameters to solve design problems with advanced computer processing. Every step of a designer’s process is translated into coded computer language. The software program uses this information alongside project-specific parameters to create algorithms that generate design models or complete design analyses.

⁴ See, about this topic, Byung-Chul Han, *Non-Things* (Cambridge, UK: Polity Press, 2022).

⁵ “Phygital” is a term (and a concept) coined in the field of economics studies. According to Monash Business School Marketing Dictionary, it is “the concept of using technology to bridge the digital world with the physical world to provide a unique interactive experience for the user”.

(<https://www.monash.edu/business/marketing/marketing-dictionary/p/phygital>).

⁶ The use of such temporary support structures would have been incompatible, in fact, with the large size of the dome and its drum. About this the point see: Ross King, *La cupola del Brunelleschi. La nascita avventurosa di un prodigio dell'architettura e del genio che lo ideò*, (Milano: Rizzoli, 2009).

⁷ In this opera, Le Corbusier outlines five key principles of design that he considered to be the foundations of the modern architectural discipline, which would be expressed through much of his designs. They are pilotis - a grid of slim reinforced concrete pylons that assume the structural weight of a building; free design of the ground plan; free design of the façade; horizontal window; roof garden.

⁸ Fernando Espuelas, *Madre Materia* (Milano: Marinotti Editore, 2012).

⁹ By materiality, the French architectural theorist means a broad concept, which includes not only building materials but also the tools, processes and techniques through which the same materials are shaped to become architecture. Cf.: Francois Picon. *The materiality of architecture* (United States: University of Minnesota Press, 2020).

¹⁰ Francois Picon. *The materiality of architecture* (United States: University of Minnesota Press, 2020), p. 8.

¹¹ Cf Pierluigi Nervi, *Arte o Scienza del Costruire?* (Milano: CittàStudi, 2014).

¹² Picon, 8.

¹³ Eduardo Vittoria was also the founder of the School of Architecture and Design at the University of Camerino

¹⁴ Aldo Capasso. “La leggerezza della tecnologia”. In *Eduardo Vittoria. Studi, ricerche, progetti*, edited by Pietro Nunziante and Massimo Perriccioli (Napoli: Clean Edizioni, 2018), p. 22.

¹⁵ Gianluca Carella, Venanzio Arquilla, Francesco Zurlo, Maria Cristina Tamburello, “Phygital experiences design”, *DIID, isegno Industriale Industrial Design* 67 (2019): 128-35, p. 128.

¹⁶ The “construction” of the digital twin, as an example, typical of those working in the BIM environment, in educational contexts encourages the idea that the goal of the design process is the production of an Avatar, resulting from data systems more than as building systems.

¹⁷ From Jean Prouvé to Carlo Scarpa, from Le Corbusier to Renzo Piano or Shigeru Ban, many architects of modernity have publicly claimed that their training took place not only in university classrooms or behind drawing tables (nowadays PC screens), but also in craftsmen’s workshops or factories.

¹⁸ Tim Ingold, *Making* (Milano: Raffaello Cortina Editore, 2019.D), p. 129.

¹⁹ Francois Picon. *The materiality of architecture* (United States: University of Minnesota Press, 2020), p. 12.

²⁰ In 2013, Momentum, an Australian marketing agency, started calling itself an “agency for the Phygital World”. The digital revolution began with the transformation and transposition of many real-life activities into digital entities. Today, the reverse tendency is becoming ever more apparent. According to Ajay Singh, “the virtual is beginning to reveal itself within the actual” (cf. https://www.academia.edu/41962663/PHYGITAL_-THE_FUTURE_OF_MARKETING).

²¹ Kuhnhenrich, Helga. “Digitalisation. A process to be shaped”, in *Craftsmanship in the digital age: architecture, values and digital fabrication*, edited by ANCB - The Aedes Metropolitan Laboratory, Series: ANCB Edition #4, Berlin, 2019, p. 16.

²² In Europe, the ETH of Zurich, the Institute for Advanced Architecture of Catalonia (IAAC), and the Schools of Architecture of the Royal Danish Academy of Copenhagen are among those further along this path. For architects, it is not only important to understand how those machines work, they have just to understand the process of designing with them, remind us Martin Tamke, professor at the Royal Danish Academy of Fine Arts of Copenhagen, cf. Martin Tamke, "Fundamental changes for architecture", in *Craftmanship in the digital age. Architecture, value and digital fabrication* edited by Hans-Jurgen Commerel and Kristin, p. 36 e p. 38 (Berlin: ANCB edition #3, 2019).

²³ The techniques of digital fabrication generally fit into four main categories: cutting, subtraction, addition, and formation. The first two are part of the subtractive techniques; the others are additive. The primary difference between additive and subtractive involves how creating parts from raw materials. Additive manufacturing processes work by adding layers to create the finished product. 3D printing is the reference technology in this area. With the subtractive manufacturing processes, a cutting tool removes material as, in sculpture, the artist breaks away pieces of stone to reveal the finished piece. See on this point: Luca Caneparo, *Digital Fabrication in Architecture, Engineering and Construction* (Berlin: Springer, 2014).

²⁴ File to Factory refers to the seamless merging of the design process into fabrication. It involves the direct transfer of data from a 3D modelling software to a CNC (Computer Numerically Controlled) machine. It employs digital design and fabrication strategies based on computational concepts.

²⁵ Data most often comes from CAD (computer-aided design) or other digital environments and is transferred to CAM (computer-aided manufacturing) software. The output of CAM software is data that directs the machine, like a 3D printer or CNC milling machine.

²⁶ According to what Mario Carpo defines as the "Albertian Paradigm", Italian architect Leon Battista Alberti (1404-1472) considered construction documents to be the original work of architecture and the resulting building to be an identical copy of the documentation. In his volume *The second digital turn*, Carpo suggests that digital processes (digital fabrication in particular) offer architecture culture an opportunity to subvert the Albertian Paradigm by returning the action of building to a pre-Renaissance culture i.e., to a looser relation between design, production and building.

²⁷ Martin Tamke, "Fundamental changes for architecture", in *Craftmanship in the digital age. Architecture, value and digital fabrication* edited by Hans-Jurgen Commerel and Kristin, 36-40 (Berlin: ANCB edition #3, 2019), pp. 38-39.

²⁸ Tamke, 66.

²⁹ D_lab is in charge of this paper's author.

³⁰ The workshop venue is the School of Architecture and Design "Eduardo Vittoria" di Ascoli Piceno (SAAD), one of the five departments of the University of Camerino.

³¹ The basic equipment adopted during the workshop refers mainly to: laser cutting machines with a 600 x 400 mm working plane, laser cutting machines with a 1500 x 500 mm working plane, Roland CNC milling machine with a 270 x 270 x 145 mm working plane, 3-axis CNC milling machine with a 3000 x 2500 x 500 mm working plane, Maker Boat Replicator 3D printer with a print volume of 280 x 150 x 150 mm, and Wasp 3D printer with a print volume of D 600 x H 1000 mm.

³² Design thinking is a non-linear, iterative process that teams use to understand users, challenge assumptions, redefine problems and create innovative solutions to prototype and test. Involving five phases - empathize, define, ideate, prototype and test - it is most useful to tackle problems that are ill-defined or unknown. Nobel Prize laureate Herbert A. Simon first mentioned design thinking in his 1969 book, *The Sciences of the Artificial*, and then contributed many ideas to its principles. On this point, see Hasso Plattner et al. *Design Thinking: Understand - Improve - Apply* (Berlin: Springer, 2010).

³³ The most suitable software for managing this phase is Rhinoceros in combination with the VPL Grasshopper 3D plug-in. For the use of this specific tool and for an introduction to the computational design approach (for which this tool is intended), training 'pills' (lectures and tutorials) are provided in the crash courses for the basic use of the software.

³⁴ MDF is a derivate wood product achieved by combining hardwood or softwood residuals into wood fibres, combining it with a resin binder, and forming panels by applying high temperature and pressure.

³⁵ Concerning the new paradigms of digital architecture, we refer in particular to the work of Gilles Retsin, Programme Director of the M.Arch Architectural Design at UCL, the Bartlett School of Architecture

³⁶ Scalability is a term borrowed from computer science. It means the ability of a computer application or product (hardware or software) to continue to function well when it (or its context) is changed in size or volume to meet a user need. About the scalability paradigm in architecture see.

- ³⁷ Roberto Ruggiero, *Executive design and digital construction processes. A constructive experimentation between Italy and Japan*. In *Techne - Journal of Technology for Architecture and Environment* 18 (2019): 300-08, p. 302.
- ³⁸ Lluís Ortega, *The Total Designer: Authorship in the Architecture of the Postdigital Age* (Barcelona, Actar, 2017), p. 20.
- ³⁹ Ortega, 22.
- ⁴⁰ Tim Ingold, *Making* (Milano: Raffaello Cortina Editore, 2019.D), p. 132.
- ⁴¹ Ingold, 23.
- ⁴² Ingold. 133.
- ⁴³ Tomas Maldonado, *Reale e Virtuale* (Milano: Feltrinelli, 2015), p. 57.
- ⁴⁴ The sentence is attributed to the French writer Victor Hugo. In French «*Il n'est rien au monde d'aussi puissant qu'une idée dont l'heure est venue*». Cf.: <http://webscience.com>
- ⁴⁵ Luciano Floridi, *Etica dell'intelligenza artificiale. Sviluppi, opportunità, sfide* (Milano: Raffaello Cortina Editore, 2022), p.139.

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A TV CABINET OF CURIOSITIES

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INTRODUCTION

Museums have been used as educational tools for as long as we can remember; traditionally respected authorities of the truth displaying facts and information. Once upon a time, a cabinet of curiosities was a part-witch cave, part-apothecary chamber and part science lab. These 'wonder rooms' attempted to tell stories about the world's phenomena and were considered the earliest manifestations of museums. However, what if we transformed the museum? This paper explores The Media Majlis at Northwestern University in Qatar as a case study for modern-day learning in a museum environment. It draws research on museum interpretation and its impact on advancing pedagogical study.

Cabinet of Curiosities

The notion of a cabinet of curiosities emerged in the late sixteenth century as private collections of the wealthy and curious. These collections comprised various objects, such as natural specimens and artifacts, often arranged and displayed in a way that aimed to tell stories about the world and its phenomena. They aimed to tell stories about the world's phenomena. They were seen as a part-witch cave, part-apothecary chamber, and part-science lab¹ and were considered an important precursor to museology.

It is noted that cabinets of curiosities were an expression of the early modern European interest in exploring and collecting the natural world and the desire to possess and display rare and exotic objects.² This collection habit reflected the Renaissance interest in knowledge and the world, bringing together objects from different cultures and periods to display man's achievements and the wonders of the natural world. These collections were a mix of science and art, focusing on the marvelous, the unusual, and the unexpected.³

Overall, the cabinets of curiosities served as early examples of museums and helped to shape our modern understanding of museums as places where knowledge, art, and culture are collected and displayed.⁴

Museums

Museums have long been recognized as educational institutions offering learning and cultural engagement opportunities. The concept of the museum as a place of dialogue has been increasingly recognized as a way for museums to fulfill their educational role in a more dynamic and contemporary way.⁵ However, traditional approaches to museum exhibitions often prioritize the display of facts and information over interactive experiences that encourage questioning and dialogue.

The use of museums as educational tools dates to ancient times. In traditional museums, the role of the educator was to impart knowledge and information, and the visitor was expected to absorb this information without query. This approach to museum education was based on the idea that museums were trusted authorities of truth, and their primary function was to impart this truth to visitors.⁶

One of the earliest examples of this type of museum was the Alexandria Museum in Egypt, which was established in the third century BC. The museum was a learning center where scholars and scientists could study, teach, and conduct research. The idea of the museum as a trusted authority of truth has been challenged recently as museums have become more participatory and engaging for visitors. Nevertheless, the museum's traditional role as an educational tool has remained an important aspect of museum practice.⁷

As traditional repositories of knowledge and cultural heritage, museums have long been seen as authoritative sources of information. One reason museums have long been recognized as educational institutions is that they provide a context for learning that is impossible in traditional classroom settings. Museums create an immersive experience that allows visitors to engage with objects and collections in a way that is not possible through reading or lecture-style teaching.⁸ Additionally, museums can offer a hands-on, experiential learning environment where visitors can actively participate in the learning process, leading to greater understanding and retention of information.⁹

Museums also can provide a platform for visitors to engage with different cultures and perspectives, which can help to promote cross-cultural understanding and empathy¹⁰ and can offer opportunities for lifelong learning. In this context, museums have the potential to shift their focus from matters of fact to matters of concern, creating a learning environment that invites dialogue and encourages the visualization of important issues. This is because museums are unique spaces where people can interact with objects and collections, engage in critical thinking, and gain a deeper understanding of the world around them.¹¹

The University Museum

Underpinned by museum, audience, pedagogical, and interpretation theories, university museums can play a critical role in preparing students with opportunities to engage with real-world problems, develop critical thinking skills, and gain a deeper understanding of the social and cultural context in which they will work.

The teaching, learning, and engagement practices in university museums are multifaceted and involve considerations from several different disciplines. These considerations include pedagogical theories on how to teach students best, theories of how students learn, and approaches to engaging people in museum experiences. Pedagogical theories play a crucial role in determining how university museums teach. For example, theories suggest that students learn best when they actively construct their understanding of the material rather than passively receive information.¹² In museum contexts, this could involve designing interactive exhibits or educational programs that encourage students to make connections between what they are learning and their own experiences.

Similarly, theories of how students learn also inform teaching practices in university museums. For example, social learning theories highlight the importance of social interaction and collaboration in the learning process.¹³ In museum contexts, this could involve designing exhibitions or programs that encourage students to work together to solve problems or to engage in discussions with one another.

The concept of university museums presents a unique opportunity to blend different disciplines, including teaching, learning and engagement, to enhance the educational experience.

THE MEDIA MAJLIS

The Media Majlis at Northwestern University in Qatar is a non-accessioning digital-first museum in Doha, Qatar. The museum was established in 2019 as an alternative teaching space for young scholars, faculty, and the general public who desire to explore media, communication, and journalism topics. The Media Majlis hosts two annual exhibitions that align with the university's academic semesters (Spring, opening in January and Fall, opening in August). The exhibitions rely on loaned and licensed content and objects and feature various types, including audio, video, photography, and interactive installations.

Just like a traditional cabinet of curiosities, The Media Majlis aims to provide its audience with a rich and immersive experience by displaying a range of artifacts and materials that span various disciplines, cultures, and time periods. However, its exhibitions attempt to engage visitors and encourage them to explore various themes and topics. By embracing technology and new media, the museum provides a dynamic and contemporary take on the concept of a cabinet of curiosities, offering visitors a unique and enriching experience that encourages them to think critically and creatively about the world around them.

As a result, this is an example of how a museum can integrate technology and advance pedagogy, providing a platform for museum professionals and educators to study and explore innovative museum education and development methods.

JOHN FALK AND FREEMAN TILDEN

The theories of John Falk and Freeman Tilden have significantly contributed to the museum education and visitor studies field.

Falk is a leading expert in the field of museum interpretation and has made significant contributions to the study and practice of museum education. He is known for his work on 'free-choice learning,' which refers to the idea that individuals learn best when they can make their own choices about what they want to learn and how they want to learn it. He introduced the concept of 'identity learning' and argues that museums are not just places to learn about specific subjects but also spaces that help visitors explore and understand their identities. According to Falk, museums can play an essential role in helping visitors understand their place in the world, their relationships with others, and their values and beliefs.¹⁴

In contrast, Tilden, a museum educator and author, emphasized the importance of 'interpretation' in museums, defining it as the communication of meaning about things. Tilden's definition highlights the importance of effective communication in museums. Tilden argued that museums should strive to bring the collections to life, connecting them to the larger context of the world and making them relevant to visitors. He emphasized the importance of storytelling and other interpretive techniques to engage visitors and help them make meaning out of the collections.¹⁵

In his seminal work 'Interpretation of Cultural and Natural Resources,' Tilden outlined six principles for interpretation in museums, including the need for the museum to be relevant to the visitor and for interpretation to be educational but not didactic.¹⁶

Tilden's emphasis on interpretation is complemented by Falk's focus on identity learning, as both emphasize the importance of making the collections relevant and meaningful to visitors. However, they contrast with the concept of a cabinet of curiosities. Unlike the traditional cabinet of curiosities, these scholars see museums as educational institutions shaping visitors' knowledge and understanding—rather than being didactic and focusing on imparting information, a modern museum is a place for exploration, interpretation, and engagement.

Overall, these theories combine to form a more nuanced and comprehensive understanding of the role of museums in shaping knowledge and understanding. By emphasizing the importance of interpretation, engagement, and community, Falk and Tilden provide a framework for museums to create truly transformative experiences for their visitors. By combining these theories with a deep understanding of the needs and desires of museum visitors, museums can create exhibitions and programs that are both educational and engaging.

THEORY IN PRACTICE

Within the context of university museums, Falk argues that university museums should focus on providing meaningful experiences for students linked to coursework and extend beyond the classroom walls, suggesting these experiences should encourage students to make connections between the museum exhibitions and their coursework and should be designed to support students' critical thinking and problem-solving skills.¹⁷

Meanwhile, Tilden argues that exhibitions should provide context, highlight the significance of the objects on display, and encourage visitors to engage with the content in a meaningful way—exhibitions should be designed to stimulate visitors' curiosity and imagination and should be accessible and appealing to a wide range of audiences.¹⁸

Falk's theory of free-choice learning provides a framework for understanding how university museums, such as The Media Majlis at Northwestern University in Qatar, can foster more engaged, critical, and creative thinking. Falk's theory proposes that museums can facilitate more meaningful learning experiences by allowing visitors to engage with the material at their own pace and on their terms. Falk's interpretation theory and Freeman Tilden's interpretation principles can be applied to The Media Majlis in several ways.

Falk's emphasis on free-choice learning aligns well with The Media Majlis's interactive and immersive exhibitions. By allowing visitors to explore and interact with the material in their way, The Media Majlis is helping to promote a more meaningful and engaging museum experience. It fosters a greater sense of ownership and connection to the material, which aligns with Tilden's principle of an invitation to visit.

Falk's focus on the cumulative and evolving nature of museum experiences can also be seen in The Media Majlis, which offers a diverse range of exhibitions designed to be accessible and engaging for visitors of all ages and backgrounds. By building a community of museum-goers who are passionate about learning and engaged with the material, The Media Majlis is helping to foster a lifelong love of learning and a desire to explore the world through museums, which aligns with Tilden's principle of stimulating interest.

Falk's theories can also be applied to the digital exhibits offered by The Media Majlis, which offer new and innovative ways to engage with museums and expand learning opportunities. By leveraging cutting-edge technology and interactive multimedia, The Media Majlis can offer visitors a unique and immersive experience that is impossible with traditional physical exhibits, aligning with Tilden's principle of providing a rewarding experience."

Falk's theory of the cumulative and evolving nature of free-choice learning has been widely discussed and debated within the field of museum interpretation. The introduction of new digital museums and exhibitions has the potential to expand, challenge and reshape these theories in several ways. While digital museums can provide new and innovative learning experiences, it is vital to consider the potential limitations and challenges associated with these new approaches and ensure they are accessible and engaging for all visitors.

SHORTCOMINGS

While the concept of museums as educational spaces, the role of the university museum as an alternative classroom, and the interpretation theories of leading academics seem overtly positive, it does not mean that The Media Majlis is the best recipe for success; tThere could be several reasons faculty and students find it challenging to engage with exhibitions at university museums, such as The Media Majlis and implement them into their course syllabi. One reason could be the lack of alignment between the exhibitions and course content, making it difficult for students to connect the exhibitions with the topics they are studying. Additionally, the exhibitions might not be presented in a way that is engaging and accessible to students, which could make it difficult for them to grasp the key themes and ideas presented. Furthermore, using technology in the exhibitions might be intimidating for some students and faculty, which could limit their engagement with the exhibitions and the learning opportunities they provide.

Some faculty members may not view museums as credible educational institutions and may question the validity and reliability of the information presented in exhibitions. This can be due to a lack of familiarity with museum collections and exhibitions or a perception that museums primarily serve a recreational or entertainment function. Another reason is that faculty members may be concerned about the relevance of exhibitions to their courses and their students' learning goals. They may feel that exhibitions are too broad and general in scope or lack the depth and specificity required to support learning in their discipline.¹⁹ Finally, some faculty members may also be apprehensive about the impact of museum exhibitions on student learning, as they may question the effectiveness of exhibitions in facilitating understanding and retention of information.

These are some reasons why university faculty may be apprehensive about using museum exhibitions as an educational resource for their students and why this might not be in line with the pedagogical visions of the museum. Museums must engage with university faculty and address these concerns to ensure that exhibitions are effectively integrated into the educational landscape and considered valuable pedagogical resources.

CHANGE

One of the critical theories that have been used to inform the transformation of museums is the concept of interpretation, which emphasizes the importance of creating experiences that are meaningful, relevant, and engaging to the individual visitor.²⁰ This approach is based on the idea that museums should strive to create opportunities for visitors to engage actively with the content rather than simply passively receiving information.²¹

The transformation of museums to align with 21st-century thinking and technology is a complex and ongoing process that requires a deep understanding of the theoretical underpinnings of museum practice and the practical implications of incorporating new technologies and approaches into the museum environment.²² Nevertheless, it is a critical step in ensuring that museums remain relevant and engaging in the future. In practice, this transformation is taking place using new technologies, such as virtual and augmented reality, gamification, and digital storytelling, that allow museums to create immersive and interactive experiences designed to foster critical and creative thinking.

In a rapidly evolving technological landscape, museums must continuously adapt and innovate to keep up with changing media uses. This requires an ongoing exploration of new technologies and an understanding of how they can be leveraged to enhance the museum experience for visitors. According to a 2017 American Alliance of Museums study, "the integration of digital technologies

and media into museums has the potential to provide more engaging, personalized and meaningful visitor experiences."²³

In summary, educators can stay connected with modes of student learning in museum environments by incorporating hands-on, interactive exhibits, encouraging student engagement and participation, and exploring the role of technology in enhancing visitor learning. The museum content should be gateways for interrogation, reflection, and interaction, rather than passive, static, and didactic, to provide visitors with a more meaningful and engaging educational experience.

CONCLUSION

While technology can offer many benefits in terms of enhancing the visitor experience and facilitating learning in museums, it is essential to carefully consider the potential drawbacks and limitations. University museums uniquely prepare students for the social and workplace issues they will encounter in their future careers.

Through exhibitions and programming that focus on cultural heritage, social and political issues, and key players, university museums can provide students with opportunities to develop critical thinking and problem-solving skills, gain a deeper understanding of the cultural context in which they will be working, and build the relationships they will need to succeed.

As times change, museums need to reflect a shift in their role from passive, static displays of collections to active, engaging sites for learning and critical thinking. Furthermore, while The Media Majlis might be an early example, the museum must focus on audience engagement, educational value, and technology used as a resource for learning and understanding.

In conclusion, the pedagogical, museum, and university approach to modern-day learning in museums contrasts, complements and contradicts the concept of a cabinet of curiosities. Museums like The Media Majlis have evolved to focus on educational and interpretive experiences, with a pedagogical approach to learning that emphasizes active engagement and personal connections with museum content.

By using exhibitions exploring identity and digital technologies, museums can facilitate dialogue and encourage visitors to think differently, triggering alternative ideas and new ways of thinking.

NOTES

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ONLINE LEARNING STRATEGIES FOR DESIGNING A PLAYSCAPE

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INTRODUCTION

The architectural design studio is pivotal in architectural education through simulation and project-based learning. Notwithstanding, online education is taking over the conventional system after the pandemic. Online education has many underlying limitations, especially in imparting knowledge and obtaining information that can be analysed using VARK learning preferences. Moreover, the foundation year is the most significant milestone in architectural education when new students start to try and experiment for the first time with designing the human body features and movements. This research chooses two batches of architectural foundation year students, the intake year 2019 and 2020, in Universitas Multimedia Nusantara took on one project in the architectural studio through the online learning process.

The research will conduct learning preferences to analyse architectural studios' online learning process gap between students' learning preferences and learning variables. Every student will take the VARK test to comprehend their learning preferences and measure the effectiveness of the learning process during the online process. The project is designing a playscape for children based on their body movements while playing outside. Therefore, learning variables based on design principles for this project are understanding the project task, doing the research design process, comprehending the site and interpreting programmes on-site, and transforming research design and context into architectural forms. Hence, this research uses the correlation method to analyse learning preferences and variables through online observation, the VARK test, and structured interviews. After comprehending the gap in online learning, this research proposes learning strategies for online architectural design studios based on learning preferences.

Online Learning Challenges for the Foundation-Year Architectural Design Studio

Every student in each discipline and level of education has different learning preferences that are challenging to accommodate all unique students' preferences for lecturers. Hence, the learning process in an architectural design studio requires multimodal learning preferences by combining VARK (Visual Audio Read/Write Kinaesthetic) so students comprehend all information, both knowledge and skills. The architectural design studio in the foundation year has a prominent role in introducing students to architectural education. In Universitas Multimedia Nusantara, an architectural design studio is a project-based that starts in the second semester; on the other hand, online learning was ineluctable that affected students understanding since March 2020.

Furthermore, understanding children's body movements for designing a playscape faced problems for students even though there was a video. Then, students needed more sensitivity for spatial translation, which affected the accuracy of form and dimension. Therefore, online learning issue for an architectural design studio mainly needs more kinaesthetic learning preference.

VARK (Visual, Audio, Read/Write, Kinaesthetic) Learning Preferences

Learning is getting, achieving, retaining and using imagination to accomplish skills.¹ VARK learning preferences utilise essential senses in communication between students and lecturers because learning is a process of giving and receiving information. Visual (V) learning preference has advantages in processing and receiving information in the graphic, diagrams, symbols, hierarchies, and other visual forms. Aural (A) learning preference is strong for receiving information and learning by listening and speaking. Read/Write (R) learning preference marks their ability to receive information by reading. Kinaesthetic (K) learning preference has the best learning type by directly experiencing and practising.²

Online Learning Model

Some researchers suggested that the success of online learning must pay attention to cross-culture learning strategies and fluency in information technology. Online learning has opened boundaries and converged multi-culture; however, lecturers encounter new challenges in designing instructions and learning methods using multicultural, multimedia, and multiplatform.³ Besides, technology 4.0 has affected education, including technology and learning methods.⁴ The readiness to encounter online learning starts from the lecturers' fluency and self-confidence in utilising ICT.⁵ Overall, the lecturers' fluency, readiness, and confidence have helped the success of online learning through customising and flexibility.

The application of learning preferences determines the accomplishment in the learning process. The success of online learning could happen when there are mutual interests, needs, and power between students and lecturers.⁶ So, the success of online learning is on lecturers bridging knowledge and cultural differences.⁷

Architectural Design Studio Learning Model

The architectural design studio is project-based learning that requires students to understand and be sensitive to environmental issues and context.⁸ Students need to do research and simulation that demand a direct comprehension of human activities, space areas, and material characteristics; with the results, students need several tools and materials throughout the learning process.⁹ Two-way dialogue between lecturer and student is a significant successful key for the architectural design studio.¹⁰

The studio is an educational model for architectural design in cognitive and visual. Visually, two-dimension and three-dimension become the foundation of studio thinking in understanding geometry, movement representation, and physical construction.¹¹ Cognitively, the architectural educational model simulates architectural design with critiques of each design process.¹²

The architectural learning model always associates with continuous experimental and communication processes. Dooren suggested five elements for the learning process in the architectural design studio to be more explicit or understandable during the communication process, like experimenting, an experimentation-based way of thinking; guiding theme, a value-based way of thinking; domains, all aspects and scales of design to determine the design product; the frame of reference, a knowledge-based way of thinking; laboratory, the designer's visual language while experimenting.¹³

Online Learning Preferences for the Architectural Design Studio

When the architectural design studio has a foundation in mutual interaction, there will be discrepancies between manual and digital tools. Its orientation is rooted in experiences during the learning process in a physical studio, like direct interaction, learning to develop a design, communication, discussion, and sharing. The pandemic has impacted architectural studio conditions, altering physical to online studios that force students and lecturers to adopt new routines, habits, and ways of changing information.

New students in the architecture foundation year could quickly adapt to the online studio process because they were beginners in learning to communicate in architectural design. The benefit of online learning for the architectural design studio is a chance to record the feedback process, even though the shortages limit ways of socialising and reduce a sense of belonging.¹⁴

Multimodal (VARK) learning preferences turn into pedagogy strategies at each level of education. The research utilised VARK learning preferences on the architectural design studio that has proven the enhancement of learning outcomes where students got inspired on kinaesthetic preference class.¹⁵

DESIGNING A PLAYScape

In Architectural Design Studio 1, designing a playscape was the first experience for students designing along with context, like site selection and analysis and human body movement studies for children. This project lasts eight weeks, and the user target is children aged 5 – 12. Each student has to choose a location for a playscape near their house. The playscape area is 64 m², and the maximum height is 6 meters. Furthermore, students follow the four general principles:

1. understanding the project task,
2. doing the research design process,
3. comprehend the site and interpreting programmes on-site,
4. transforming research design and context into architectural forms.

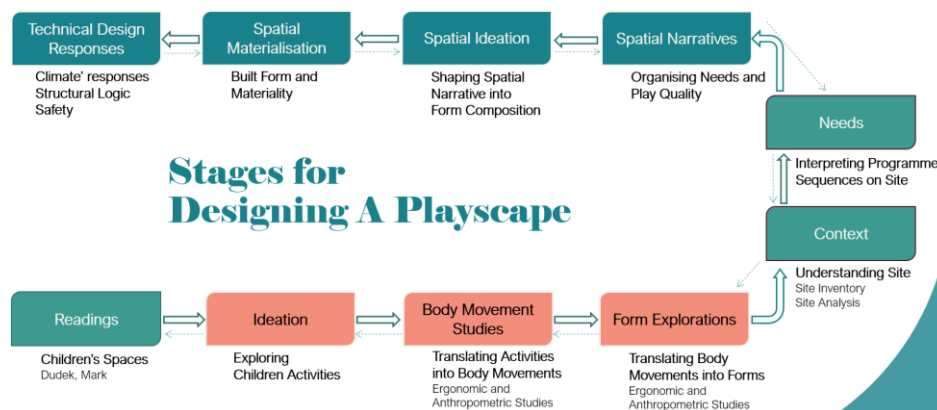


Figure 1. Stages for Designing a Playscape

The first principle is understanding the project task by reading literature about how children's development affects their movements and activities within an urban environment.

The second principle is a research design process, including ideation, body movement studies, and form explorations. Ideation is the exploration and imagination processes for all possible children's activities while playing outside individually or in a group and depicting children's activities. Thus, body movement studies are essential to ensure the ergonomic and anthropometric of children while playing. Form explorations are translating body movement studies into forms or setting geometry boundaries.

The third principle is comprehending the site and interpreting programme sequences suitable for children playing on site. While understanding the site, students must survey to gather site inventory and analyses, including social, cultural, and environmental contexts. Afterwards, the student needs to define and put programmes for children's activities on site considering the social, cultural, and environmental context.

Furthermore, the final principle transforms research design and context into architectural forms that comprise spatial narratives, spatial ideation, spatial materialisation, and technical design responses. The spatial narrative is organising needs and play quality when the student narrates and depicts children's activities and movements corresponding to context. Next, spatial ideation shapes spatial narratives into form compositions that determine children's movements according to the proposed children's movements. Afterwards, spatial materialisation defines the use of materials influencing children's movements and playing quality. Finally, the technical design responses aim to answer safety, structure, and microclimate challenges that meet construction and artistic requirements.

Online Learning Challenges for Foundation Year Students While Designing A Playscape

The researcher collected data from 86.57% of students and participated in an online learning program for designing a playscape. The students completed a free VARK questionnaire online, and this research focused on identifying the strengths of each student's learning preferences. The results indicated that most students had a strong learning preference for Kinaesthetic (K) and Visual (V).

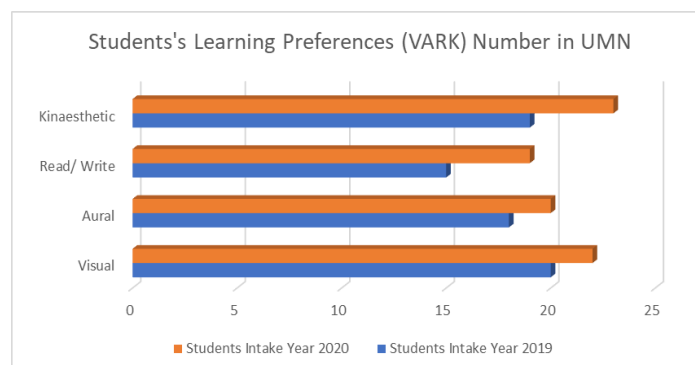


Figure 2. Students' Learning Preferences (VARK) Number in UMN

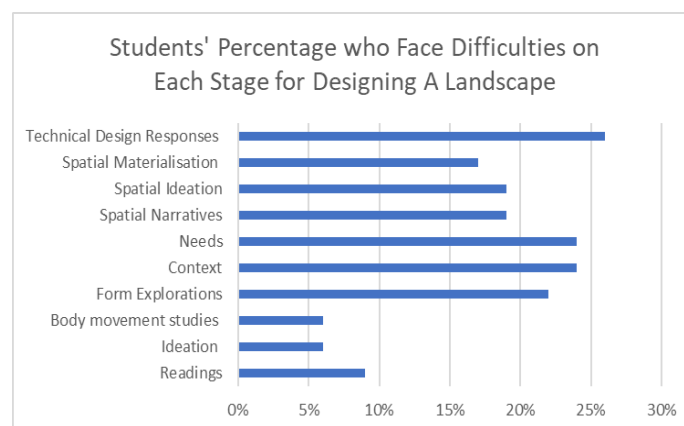


Figure 3. Students' Percentage who Face Difficulties on Each Stage for Designing A Landscape

Two perspectives of online learning for students intake in 2020 while designing a playscape. First, students were new to architectural education, making it easier to adapt to multiplatform digital.¹⁶ On the other side, they faced obstacles in cultural acculturation and socialisation among students for studios.

Meanwhile, students who intake-year in 2019 have already had a robust social and habit in collaborating and sharing knowledge and skills. On the contrary, the challenge of online learning for designing a playscape is the loss of direct interaction, which declines learning motivation.¹⁷

After conducting observations and interviews with students, each student encountered unique challenges while designing a playscape. Most students reported facing the most difficulty during the technical design process. Conversely, the slightest problems were during the ideation and body movement study stages. Most students needed help from the form exploration stage to the technical design responses stage.

While understanding the project task, reading is an advantage for the learning preference of Read/Write (R). Moreover, the research design process contains three design stages that demand Visual (V) and Kinaesthetic (K) learning preferences. Most students had trouble imagining activities and movements in the ideation stage due to no direct observation or childhood experience playing in a playscape (K). Body movement studies are experimenting and laboratory elements of the learning process through drawings of human motion based on selected activities. The biggest challenge was the form explorations to define the boundary and form that shape children's movements.

Furthermore, comprehending the site and interpreting programmes on-site is essential in comprehending the physical, social and cultural context. Students had only a chance to survey via google street. VAR data about the site was insufficient; kinaesthetic, direct observation was the key for students to comprehend the site context for learning preferences.

The challenges of transforming research design and context into architectural forms were connecting the previous process into architectural forms. These stages are part of experimenting and laboratory elements that need the frame of reference as the designer's knowledge. The spatial narratives stage had the strength for Visual (V) students to express their ideas using abstract diagrams. The spatial ideation stage was challenging to depict architectural forms in line with proposed activities, context, and needs. Due to a lack of field study and material exposure (K), students needed help to decide on materiality for their design in the spatial materialisation stage. In the technical design stages, most students needed to remember climate responses and safety considerations for the final stage.

In conclusion, designing a playscape needs multimodal (VARK) learning preferences, especially for project-based learning.¹⁸ Every learning preference has affected communication and exchange of information or knowledge and skills transfer between lecturers and students.¹⁹

ONLINE LEARNING STRATEGIES FOR DESIGNING A PLAYSCAPE

Online learning strategies for designing a playscape must be more explicit, using five design elements and VARK learning preferences.²⁰ First, comprehension of the project scope contains the domain and guiding theme. The domain acts as the aim of design through multimodal learning preferences. Besides, a guiding theme keeps students' work on track using VAR learning preferences. Second, exploring ideas and forms involves experimenting, a frame of reference, and a laboratory. Experimenting and laboratory elements need direct experiments utilising multimodal learning preferences and multiplatform. In this project, the primary role of a frame of reference is the inevitability use of Kinaesthetic (K). All stages for designing a playscape, from movement studies to technical design responses, need multimodal learning preferences.

This research suggests a combination of online and on-site learning (hybrid). Online learning strategies for designing a playscape:

1. Readings

Lecturers must provide all multimodal learning preferences. Lecturers provide photos and diagrams (V), readings (R), discussion and brief lecturing (A), and examples (K). This stage is eligible for online learning.

2. Ideation

The lecturer offers multimodal learning preferences by preparing notes (R), diagrams (V), explanations (A), and examples (K). In this stage, online learning is possible as students use technology and imagination to find many kinds of children's activities. On the other side, students must discuss to find more references.

3. Body Movement Studies

Students need a direct observation or simulation (K) of children's movements, and this simulation (K) helps students to develop their sense of space and dimension. When it is time to depict body movements, lecturers provide examples (K) of body movement drawings. The studio can be online while students understand their studies.

4. Form Explorations

While translating body movement into forms, students have to start by themselves with sketches (V) or models (K). When students are easier to express their idea through sketches (V), the communication between lecturers and students uses digital and manual drawings. Another option for students who prefer using models (K) is the mannequin to define the geometry. Sketches (V) or models (K) are mediums to understand, experiment, communicate, and form explorations to produce some geometry alternatives for every specific movement. These options give flexibility to students who have different learning preferences.

5. Context

Students must visit the site for few times, capturing site inventory and context. Because it is the student's first time doing site analysis to comprehend the context, it is better to work in a group. Another challenge is comprehending the social and cultural context that should fit children. Students must sketch diagrams (V), take notes (R), and discuss (A) while interpreting the site and context. This stage is not only two ways communication between lecturers and students, but it involves children as clients and society around the site. Online learning might happen when students understand the physical, social, and cultural contexts. The feedback and exchange of information while processing data utilises digital platforms.

6. Needs

This stage can maximise online learning when students understand the context. Students must consider the context of programmes or children's activities for need supervision, community surveillance, movement sequences, and comfort. Students express their programmes on the site using diagrams (V) and models (K) corresponding to movement sequences and areas from the third stage – body movement students. The feedback process uses discussion (A) and sketches (V).

7. Spatial Narratives

Spatial narratives use online learning when students comprehend previous stages. Students learn to describe (A) and depict (V) how children play in narration. This narration helps students express their ideas for a playscape. On-site learning should always be available whenever students need it.

8. Spatial Ideation

Spatial ideation translates spatial narratives into form compositions by experimenting and exploring (K) geometries and details based on children's movement sequences and qualities. Students must

explore using drawings (V) and models (K). After they finish the model, they must ensure that all conditions meet, including activities, context, and needs. s. Depending on the student's needs, the architectural design studio can run online or on-site.

9. Spatial Materialisation

Students decide on materiality at this stage, ensuring sturdiness, movements, playing comfort and safety. Students, without prior knowledge about materials, need to sense and touch (K) so they know about their characteristics and textures. Besides, students must ensure that it is comfortable, safe for children's play, and long-lasting. Studio opens to an online or on-site class.

10 Technical Design Responses

Technical design responses demand climate responses, sturdiness, and safety. Students might choose an online or on-site studio at this stage. A playscape model must include the surroundings; thus, students can simulate (K) sunlight, shading area, and rainwater. Besides, students can observe the sturdiness of form and materials composition, including details. Finally, students imagine activities, movements, and contexts on the models if their design meets safety.

CONCLUSION

VARK's learning preferences have moulded knowledge and skills transfer from ideation to design forms. VARK learning preferences refer to senses which are helpful in communication throughout the learning process, ultimately two-ways information changing between students and lecturers at a studio.²¹ Online learning for the architectural design studio extends other ways of communication in assisting students and understanding the process of assignment aims and scopes with Aural (A) and Read/Write (R) preferences by video recording the learning process. Digital media accommodate visual learning preferences. On the contrary, online learning for designing a playscape could not accommodate Kinaesthetic (K) learning preference due to limited access to simulation, experiencing space, material, and spatial quality.

The biggest obstacle in the design process is transforming abstract ideas into tangible forms. It was solved by referring to some examples and doing direct and explicit experiments through experimenting, the frame of reference, and the laboratory.²² Hence, the absence of direct experiments-K in online learning for designing a playscape obstructed a comprehensive understanding and ability of spatial logic, human body movements, and technical term.

The most significant limitation is Kinaesthetic (K) learning preference, crucial for communication while designing a playscape. Consequently, online studios need to focus on the Kinaesthetic (K) learning preference development in designing a playscape. Kinaesthetic (K) is a prominent learning method in the foundation year of architectural education, but it always needs to exist even in the online studio. Hence, the flexibility for students to demand on-site or physical studio is essential, as the lecturer's creativity to offer and adapt to changes and online platforms.

Hybrid learning is the best solution for the foundation year of architectural education while students are in training to enhance their senses. Online learning has opened many communication choices but still needs experiments and experiences (K). Thus, the uses of multimodal (VARK) and five elements of the design process must always be open to technology growth without abandoning Kinaesthetic (K) learning preference.²³ Despite it, a foundation year cannot replace physical studios and simulation. Students are learning about human body movements, social and cultural context, and materiality in this context. Other design stages happen for online learning, especially for exchanging information and giving and getting feedback.

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- ¹⁰ Goldschmidt, Hochman, and Dafni, 'The Design Studio Crit: Teacher-Student Communication'.
- ¹¹ Uddin, 'Geometry, Pattern, Kinetics: Beginning Studio Pedagogy from 2D to 3D'.
- ¹² Vale, 'The Forms of Representation in Architectural Design Teaching: The Cases of The Forms of Representation in Architectural Design Teaching : The Cases of AUIC-POLIMI and FAUP'.
- ¹³ Dooren et al., 'Anchoring the Design Process: A Framework to Make the Designerly Way of Thinking Explicit in Architectural Design Education'.
- ¹⁴ Somer and Ceylan. 'An Evaluation of Online Architectural Design Studios during COVID-19 Outbreak'.
- ¹⁵ Abd Elhamid Abd rabboh, 'Implementation and Assessing Utilizing of Vark Theory At Pedagogy in the Architectural Design Studio: Experimental Study'.
- ¹⁶ Somer and Ceylan, 'An Evaluation of Online Architectural Design Studios during COVID-19 Outbreak'.
- ¹⁷ Somer and Ceylan.
- ¹⁸ Deamer, 'Design Pedagogy: The New Architectural Studio and Its Consequences'.
- ¹⁹ Goldschmidt, Hochman, and Dafni, 'The Design Studio Crit: Teacher-Student Communication'; Vale, 'The Forms of Representation in Architectural Design Teaching: The Cases of The Forms of Representation in Architectural Design Teaching : The Cases of AUIC-POLIMI and FAUP'.
- ²⁰ Dooren et al., 'Anchoring the Design Process: A Framework to Make the Designerly Way of Thinking Explicit in Architectural Design Education'; Fleming, *VARK Strategies: The Definitive Guide to VARK Model of Learning*.
- ²¹ Fleming.
- ²² Dooren et al., 'Anchoring the Design Process: A Framework to Make the Designerly Way of Thinking Explicit in Architectural Design Education'.
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DISCOVERING QUANDARIES WHILE INSTITUTING [ATTEMPTING TO INSTITUTE] AGENCY

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INTRODUCTION

To aim at critical agency of students in Higher Education (HE), and to do so democratically, requires employing methods conducive to igniting motivation and skill to use this agency. Critical agency is currently discussed as a dynamic relationship between resistance towards given structures (negation) and an affirmative creation of new practices.¹ Critical pedagogies based on Freire² strive to let critical agency emerge through a) heightening the awareness for situated societal practices and b) enabling students to intervene in those practices. Reaching this requires a dynamic process of teaching and learning based on problems which are rooted in students' and teachers' experiences. Students and teachers need to meet dynamically at eye-height to co-shape the teaching and learning process.³

Hence, this inquiry's purpose is to uncover quandaries at stake when meeting in this dynamic relationship while intending to *institute agency*, specifically within an introductory course of the Embedded Design master's program. The notion of *instituting agency*, is unpacked into "to institute" or to put into effect and "agency" or the capacity to act. The paper's core is a reflective interview conducted by Lieselotte van Leeuwen (outsider) with Samantha Hookway (insider) on the course assignment titled "Institutional Investigation". The method of the interview is to critique the critique⁴ where #Insti.Invest's intentions, application, and results are probed with respect to its capability to increase student agency in the institution. Difficult and sensitive areas are discovered within the interview process. The inquiry contributes to both the field of design education and epitomizes some of the special circumstances of *Embedded Design*,⁵ a growing field within design that uses artistic methods and approaches to aid change processes in complex organizational contexts.

The Assignment

The Institutional Investigation (#Insti.Invest) is a course assignment conducted on three occasions (Autumn terms 2020-2022) for the Embedded Design MFA program (EmDes) at the University of Gothenburg. During this ca. seven-week assignment, students –while entering the institution– are positioned as critical investigators engaged with the institution's spaces, programs, support structures, and management style. The assignment results in an intervention proposal. Students work in small groups and do so rather autonomously, while supporting course activities for this work are provided i.e., demonstrating methods, modelling practice, and inviting institutional interviewees in, e.g. administrators and leadership. Pedagogically, it is foremost an introduction to Embedded Design as a

field and program and a familiarization of the institution as a whole. More mightily, it facilitates institutional critique from the start of the students' education.

This assignment's pedagogical experience continuously evolved, particularly between 2020 and 2021 with its involvement in the Erasmus+ project, Teaching to Transgress Toolbox, where it was officially taken through a critique process. As a result of this involvement, the assignment became a shareable method on the TTTT website.

THE INTERVIEW [ABRIEVATED]

Instituting Agency

LvL: *Instituting agency* is your core concept – what exactly is it and how is instituting related to transforming student agency?

SH: Simply put, *agency* is an intention to reach a specific goal plus the resources to do so. In the #Insti.Invest assignment *agency* is taken on two-fold: (a) as introducing *agency* as embedded design practice which means entering institutions investigating them, analyzing them, finding gaps or needs, and designing intervention proposals via visual and aesthetic means. Then, (b) as student *agency* which aims to shift students from a passive receiver of instructions or information into more active shapers of their education. Here, an acknowledgement that students are the majority group of the institution but experience the smallest amount of power at the point of entry is at hand. In a sense, the students ought to become *willful*, which can be underpinned by Sara Ahmed's exploration of *willfulness*.⁶ Hence, I am exploring if underpinning *agency* with Ahmed's *willfulness*⁷ can alight upon much needed nuances to better the EmDes practice as well as on my role as teacher in *instituting agency* within the incoming EmDes students.

In Ahmed's, *Willful Subjects*, the interaction, and the implication of *willfulness* is often described in relation to minority bodies, or bodies with less power. Moreover, Ahmed states that, *willfulness* has form-giving attributes that are inherently political and are engaged in political struggles, "whether that struggle is a struggle to exist or to transform an existence. Willfulness might be thought of as becoming crafty".⁸ Ahmed continues to explain that *willfulness* can be a project or task that can be assigned and that bearing the assignment of being *willful*, "can be a mobilizing experience."⁹ Hence, as Ahmed positions, *willfulness*, one could position *agency* to be transformative, and crafty [which I interpret as both crafting designed material and shrewdness]. Whilst being part of the mobilizing act of being assigned to be *willful*, as Ahmed claims, could position *instituting agency*. In such a way, *willfulness* adds a layer to the understanding of just what *instituting agency* could entail.

To further flesh out this core concept, one can also turn to design research. Shana Agid, artist/designer/teacher/researcher, references Freire's notion "'problem-posing' as a collective and dialectical process" and describes that designers need to be profoundly aware of the often chaotic, complex conditions of their design's context.¹⁰ This notion characterizes the context of the #Insti.Invest assignment and also the practice of EmDes. At the same time, it provides a critical view on doing this work in the introductory course. Light and Akama shed light upon participatory design projects, similar to #Insti.Invest, and state that there exists a "pre-existing mutuality" enacted when attempting to do participatory design ethically as "an embedded and embodied ethics"¹¹. They identify that "the rights-based nature of obligation and the relations-based nature of care" are inverted yet connected.¹² I draw from Light and Akama an understanding that there is a balancing act at play between care and obligation, and that while attempting to *institute agency*, I must be aware of this balancing.

The Quandaries

Reflections on the implementation of critical pedagogies in HE directs to the need to situate concepts like emancipation and empowerment. Quandaries arise due to neoliberal values governing academic institutions as well as to an international student body with diverse educational backgrounds and needs.¹³ The questions below mirror some of these quandaries and explore the potential to constructively face them in situated practice.

Quandary 1: How to reach most students and not just a few?

LvL: In our MFA programs we are teaching an international body of students. The range of prior academic experiences is large. Students who come from a rather hierarchical and prescribed learning environment with limited agency might feel threatened rather than positively challenged by your task. In contrast, others might see it as an invitation to radically crack down on anything institutional.

How do you navigate the stretch towards a constructive dialog? Can you give an example of a student's reflection on this.

SH: First and foremost, I believe that conducting this assignment as group work mitigates the different attitudes the students each bring in. And then the demand for a proposed intervention as the final result behooves students to be constructive with their criticisms. Below is a reaction of one student self described as coming from a previous schooling that was different than the experience they had in this project:

I am on another planet [from before coming here], but it's the right one. [...] –the way I am being seen here, the way people talk with me– it's something completely new [for me], that there is a space created for me [where] I feel, that I can say what I think. I can talk about my ideas. And not only that, but I can actually do them on my own terms. And I really love this freedom that I feel here. (project debrief student quote, 2022)

As one can infer from this reflection the student expresses a new sense of freedom provided by the assignment's experience. From my perspective, getting reflections like this is absolutely part of succeeding at my pedagogical intention to *institute agency*. Albeit, reflections from students come in a variety of ways, timings and not always as positive. Yet, the majority of them, thus far, are positive and my biggest assumption related to this is because the assignment and all its support mechanisms is enacting the dynamics between becoming aware and becoming able to act.¹⁴

Quandary 2: Safe enough to fail environment?

LvL: Critical agency and creative ownership require more than analytical skills.¹⁵ Trust to be protected as a student and supported when taking risks, confronting issues, or feeling overwhelmed are vital to transformative learning. A 'safe to fail' environment emerges from a shared attitude of teachers and students alike. This can be in stark contrast to a competitive HE environment.

(Q1) How did you create a 'safe to fail' situation in which students feel entitled to critically evaluate?

SH: In 2020,¹⁶ the students voiced, worriedly, that they did not have enough psychological safety to critique while simultaneously trying to gain a belonging. My response was: "we want you to be critical, you are students, and this institution is primarily built for you. Being a student brings privilege and ease towards forgiveness; a get-out-of-jail-free card, if you will. The only one who is risking anything is, perhaps, myself as the Course Responsible/ staff of this institution but remember, I have assigned this assignment to you." Subsequently, this sentiment has been repeated in all following years.

In 2021, supportive pedagogical activities aiming to mitigate the nervousness revealed in 2020 were added, e.g., methods developed in the TTTT project, more precise mid-process feedback schedules,

and examples of previous student deliveries. This group reacted to these supportive activities with – “Quit hovering, please.”

Then in 2022, a combination of employing supportive pedagogical activities with experience to draw from gave a more natural response to this issue. I could predict more and could, even, warn the students when and how sensitive aspects of this assignment transpired within the previous groups. Which seemed to really give this last group confidence and assurances while, also, I could as their teacher, expect [demand] more autonomy for their project work.

LvL: (Q2) What role do the types of responses students get from e.g., the faculty administration play – did you prepare the students for eventually hostile reactions?

SH: An Embedded Designer [at least my version of the practice], balances a critical stance with a collaborative spirit. One is employed to aid in creating transformation and so it is natural for our partner institutions that we enter to be wary of us; change often hurts. #Insti.Invest injects the students into this reality. Yet, to alleviate any students feeling overwhelmed, I do my best to model through being transparent with learnings pulled from my personal practice of conducting similar investigations. For example, I simultaneously introduce ethnographic methods by displaying a strategic plan which includes inviting staff interviewees/presenters from the institution. These invitations differ each year but primarily consist of guests representing management, administration, e.g., the dean, head of the department, building coordinators, communications, admissions, and teaching staff form design as well as other disciplines that sit adjacent. These invitees play a dual role: (a) giving students insights and hinting at improvement areas ripe for engagement and (b) becoming informed about #Insti.Invest to lessen the surprise factor when the students later approach them with bold critiques. The repetition of the assignment means it is being institutionalized itself along the way, too.

The type of responses received from staff has been both docile and hostile. In 2021, depicted in Figure 1, is the project that received the most attention to date. Described shortly, the project proposed an intervention to incite an “uprising” lead by teaching staff to take space and time to create culture together. It intended to inspire a grassroots mobilization for teaching staff inside an institutional reorganization process including a recent merger between two previously separated school organizations. Most notably, this project tested my yearly statement around who risks the most because I found myself in a predicament with my, then, boss.¹⁷ Even so, the results of this project have had a lasting presence. The students presented this project to the Education Council ca. four months after the course ended. And a year later, the “Teacher Led Forum” was created, inspired by their intervention, and they facilitated a workshop and material prototype within this forum. This student project result has created a transformation in the institution.

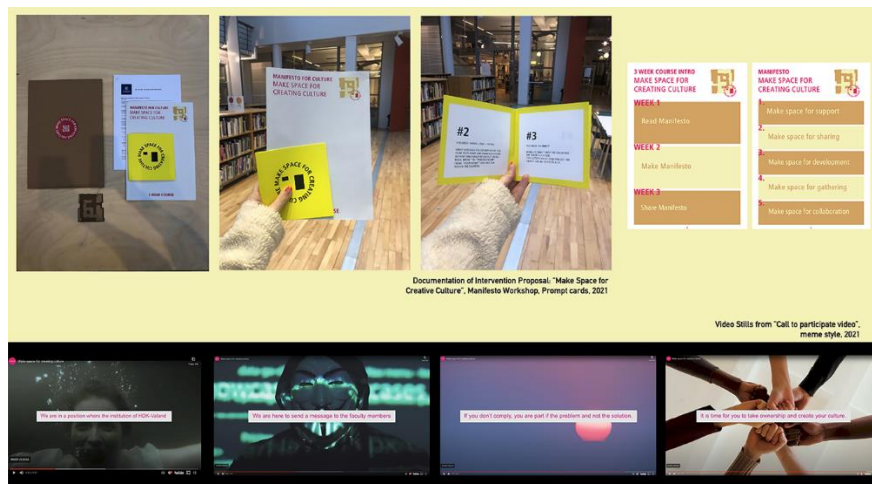


Figure 1. Insight into #Insti.Invest Intervention “Making Space for Creative Culture” (2021) by Elin Palmaer Karlsson, Cali Karlberg, George Bsirini and Astrid Alvir (see <https://openwindow.se/archive/make-space-for-creating-culture> for more information).

Quandary 3: Working with uncertainty?

LvL: As Tinning points out while referencing Law’94, the modernist (and neoliberal) quest for certainty by both students and teachers alike can easily mean: “when we encounter complexity, we tend to treat it as distraction from the task of achieving certainty.”¹⁸ However, uncertainty is a permanent feature of complex dynamic systems and therefore needs to be addressed explicitly in teaching for critical agency.

You seem to embrace uncertainty and complexity as a teacher and as a designer. What type of tensions do you experience?

SH: My practice has informed me, that certainty is a temporary construct while designers have tools, methods, and skills to aesthetically manifest these temporary constructs. We can make these constructs seem real enough to help make decisions or even actions towards future constructs. Albeit no design should be uncompromising, and designers must stay accountable for creating biases where any one temporal construct becomes misused or unethical. Even so, I believe that the design practice allows for uncertainty to become less overwhelming.

While in teaching, examining course assignments is less friendly to uncertainty. I aim for students to invoke their agency and go further than I [or they] could have imagined in my assignments. Yet, there is a tension between this ambition to facilitate a transformation that conflicts with creating clear communication about how and with what means it will be examined i.e., creating a situation where early examination decisions may need to be adjusted. This happened in #Insti.Invest22 while working with, “Fanzines”,¹⁹ for the publication format of the final intervention proposals. One student group needed the Zine format to expand beyond its typical materiality of self-published works on paper and ended up with a meditation pillow that zips out as a mat. Often, we can together expand definitions of material formats [the zine format allows for this] but this comes in conflict with the predetermined detailed exam instructions. There is always a struggle between what was asked to be delivered and what expands that ask – however, the expansion is the real goal for deep learning, at least in the arts.

Thus, this is quite a conundrum to deal with and specifically when meeting the systemic/institutionalized quality assurance measurements and criteria, or when ensuring safety for students with learning disabilities or anxieties and etc. That is there are situations where certainty is needed while the discipline and learning environments flourish within situations of uncertainty. So, in

answering your question, I am left with more questions. How can we create a safe and unpredictable space, yet also, abide to the course assignment's formal parts and rules? And to do so with knowing the activity schedules are submitted 6 months ahead, the literature list well in advance and etc.?

There is something fluid and self-organizing about *instituting agency* in the students and this conflict between welcoming fluidity and providing definitive exam instructions is unresolved. Yet, if returning to Ahmed's notion of *willfulness* for underpinning, what it could mean to *institute agency* is that one needs to embrace a craftiness to mobilize willful transformations whether that be inside an institution or inside a student's learning journey. When e.g., as the teacher of this assignment, I display fluidity and even doing so in conflict with some quality assurance measurements, this could be when I am fully invoking my own *agency* in front of the students. In other words, when I exhibit my own *willfulness* and it is seen as combined with the vulnerability that comes with going against the status quo, I am modelling a way of *instituting agency*.

Moreover, when returning to Light and Akama's suggestion that there is an "interplay between the approaches of obligation and care to produce an embedded and embodied ethics,"²⁰ I can draw a parallel to this quandary and allow for myself not to just model *instituting agency* but realize I must also balance care and obligation, because I am in the role of the teacher. I must create moments of certainty inside the uncertainty, it happens as Agid suggested in dialog.²¹

CONCLUSION

LvL: Teaching in this way seems to me challenging but effective in instilling in students the awareness of entitlement to have a dialog at eye height and entering that dialog. It is about the dynamic of freedom and responsibility for both teachers and students. The quandaries don't go away, but one can get better in handling them – there is no quick fix. Your risk-embracing and self-critical attitude are vital to the success of such assignments. In the future it would be interesting to analyze, if and how such an introductory task shapes attitudes and relationships beyond this specific moment in one course. Ultimately, such questions arises such as : is *agency* synonymous with self-determination, self-organization, self-decision-making? And does *instituting agency* point to putting in effect the power within oneself? Or is the power to make change on the institutional landscape more relevant? And finally, if both are important how does one balance their dialog?

NOTES

- ¹ Paola Rebughini. Critical agency and the future of critique. *Current Sociology*, (2018): 66(1), 3-19.
- ² Paolo Freire, Cultural action and conscientization. *Harvard educational review* (1970), 40(3), 452-477.
- ³ Mohammad Aliakbari & Elham Faraji, Basic principles of critical pedagogy. In *2nd International Conference on Humanities, Historical and Social Sciences IPEDR* (2011, October).(Vol. 17, pp. 78-85).
- ⁴ Richard Tinning. Toward a "modest pedagogy": Reflections on the problematics of critical pedagogy. *Quest*, (2002): 54(3), 224-240.
- ⁵ Embedded Design is the University of Gothenburg's naming for the area of design that integrates itself in organizational contexts and is most friendly with areas such as "strategic design", "service design", "transformative design", "business design". It is, also, a very collaborative practice and utilizes interdisciplinary approaches. The master's program Embedded Design embeds the artistic and designerly ways of working in in institutions as a tool to improve and question them (<https://www.gu.se/en/study-göteborg/mfa-in-design-with-specialisation-in-embedded-design-k2emd>).
- ⁶ #Insti.Invest2020 is exemplified and shared as a method in the Erasmus+ study, Teaching to Transgress Toolbox, or TTTT, (2022), inside "Portal to the Institution" and under "Score 3" found at: http://ttttoolbox.net/Portal_to_the_Institution::Score3.xhtml
- ⁷ Sara Ahmed, *Willful Subjects*. Duke University Press. (2014): pp.133-172.
- ⁸ Sara Ahmed, *Willful Subjects*. Duke University Press. (2014): p.133
- ⁹ Sara Ahmed, *Willful Subjects*. Duke University Press. (2014): p.157
- ¹⁰ Shana Agid in Fisher, T. & Gamman L., eds. *Tricky Design – The Ethics of Things*. Bloomsbury Visual Arts.(2019): p. 117-118 in Chapter 7 *Making 'Safety', Making Freedom: Problem-Setting, Collaborative Design and Contested Futures*.
- ¹¹ Ann Light & Yoko Akama in Fisher, T. & Gamman L., eds. *Tricky Design – The Ethics of Things*. Bloomsbury Visual Arts. (2019): p.136 in Chapter 8 *The Nature of 'Obligation' in Doing Design with Communities: Participation, Politics and Care*.
- ¹² Ann Light, *Tricky Design*. p.140
- ¹³ Macdonald & Brooker, Articulating a critical pedagogy in physical education teacher education. *Journal of Sport Pedagogy* (2000), 5(1), 51-63;
Rod Philpot, Wayne Smith, and Alan Ovens. "PETE Critical Pedagogies for a new millenium." *Movimento* 25 (2022); Richard Tinning. Toward a "modest pedagogy": Reflections on the problematics of critical pedagogy. *Quest*, 54(3), (2002): 224-240.
- ¹⁴ Mohammad Aliakbari, and Elham Faraji. "Basic principles of critical pedagogy." In *2nd international conference on humanities, historical and social sciences IPEDR*, vol. 17, pp. 78-85. 2011..
- ¹⁵ Richard Tinning. Toward a "modest pedagogy": Reflections on the problematics of critical pedagogy. *Quest*, (2002): 54(3), 224-240.
- ¹⁶ This assignment and course in 2020 were run in distance learning mode due to the COVID19 Pandemic circumstances. It, also, was the first time this course and this MFA program curriculum were run.
- ¹⁷ After this project was delivered, there were a couple hours where I thought that I may get fired over this. Particularly, because at the time, our unit had a new boss who was not working out so well and an opposition by peer colleagues was brewing. The students also delivered the project quite timely regarding said brewing. Not to go deep into these details but this person is no longer the unit's manager, and that person took what the students produced a bit too personally – honestly, the students had not given much attention to this character– beyond the function of their position as a middle manager. And I am quite sure none of my colleagues gave details about this trouble brewing – but at the same time when you ask students to have eyes and ears on the institution they are likely to uncover this kind of unrest, or even form grievances opinions themselves about the management of the department they belong too.
- ¹⁸ Richard Tinning referencing John Law (1994), *Organising Modernity: Social Ordering and Social Theory* (2002).
- ¹⁹ Fanzine is "a magazine, usually produced by amateurs, for fans of a particular performer, group, or form of entertainment" (Oxford Languages) and in #Insti.Invest22 was the chosen format for delivering the intervention proposal. This was because of it is low threshold publication format that advocates (a) self-publishing (b) it is easily share-able and (c) it, most often, allows for form alterations because it embraces the amateurs to participate (it has a basic structure but also allows for redesigning that structure with little consequence). Most importantly, the Arts Library of the University of Gothenburg has a Zine Archive that one can submit too and thus,

choosing to do zines and submitting them to the library gave a place to publicly share the proposals, and to do so within an institutional structure.

²⁰ Ann Light & Yoko Akama in Fisher, T. & Gamman L., eds., *Tricky Design – The Ethics of Things*. Bloomsbury Visual Arts. p.136 in Chapter 8 *The Nature of 'Obligation' in Doing Design with Communities: Participation, Politics and Care* (2019).

²¹ Shana Agid in Fisher, T. & Gamman L., eds. 2019, *Tricky Design – The Ethics of Things*. Bloomsbury Visual Arts. p. 117-118 in Chapter 7 *Making 'Safety', Making Freedom: Problem- Setting, Collaborative Design and Contested Futures*.

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THE IMPACT OF VIRTUAL REALITY ON THE DESIGN PROCESS: THE CASE OF DDFT 473 – VIRTUAL ENVIRONMENTS

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INTRODUCTION

Technological advancements have significantly impacted architectural education, especially in recent years.¹ As the means of representation, modeling, and simulation of buildings and their structural systems have evolved, so has the profession. Still, despite the rapid changes, architectural education remains somewhat inconsistent in its technology adoption, especially relative to the design processes within studios.² And while some of the newer approaches, such as parametric design and artificial intelligence, are forcing rapid change,³ these still have not replaced the overall 'thesis' of studio education - described by Schnabel⁴ as a linear process, which remains an abstract, conceptual, and iterative process - starting in a two-dimensional sketch or image that is later rendered into the third dimension through different mediums.

One of the technologies with the potential to disrupt design education appears to be Virtual Reality (VR) – in its different iterations.⁵ While VR has been around since the 1980s, recent advancements in extended reality technology (XR) itself, in addition to the “*metaverse*” discourse, have created a heightened interest within the architectural profession and education. As a result, many studies have appeared which examine the use of VR in the architecture and construction fields. These point toward some inevitable changes to the pedagogical approaches within the design studio and the profession in general⁶

In this paper, we take a closer look at the use of VR in architectural education through a case study of the course "DDFT-473: Virtual Environments". This course, offered as part of the Bachelor of Architecture at the American University in Dubai, uses VR technologies as the primary design medium – attempting to shift from the traditional linear 2D to 3D design process. The students participating in the course are expected to design entirely in an immersive environment – bypassing other design mediums. The course aims to boost students' creativity and understanding of space, therefore improving their learning outcomes relative to design and the relationship between architecture and the designer. The course also aims to boost collaborative design and editing, made possible by the collaborative tools within the VR ecosystem. This paper reflects on the experience of some of the participants in this course relative to designing architectural spaces in a completely immersive environment. The paper attempts to understand if such a design methodology could boost creativity and improve concept generation and design skills. The article hopes to contribute to the literature on the use of XR technology in architectural design studio pedagogy.

(VR) IN ARCHITECTURE EDUCATION AS A TOOL FOR CREATIVITY

Virtual Reality (VR) systems have been used in design fields for nearly two decades in varying formats and iterations.⁷ The technology has had broad applications in other areas beyond the design disciplines, such as in medical fields,⁸ education,⁹ tourism,¹⁰ and industrial design¹¹ – and others. These applications vary in the type of VR systems they use and the levels of immersion.¹² While the technology has been around for a long time, recent advancements in hardware and software have made it widely accessible, affordable, and more robust. This has increased its presence, especially in the architecture and design disciplines.

A standard definition for VR remains somewhat elusive, with different scholars and practitioners providing several descriptions highlighting the collaborative, immersive, interactive, and human sensory experience included by these systems¹³. Oxman¹⁴ describes VR as a system where the user has a pure virtual presence, which seems to encapsulate all the different definitions, and distinguishes VR from other forms of computer-based virtual simulations, such as Mixed Reality (MR) and Augmented Reality (AR). The latter two systems, while immersive, provide a hybrid mix of virtual and real worlds.¹⁵

VR has recently spread widely within architectural practice and education. The availability of affordable, and lightweight Head-Mounted Display (HMD), such as the *HTC - VIVE* and the *Oculus Rift and Quest*, and other necessary hardware has enabled users to have more immersive experiences without the need for dedicated VR labs.¹⁶ The widespread of these systems has also allowed a better integration with industry-standard software packages.¹⁷ While the widespread use of these systems has increased, most of it appears to be in the later stages of the design process - or as an interface with clients to "visualize" the final product. VR is becoming more important as a collaborative tool due to its inherent collaborative abilities and interfaces with Building Information Modeling (BIM) since BIM is at the core of the construction industry nowadays¹⁸.

While significant research is available relating to the use of VR in visualizing and experiencing the design process, less academic research examines the role of VR on architectural studio creativity.¹⁹ Creativity as a concept is difficult to quantify or define, especially in the design fields.²⁰ Still, as an attempt to better understand creativity, especially conceptual stages, several factors seem to influence this process within design studios. These include *spatial ability, immersion levels, and motivation*.²¹ Digital design, in general, and VR systems, in particular, as tools for design appear to complement these elements and therefore help boost this creativity.²² In a study by Yang,²³ the authors indicate that using an immersive VR system in the early design process boosted students' creative activity and allowed them more freedom in design. Therefore, VR enabled more out-of-the-box thinking compared to 2D conceptual sketching. The technology also allowed for more conceptual development and provided students with a more holistic conceptual design. The authors argued that VR allowed for radically different designs since the students could see the different elements from 'new' viewpoints.²⁴ Assisted by advancements in VR hardware and better network infrastructure, another potential benefit of VR in education is the ability to collaborate simultaneously amongst many designers. For example, different students could engage in the design process. This collaboration could boost creativity in design as it allows for the instant exchange of ideas.²⁵ Educators could help guide and critique designs collaboratively and in an immersive and real-time environment. Lo and Schnabel²⁶ further argue that the use of collaborative (social) VR in education yielded an increase in efficiency and improved communication between the designers. Overall, the use of newer VR applications in the design process appears to be breaking free from the traditional linear design process and affording design students and professionals extended opportunities for more creativity in design.²⁷ While students and designers are usually comfortable with specific software packages and are therefore limited by the

capabilities of these packages, newer VR ecosystems allow interface well with most design software and act as a unifying medium for the designers, especially in a collaborative studio environment. The VR systems also enable non-designers to be part of the design process, therefore allowing for stakeholder feedback and community engagement with relative ease.²⁸ The latter aspect is extremely important not only in the architecture profession but also in the areas of urbanism and landscape architecture.²⁹

DDFT-473, PROCESS, AND OUTCOME OF IMMERSIVE VIRTUAL ENVIRONMENTS

The course "DDFT 473 - Virtual Environments" was introduced as a professional elective technology course under Digital Design and Fabrication Technology courses within the bachelor of architecture program in the summer of 2021. The course was influenced by the digital emphasis of the School of Architecture, Art, and Design, within the university and by the impact of digital presence as experienced by students and faculty during the covid-19 pandemic. In essence, the course introduces students to the principles of VR modeling methods, where they acquire passive and active learning techniques to provide them the opportunity to 3D design while they are inside VR (Figure 1). The course boosts students' design creativity and introduces them to immersive architectural design – free of the traditional linear process. The course uses VR Sketch, an extension to *SketchUp*, and combines multiple training coursework exercises inside VR with a single design project following a specific design brief.



Figure 1. Top: Center for Research, Innovation, and Design; Bottom: Immersive Virtual Environment (Collaborative Editing Mode in VR Sketch)

In each course offering, the design brief focused on a specific aspect relating to the technology's usage and a topic deemed relevant to influence both the students' process and outcome. One brief focused on creating free space, and another tackled the relationship between virtual spaces and the senses.

For example, in a brief titled "**METAHAUS: The Virtual Home**," the students were presented with a hypothetical design exercise where they were supposed to create a virtual home inside the "Metaverse." Students were encouraged to design directly in an immersive manner inside VR (Figure 2). They also had to spend 50 hours in order to be qualified for the VR Sketch certification. This certificate was awarded to the students who successfully completed the course.

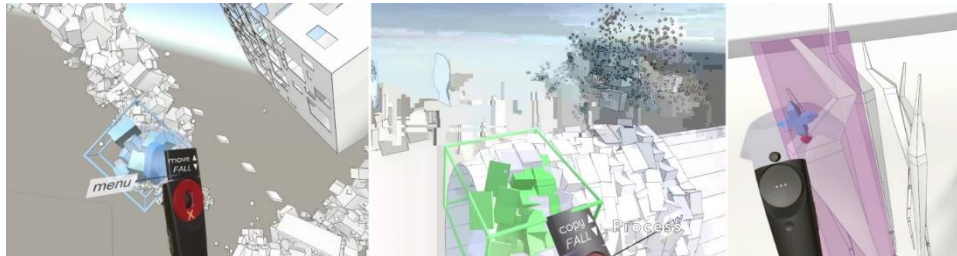


Figure 2. Immersive Virtual Process Inside VR

One of the main objectives was to challenge the students to rethink conventional physical architectural spaces and create, inside VR, spaces that can reflect virtual homes dedicated to immersive experiences in virtual worlds. This has led to a body of student work that represents some exciting expressions of space, which are uncommon in traditional architectural programs. For example, some students wanted to reinterpret specific spaces inside a house and reimagine their functions within the virtual realm (Figure 3). They were also asked to consider aspects of User Experience (UX) and characteristics that can only be applied within the virtual space. Ultimately, the brief emphasizes the 'experiential' aspects of architecture, allowing students to design in any location and time – free from site restrictions.

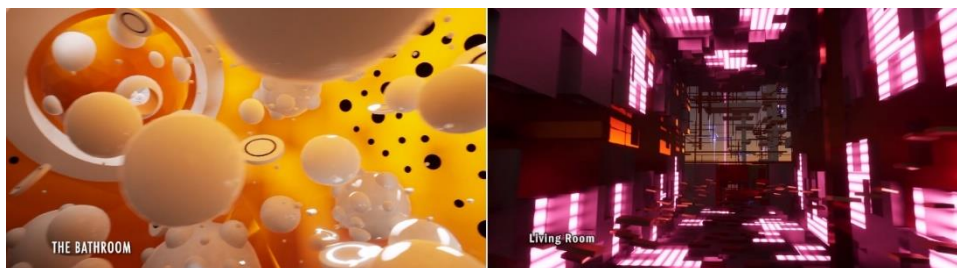


Figure 3. Reinterpretation of Spaces in a Virtual Home (The Bathroom vs the Living Room)

Finally, students were expected to produce a 'montaged' video with a project walkthrough using a visualization application such as *Twinmotion*. DDFT 473 is different from regular VR courses, which are usually used to visualize the final design. In this course, VR became the design environment and the design tool. Meanwhile, the final product is presented in a two-dimensional video and images along with the VR immersive experience file. This *flipped-design* methodology has allowed students to experience and manipulate design like never before - in an immersive manner on a scale of 1:1 with relative freedom and ease. Students work varied from rectilinear, sharp, and regular designs to fluid, curved, and irregular ones (Figure 4).



Figure 4. Selected Samples of Student Final Outcome

METHODS

A survey focusing on the use of VR as a design tool was developed for this research effort to test the user feedback and experience using VR. Due to VR studio capacity and workstations, the course is usually limited to nine students per iteration. Hence, the number of responses remained somewhat limited (N=22). An online survey was administered at the end of each academic semester. The responses were generated mainly from three-course offerings, some had multiple sections, to total five classes during the past two academic years.

Overall, the survey was divided into three main sections and consisted of 20 multiple-choice questions. The first section covered demographic information such as gender, age, study major, and year in the program. Also, questions about eyesight and the use of glasses were included. The second section was the main section and examined aspects of VR use. These included questions about ease of use, proportions, scale, limitations (if any) on creativity, if designing in VR was intuitive, and questions about experiential aspects – among others. Section two was the longest section of the survey and consisted of twelve questions. The third and final section of the survey was a reflective one. It focused on the experience during the time spent in the immersive environment and whether users experienced any dizziness, nausea, or other adverse effects using the Head-Mounted Displays (HMDs) and the VR controllers. It is worth noting that upon completing each semester, and in addition to the survey, the students participated in an informal discussion relative to their experiences with VR. Some additional insights and comments were distilled from these meetings and included in the discussions below.

Survey Results

The survey shared with the students who participated in the different iterations of DDFT 473 provided some valuable insights relative to the use of VR in design, especially in the *flipped-design* format discussed earlier. While the responses remained limited to a total of 22, some of the answers shed some light on the usefulness of this technology and methodology in design studios. Out of the total respondents, 90% were architecture students, mostly in their senior year. Meanwhile, 68% were female respondents, and 50% indicated the need to wear glasses while working on the computer (irrespective of VR usage).

When asked if VR, as used in the course, contributed to their *creativity in design*, the majority agreed or strongly agreed with this notion (Figure 5). This overwhelmingly positive response could be expected, as for nearly all participants, this was the first time to use VR extensively. This, coupled with an architectural design brief that provided students with more freedom in design, potentially explains these overwhelmingly positive results.

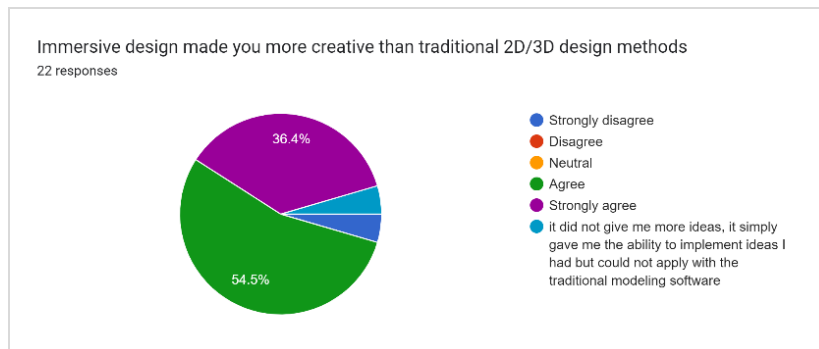


Figure 5. Creativity In VR

When asked about *proportionality* in design, the same pattern emerged with nearly 95% positive responses (Fig. 6). Students reported that the proportions of their spaces and different elements in the design were clearer (to them) when designed directly in an immersive manner using VR. This could be due to the immersive nature of the system and the ability to move through the designs with ease and on different scales and perspectives.

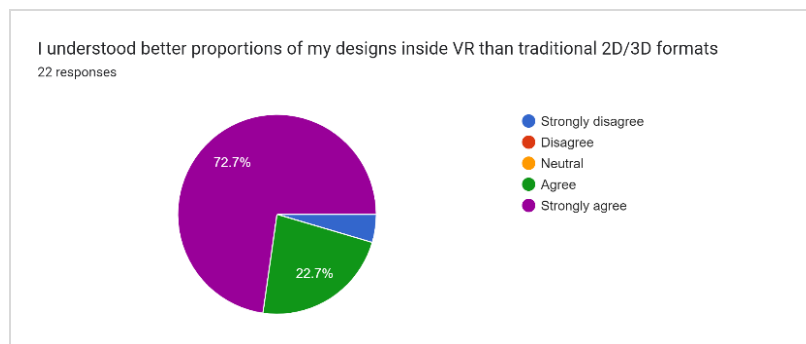


Figure 6. Proportionality in VR

As students often struggle with understanding and conceptualizing space, especially in early design stages, 85% of respondents indicated that they *understood the space* they were designing better when compared to traditional 2D/3D design methods in design studios. Only a few respondents preferred the conventional methods, as seen in figure 7.

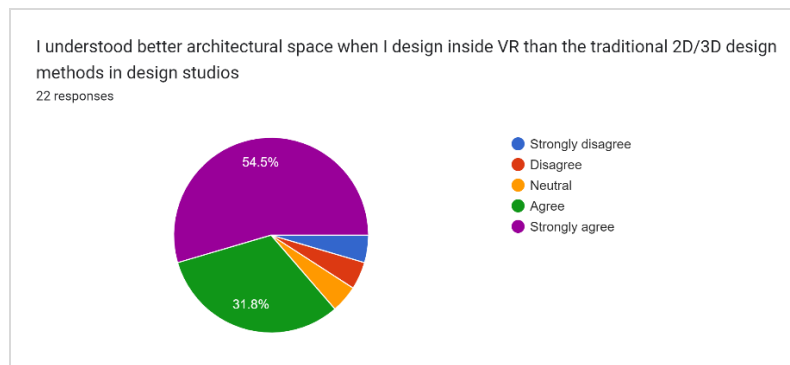


Figure 7. Conceptualizing Space

One of the aspects that VR usage seemed to be helpful in the design stage was the ability to visualize and better understand specific design details students usually struggle with. In figure 8, around 82% indicated that they appreciated this aspect of designing in VR. During our informal discussions with some students in the course, they noted that this was the first time they understood how staircases, for example, were properly designed and calculated. They were also excited to visualize and see these elements easily scaled 1:1 inside VR as if they were being constructed in real life.

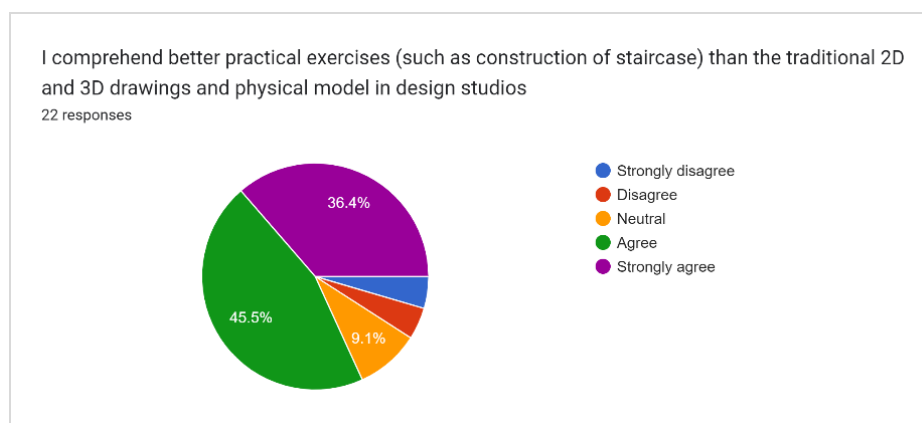


Figure 8. Design Details

Regarding the physical effects of VR on the users, 45% of the respondents reported that they felt discomfort while using the system (whether dizziness, headaches, motion sickness, etc.) (Figure 9). Out of the total responses, 78% reported some physical problem related to extensive time within the system. Despite the positive experience with VR, this remains a challenge for using the software and hardware. Though we believe this will likely change as newer systems emerge and become available in the market. It is worth noting the VR systems used for DDFT 473 are calibrated continuously to reduce some of these issues. The students were also introduced to methods in class as part of the user experience to minimize any potential motion sickness. In addition, the room setup was established as a seated position at all times while using VR. The settings within the software interface are for the seated position with the appropriate eye level from the ground – which helped reduce discomfort and motion sickness.

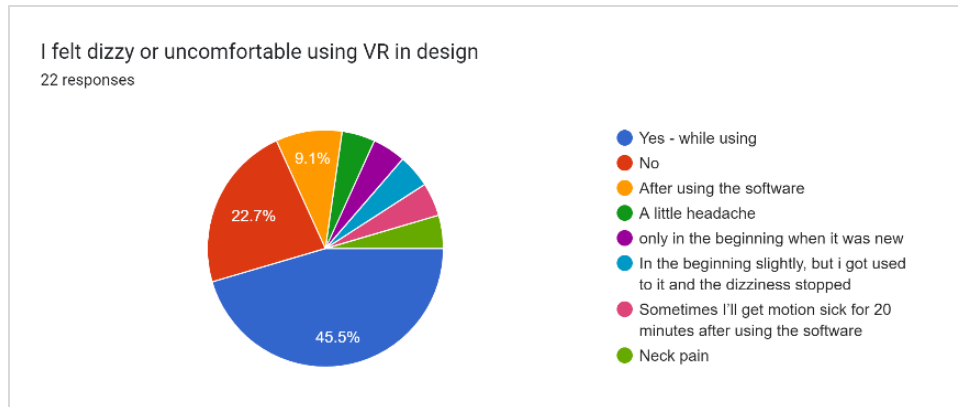


Figure 9. Physical Effects on the User

Finally, 95% of respondents felt more engaged while designing in VR (Figure 10). The process felt more enjoyable overall, and the ability to see their designs materialize instantly scale 1 to 1 was a significant attraction of the system.

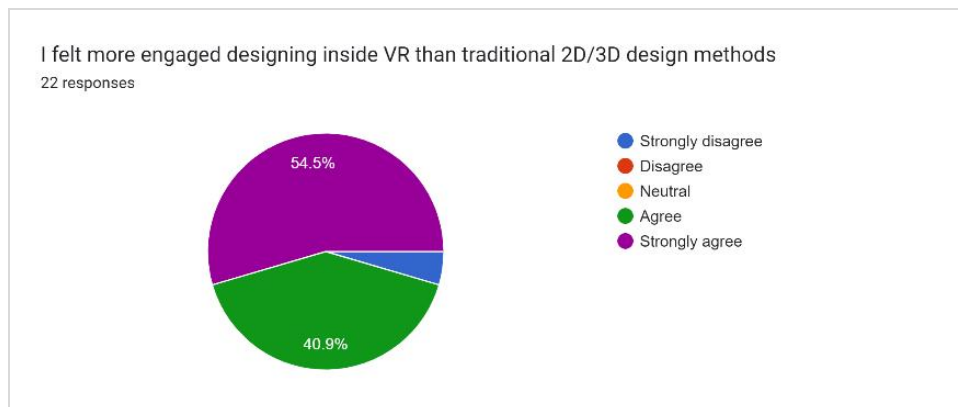


Figure 10. Engagement in Design

CONCLUSIONS: IMPLICATIONS FOR STUDIO PEDAGOGY AND FUTURE RESEARCH DIRECTIONS

Overall, this paper described the use of VR in architectural studio education as a tool for boosting creativity while implementing a *flipped-design* method. The paper argued that designing in VR directly, as opposed to a more linear 2D to 3D process, could help students conceptualize and understand space better. This, in turn, could help them generate more creative designs and have better understanding of proportions through spatial experiences. The argument for what we label a *flipped-design* approach is not necessarily novel, and the merits of such an approach to studio pedagogy have been discussed in the literature.³⁰ Nevertheless, we argue that this technique has not received the recognition it deserves as a creativity-boosting approach, especially early in the conceptual design stage or overall design process. Most current VR applications in design studios appear to use the tool to experience the final product, and not necessarily as a design-enhancing tool, as suggested here.

Considering the results of the students' work and their survey responses, this proposed *flipped-design* approach appears to help boost creativity and encourages somewhat different designs. This, of course, is aided by design briefs that focus on creativity and emphasize the strength of the VR ecosystem – namely, the experiential aspects of design and human interaction inside immersive virtual

environments. While our sample size is insufficient to generalize results, we can still see excitement, enthusiasm, and engagement among students like never before. The comments we received through class discussions also enforced this idea. Some students expressed that DDFT 473 was the best course they ever took, and that it was maybe the first time they instantly understood the implications of their design decisions. Still, some of the problems we witnessed relate to the impacts of staying immersed in VR for a long time and some technical difficulties in collaborative design. Hopefully, these issues will be resolved in the near future as technology improves, new hardware, and software packages enter the market.

In conclusion, we believe XR technology, in general, and VR, in particular, will change the architectural education landscape for the foreseeable future. Academic programs must adjust to this new reality instead of resisting these changes to ensure graduates can compete in the ever-changing professional world. While VR has come a long way in recent years and is witnessing an uptake in adoption in academia and practice, further research on how to integrate these technologies and others in studio pedagogy is much needed to realize their full potential.

NOTES

- ¹ Guney, "The Importance of Computer-Aided Courses in Architectural Education."
- ² Doyle and Senske, "Between Design and Digital: Bridging the Gaps in Architectural Education"; Guney, "The Importance of Computer-Aided Courses in Architectural Education."
- ³ Oxman, "Thinking Difference: Theories and Models of Parametric Design Thinking"; Oxman, "Digital Architecture as a Challenge for Design Pedagogy: Theory, Knowledge, Models and Medium"; Castro Pena et al., "Artificial Intelligence Applied to Conceptual Design. A Review of Its Use in Architecture."
- ⁴ Lo and Schnabel, "Virtual & Augmented Studio Environment (VASE)."
- ⁵ Schnabel, "The Immersive Virtual Environment Design Studio"; Lo and Schnabel, "Virtual & Augmented Studio Environment (VASE)."
- ⁶ Mastrolemo Ventura et al., "Implementation of Virtual Reality in Construction Education: A Content-Analysis Based Literature Review"; Al-Suwaidi et al., "Application of Immersive Technologies in the Early Design Stage in Architectural Education: A Systematic Review," 2022; Portman, Natapov, and Fisher-Gewirtzman, "To Go Where No Man Has Gone before: Virtual Reality in Architecture, Landscape Architecture and Environmental Planning."
- ⁷ Portman, Natapov, and Fisher-Gewirtzman, "To Go Where No Man Has Gone before: Virtual Reality in Architecture, Landscape Architecture and Environmental Planning."
- ⁸ Javaid and Haleem, "Virtual Reality Applications toward Medical Field."
- ⁹ Radianti et al., "A Systematic Review of Immersive Virtual Reality Applications for Higher Education: Design Elements, Lessons Learned, and Research Agenda."
- ¹⁰ Guttentag, "Virtual Reality: Applications and Implications for Tourism."
- ¹¹ Jimeno-Morenilla et al., "Using Virtual Reality for Industrial Design Learning: A Methodological Proposal."
- ¹² Portman, Natapov, and Fisher-Gewirtzman, "To Go Where No Man Has Gone before: Virtual Reality in Architecture, Landscape Architecture and Environmental Planning."
- ¹³ Portman, Natapov, and Fisher-Gewirtzman; Chowdhury and Schnabel, "Laypeople's Collaborative Immersive Virtual Reality Design Discourse in Neighborhood Design"; Schnabel, "The Immersive Virtual Environment Design Studio"; Radianti et al., "A Systematic Review of Immersive Virtual Reality Applications for Higher Education: Design Elements, Lessons Learned, and Research Agenda."
- ¹⁴ Oxman, "Digital Architecture as a Challenge for Design Pedagogy: Theory, Knowledge, Models and Medium."
- ¹⁵ Portman, Natapov, and Fisher-Gewirtzman, "To Go Where No Man Has Gone before: Virtual Reality in Architecture, Landscape Architecture and Environmental Planning."
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- ¹⁷ Al-Suwaidi et al., "Application of Immersive Technologies in the Early Design Stage in Architectural Education: A Systematic Review," 2022.
- ¹⁸ Wang et al., "A Critical Review of the Use of Virtual Reality in Construction Engineering Education and Training."
- ¹⁹ Obeid and Demirkan, "The Influence of Virtual Reality on Design Process Creativity in Basic Design Studios," 2020; Yang et al., "Examining Creativity through a Virtual Reality Support System"; Gabriel et al., "Creativity Support Systems: A Systematic Mapping Study"; Schnabel, "The Immersive Virtual Environment Design Studio"; Schnabel, "Collaborative Studio in a Virtual Environment."
- ²⁰ Casakin and Wodehouse, "A Systematic Review of Design Creativity in the Architectural Design Studio."
- ²¹ Obeid and Demirkan, "The Influence of Virtual Reality on Design Process Creativity in Basic Design Studios," December 11, 2020.
- ²² Demirkan and Afacan, "Assessing Creativity in Design Education: Analysis of Creativity Factors in the First-Year Design Studio"; Obeid and Demirkan, "The Influence of Virtual Reality on Design Process Creativity in Basic Design Studios," 2020; Oxman, "The Thinking Eye: Visual Re-Cognition in Design Emergence."
- ²³ Yang et al., "Examining Creativity through a Virtual Reality Support System."
- ²⁴ Yang et al.
- ²⁵ Schnabel and Kvan, "Design, Communication & Collaboration in Immersive Virtual Environments"; Schnabel, "Collaborative Studio in a Virtual Environment."
- ²⁶ Lo and Schnabel, "Virtual & Augmented Studio Environment (VASE)."
- ²⁷ Lo and Schnabel.
- ²⁸ Lo and Schnabel.

²⁹ Portman, Natapov, and Fisher-Gewirtzman, "To Go Where No Man Has Gone before: Virtual Reality in Architecture, Landscape Architecture and Environmental Planning."

³⁰ Obeid and Demirkan, "The Influence of Virtual Reality on Design Process Creativity in Basic Design Studios," 2020; Lo and Schnabel, "Virtual & Augmented Studio Environment (VASE)"; Al-Suwaidi et al., "Application of Immersive Technologies in the Early Design Stage in Architectural Education: A Systematic Review," 2022.

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SHARED LEARNING AGREEMENT

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INTRODUCTION

This paper outlines the origins, inspirations, and the ways a Shared Learning Agreement has been disseminated. This collaborative document known as the Shared Learning Agreement has been adapted in learning environments in order to prompt discussions and to help build the foundations for a more equitable and inclusive space for both students and staff. Each group of students who works with it can adapt it, edit it and re-work it as they see fit in order to foster their collective space. This paper draws on inclusive teaching practices, anti-racist pedagogies, activist collectives and community- led agreements.

The ethos of the Shared Learning Agreement is rooted in community- based and community-led activism and the language is directly influenced by specific collective agreements. This paper will introduce the Shared Learned Agreement and provide information on the groups that have inspired it and will discuss ways it can be adapted with groups students and staff.

Origins

In the Spring 2020, during the earlier part of the pandemic, I was co-teaching a workshop with students from an Art & Design HE institution with a colleague, Jennifer Martin. My colleague and I experienced marginalisation in many ways. Our teaching was now being conducted entirely online, and on Zoom. We noticed that some tensions were arising in the larger Zoom sessions, and in smaller online break out rooms. The tensions included conversations amongst students that made other student feel not included, or further marginalised. It became difficult for us as lecturers to retain our safety in this new environment. Boundaries were becoming nebulous. Jennifer and I spoke after a day of teaching online, and we shared our concerns and experience with eachother. We then reached out to other colleagues in the same institution and in other institutions who also have experienced forms of marginalisation. These discussions were not only supportive, but also provided us with suggestions for specific activist spaces and groups that have worked with community agreements or safe space agreements or policies.

I see the Shared Learning Agreement as an intervention, and as a starting point to be brought into the beginning of workshop series, or sessions with students and staff. Echoing Nana Adusei-Poku, I thought the Shared Learning Agreement could be the ,’ [the] beginning point of a holistic transgressive temporal performative approach, which goes beyond the institutions that we are working in.’¹

The three particular groups we looked to for direct inspiration include: Sisters Uncut, Cloud9 , and With For About. We looked to these groups for inspiration in the creation of the Shared Learning Agreement and once formed my colleague and I introduced the main points in the agreement during

the start of a workshop. We began this session with students by reading out the points in the agreement and sharing a copy of it in the chat and we stated we wished for our interactions and the way we will continue to engage in the workshops online, to come from the ethos of this agreement. There was limited discussion from the students, however the energy, mood, and boundaries that people wanted to create for safety were fostered and respected throughout the duration of the workshop series.

The Shared Learning Agreement

The following is the main text for the Shared Learning Agreement.

Shared Learning Space Agreement

This is an agreement for shared learning spaces for all course participants.

The list of agreements is not exhaustive and can be amended. In investing in a shared learning space, it is our responsibility to create spaces that are welcoming and respectful to everyone. Adhering to these agreements is a collective as well as individual responsibility to check your behaviour.

1. Ableism, Homophobia, Racism, Sexism, Transphobia, or Prejudice based on ability, Asylum status, Class, Ethnicity, Gender, Gender presentation, Nationality or Religion is not welcome here.
2. Be aware of the privileges you bring and how that may affect others.
3. Speak from 'I'; speak from your own experiences.
4. Respect people's identities and opinions by asking and actively listening rather than making assumptions.
5. Make every effort not to judge, look down on or enter into competition with others.
6. Be aware of the language you use in discussions and how this relates to others.
 - a. Our discussions transverse histories and contexts, some of which have been violent to those part of our learning spaces.
7. Be kind with your words. Give generously to allow everyone time and space to speak and share their thoughts.
8. Take note of who is speaking and who is not; consider 'moving back' so others can 'move up' in the discussion.

With Thanks: This agreement for our shared learning spaces is indebted Jennifer Martin and Nina Trivedi, Cloud9 and

With For About. Many of the points listed below are directly informed by Cloud9's Community Agreements and With For About's Safer Spaces Boundaries document.

A starting point that was considered was the terminologies for the title. Agreement, felt comfortable and deviated from the word policy or code of conduct, as that felt too restrictive and prescriptive. When the Shared Learning Agreement was formed, and with the idea of its continued co- design, the aim for this set of guiding principles was formed to aid in the co-creation of a learning environment. It helped to enable and ensure that everyone working in the space, all of the learners, can feel safe, seen, and heard in relation to their boundaries and learning requirements. When conflicts arise, and in the process of aiming to diffuse conflicts, a guiding set of principles, or beginning points, such as the Shared Learning Agreement, can help to create a more inclusive environment by 'hold[ing] each person practitioner, accountable for their own deep learning and awareness.'² Establishing healthy boundaries, and how to communicate them are significant in this context. hooks outlook on these strategies comes to mind. hooks wrote, 'Engaged pedagogy does not seek simply to empower students. Any classroom that employs a holistic model of learning will also be a place where teachers grow, and are empowered by the process.'³

The resource, *The Healing Justice, practice spaces: a how to guide*, sits at the intersection of social justice and restorative practices.⁴ Working with groups of people, or students, or practitioners, the guide prompts discussions about ethical implications and the role of empathy in our shared working and learning conditions.

In the guide the following passage has resonated with me and informs my practice:

‘[...] healing within liberation is becoming more broadly recognized. We want to name the open heartedness with which this information is offered AND emphasize that this is offered as part of a larger conversation in which we are all learning. We recognize that for all that is here, there is more that we are missing. We lift up the many traditions, known and no longer remembered, hidden in family stories and genetic chains, and stolen through colonization and dominance, that center what we now call healing inside of moments of transformation and change, grief and organization. We work with the understanding that how we heal ourselves is directly related to how we experience and interpret ourselves and the possibility for transformation. We believe some of the most powerful work lies at the intersection of health, healing, and organizing. You are at this intersection today. You are part of this work. This is where we begin.’⁵

Inspirations

The three groups that directly inspired the Shared Learning Agreement include, Sisters Uncut, Cloud9, and With for about. The ‘feminist direct action group’ Sisters Uncut states that they, ‘critique of systems of power: capitalism, racism, and gendered violence.’ The group is made up a wide cross section of people, ‘with different skills: strategisers, graphic designers, welfare coordinators, people willing to risk arrest to challenge oppressive systems.’ The group indicted that ways people contribute to the group all add to the collective spirit for the group. They hope to be inclusive of different experiences. They state that ‘they want to organise as a collective where everyone’s views are equally valued.’ Important to note is their framework for an ethics of care, as they note about the formation and ways the groups functions is with a ‘deep ethics of care, the knowledge that care work produces and reproduces the workforce.’ In a way to acknowledge difference and in an effort to heal conflict, they note, ‘There is an understanding that we will fail each other in many different ways,’ but their collective activist spirit is core to their ethos. Their safer space policy is available on their website that helps to build the conditions with which they do their work.⁶

The second group that inspired the Shared Learning Agreement is Cloud9. This was conceived of as, a global livestream to share love, care, solidarity, and support everyone affected by the coronavirus pandemic.’⁷ Cloud 9 was a collaborative website, online platform and livestream. A combination of the groups, BUFU, By Us or Us, and China Residencies, the Cloud9 collective defined their group as, ‘A project-based collective interested in building solidarity amongst Us, co-creating with You experimental models of organizing & making, generating prestige, and mining time as a resource.’ Organised in 2015 by five co-founders, BUFU state, ‘We wish to highlight the lived experiences of those who have been impacted politically and socially by white supremacy, while de-centering whiteness and resurfacing our deeply interconnected and complicated histories.’

China Residencies is a non-profit that believes, ‘Artists are cultural and social changemakers, and, in a world where people sometimes forget to listen to and learn from one another, we are passionate about creating opportunities for artists to bring a broader cultural understanding into their work and communities.’ Alongside a managing and advisory board, they offer opportunities in mainland China & Hong Kong for creative people from all over the world. They also function as an online space and foster digital projects.

The ethos of Cloud9 was to offer mutual aid, network building, community online programs, collaborative crafting, and collective love. Their community agreements are organized thematically, as things to keep in mind, who is this space for, and safety. Their safety page references the Healing Justice guides.⁸

With For About's safer spaces boundaries and reading lists were the third group that inspired the Shared Learning Agreement. With For About 2020 was Heart of Glass' 5th annual conference curated by James Leadbitter and Cecilia Wee and was formed of four weekly episodes of presentations or performances, available online.⁹

According to the conference website:

With For About 2020 responds to the additional challenges that Covid-19 creates for many marginalised people and communities, asking: What creative solutions have marginalised people developed to survive before Covid-19? What creative ways of being and organising are being made now in response to Covid-19? How do we embed and share these solutions, ways of being and organising now and into the future?

The formats, wording, implementation, ethics, care, and community building are core to all three of the groups that inspired the Shared Learning Agreement.

Ways it has been disseminated

I am interested in how interventionist pedagogies can be incorporated into teaching practice and the ways in which students and staff can have time to learn together in the co-creation of their shared space - of the studio, classroom, or workshop. In the edited collection, *Language and Decoloniality in Higher Education*, interventionist pedagogies and affective encounters are referenced.¹⁰ When creating an interventionist pedagogy that can then be organised and integrated into courses, programmes or departments, I am interested in 'Explor(ing) how affective encounter(s) can serve as embodied and interventionist pedagogy.'¹¹ The Shared Learning Agreement can be thought of as a type of interventionist pedagogical tool enabling students and staff to create inclusive learning environments.

I often come back to the following text from bell hooks:

The exciting aspect of creating a classroom community where there is respect for individual voices is that there is infinitely more feedback because students do feel free to talk — and talk back. And, yes, often this feedback is critical. Moving away from the need for immediate affirmation was crucial to my growth as a teacher. I learned to respect that shifting paradigms or sharing knowledge in new ways challenges; it takes time for students to experience that challenge as positive.¹²

One of the first spaces the Shared Learning Agreement was integrated into a workshop was at the Ruskin School of Art, in an online setting delivered by Jennifer Martin and myself to a large cohort of BA and MA students and staff. The particular points in the agreement were discussed in specific detail and the context, or the background of the agreement, and wider theoretical concepts and examples of artistic practices related to overarching ideas as presented in the agreement were also discussed.

One of the first ways the Shared Learning Agreement was integrated into a programme or department was at Central St Martins, University of the Arts, London, within a particular MA course. The two year course is formed of a Year 1 cohort and a Year 2 cohort. The Shared Learning Agreement was introduced to the Year 2 cohort half way through their year together and was utilised as a way to think about EDI in the course and to offer a space for indirect conversations about a specific conflict in an effort to heal tensions.¹³ The cohort raised important points about students who might feel pressured to heal conflict when they need additional time and may not be able to engage with the Agreement in

a live session. The Shared Learning Agreement was then presented to the Year 1 cohort at the start of their first term in a workshop setting. In small groups, the students who has prior access to the doc, discussed certain points in the document and formed discussions around wording and terms used. The document was projected on a large screen and students could actively edit, refine, and re- think parts of it during the small group discussions. The small group discussions turned into larger group discussions and the ways the points on the agreement were fleshed out related directly to the experiences of that particular cohort, resulting in a highly individualised edit of the agreement that spoke to the needs of that particular group.

Key points that have since continued to resonate, include point 8 in the agreement about.

Take note of who is speaking and who is not; consider 'moving back' so others can 'move up' in the discussion.

Students discussed those with neurodivergent learning needs and other ways of learning and being. The emphasis was on how some students engage with active listening and spaces for silence can foster deep listening. Silence can provide moment of critical reflection. In this way, the students in the group adapted that particular point to make it more inclusive of neurodivergent students.¹⁴

The Shared Learning Agreement has also been workshopped with research and PhD cohorts at UAL in relation to anti-racist pedagogy ; drawing particular influence from the prompts and suggestions outlined in Kai Syng Tan's, Towards an anti-racist Fine Art Ph.D.: 'Anti-racism productive antagonisms' (ARPA) for the supervisor, student and examiner.¹⁵ Tan writes, 'the heart of any Ph.D. endeavour is about the development of critical insight, not just by the student into a knowledge area or problem, but about their own position as autonomous researchers, not just within their fields but the wider HE sector and beyond, an actively anti-racist agenda must be integral.'¹⁶ Positionality is core to the ways students engage with the Shared Learning Agreement.

CONCLUSION

Students and staff existing on a non -hierarchical plane as both learners in a collaborative environment of the classroom, workshop or studio can benefit from a way to form a collective understanding and ethos that can set the ground for the ways they can work together. One way of achieving this is with a Shared Learning Agreement. Returning back to the Healing Justice: guide, the following declaration resonates most the groups that have worked with the document. 'Most of all, think about how you want this work to feel! How

can we do the work in a way that builds us, not burns us?'¹⁷

The Shared Learning Agreement has prompted discussions about how to engage with empathy and care in our teaching or learning settings, how to create non-hierarchical spaces, communicate boundaries, and foster active listening.¹⁸ Exploring the ways the Shared Learning Agreement can be embedded into curriculum as a way expand its potentials for student groups – and the ways it can be edited or re -worked, shared again and exist as a living document continue to motivate my practice.

NOTES

¹ Nana Adusei-Poku, *Catch Me If You Can!*, 4 MASP Afterall, Museu de Arte de Sao Paulo Assis Chateaubriand, 2019.

²

³ bell hooks, *Teaching to Transgress: Education as the Practice of Freedom*, Routledge, 1994

⁴ Healing Justice Principles and Guidelines, Autumn Brown & Maryse Mitchell-Brody with contributions from Adaku Utah, Leah Lakshmi Piepzna-Samarasinha, Susan Raffo, and Triana Kazaleh Sirdenis, accessed 07 September 2022, <https://alliedmedia.org/resources/healing-justice-principles-guidelines>

⁵ Healing Justice Principles and Guidelines, Autumn Brown & Maryse Mitchell-Brody with contributions from Adaku Utah, Leah Lakshmi Piepzna-Samarasinha, Susan Raffo, and Triana Kazaleh Sirdenis, accessed 07 September 2022, <https://alliedmedia.org/resources/healing-justice-principles-guidelines>

⁶ Sisters Uncut, accessed 07 September 2022, <https://www.sistersuncut.org/saferspaces/>

⁷ Cloud 9, accessed 10 September 2022, <https://cloud9.support/communityguidelines>

⁸ Cloud 9, accessed 10 September 2022, <https://cloud9.support/communityguidelines>

⁹ With For About, accessed 10 September, 2022, <http://withforabout/safer-spaces-bundaries>

¹⁰ Christopher Stroud, *Language and Decoloniality in Higher Education* (2021)

<https://doi.org/10.5040/9781350049109.ch-004>

¹¹ Miki Flockemann in *Language and Decoloniality in Higher Education* Chapter 4. Affect, Performance and Language: Implications for an Embodied and Interventionist Pedagogy, 2021

¹² bell hooks, *Teaching to Transgress: Education as the Practice of Freedom*, Routledge, 1994

¹³ Healing Justice Principles and Guidelines, Autumn Brown & Maryse Mitchell-Brody with contributions from Adaku Utah, Leah Lakshmi Piepzna-Samarasinha, Susan Raffo, and Triana Kazaleh Sirdenis, accessed 07 September 2022, <https://alliedmedia.org/resources/healing-justice-principles-guidelines>

¹⁴ Karen Harris, Spark: UAL Creative Teaching and Learning Journal, *Embracing the silence: introverted learning and the online classroom* Vol 5 / Issue 1 (2022) pp. 101–104

¹⁵ Kai Sing Tan, design & communication in higher Education, Volume 20 Number 1, 2021 Intellect Ltd Article. https://doi.org/10.1386/adch_00029_

¹⁶ Kai Sing Tan, design & communication in higher Education, Volume 20 Number 1, Intellect Ltd Article. https://doi.org/10.1386/adch_00029_1

¹⁷ Healing Justice Principles and Guidelines, Autumn Brown & Maryse Mitchell-Brody with contributions from Adaku Utah, Leah Lakshmi Piepzna-Samarasinha, Susan Raffo, and Triana Kazaleh Sirdenis, accessed 07 September 2022, <https://alliedmedia.org/resources/healing-justice-principles-guidelines>

¹⁸ Leonard J. Waks, *Listening to Teach: Beyond Didactic Pedagogy*, State University of New York Press, 2015

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INCLUSION OF CHILDREN WITH SPECIAL EDUCATIONAL NEEDS IN THE MAINSTREAM CLASSROOM

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INTRODUCTION

While education provisions for children with disabilities were either in special schools or special classrooms in regular schools in the past¹, the global adoption of inclusive education in 1994 ushered new dimension for children learning. Inclusive education embodies the transformation of schools and other learning centers to serve all children, including those with and without special educational needs.² Article 26 (section 1) of the Universal Declaration of Human Rights, mandates that everyone has a basic right to education.³ The Salamanca Statement and Framework for Action reaffirmed the fundamental right of every person to education and renewed the pledge of the World Conference on “Education for All” to ensure that right for all, irrespective of their differences.⁴ Nigeria is one of the countries that ratified several international human rights instruments and passed national policies and legislation that enshrine the right of all children to quality, equality, access, achievement, and participation in education.⁵ However, most children experience educational exclusion because legal requirements are not always complied with⁶, thus eliminating the chances for these children to realize their academic dreams.

REVIEW OF LITERATURE AND AIM OF THE STUDY

Teachers played a central role in the progress toward the realization of inclusive education. Their attitude towards inclusive education is crucial.⁷ Attitude consists of cognitive, emotional, and behavioral components that express feelings, actions and thoughts⁸ that people show to others. Attitude is a mental construct that indicates how people evaluate people, activities, places, or objects positively or antagonistically.⁹ Thus, children's learning is deeply influenced by the teacher's tolerant attitude toward all children, including children with special needs. Attitudes and beliefs of society in general and of teachers represent an important area of research because they inform the ideas and practices of teaching, which may be prerequisites for disadvantaged learners to attend mainstream schools.¹⁰

Teachers' attitudes can either promote or inhibit inclusive education.¹¹ Negative attitudes of teachers may be seen in their choice of poor instructional methods and not providing support to learners.¹² Teachers who have negative attitudes toward children with disabilities are more likely to use unproductive pedagogical strategies.¹³ It was argued that teachers who view disability as pathological rarely consider the needs of learners with disabilities because they see this as the responsibility of experts.¹⁴ A survey of Finnish and German teachers revealed that 90% of German teachers thought

that placing children with special needs in regular classes increases the workload, and felt that children with special needs should be taught in special settings.¹⁵ Similarly, a qualitative study of secondary school teachers in the Bahamas found that some teachers resisted the implementation of inclusive education because they considered it labor-intensive and time-consuming.¹⁶ A mixed-methods survey of teachers in three elementary schools in Korea found that 75.85% of teachers believed that students with disabilities are better taught in special settings, arguing that these students may be frustrated and not successful in regular classrooms, similarly, 41.37% of the teachers believed that special services may not be available to students with disabilities in regular classrooms.¹⁷ If the teacher does not want the child in his class, the presence of additional resources and knowledge alone cannot guarantee a positive result.¹⁸ A quantitative study of 200 students randomly selected from senior secondary schools in Ondo state Nigeria found that most of the students (75%) indicated that their teachers' attitudes did not encourage them to choose the teaching profession as a career in the future.¹⁹ Similarly, a descriptive survey of 342 teachers from Edo State public secondary schools in Nigeria revealed that most of the teachers had negative attitudes toward students with special needs.²⁰ Research shows that the positive attitude of teachers is critical for the success of inclusive education.²¹ A survey of 221 Swedish primary school teachers revealed that they have a positive attitude towards the inclusion of learners with physical disabilities in physical education classes and rejected the claim that planning inclusive education for learners with physical disabilities is stressful and that teachers do not have enough time for other learners in the class.²² An investigation of 120 teachers from regular schools in southwest Nigeria established that teachers were positive toward the implementation of inclusive education.²³ Similarly, a report of a survey carried out on 200 special and regular teachers from south-west Nigeria found that the majority of the teachers had positive attitudes towards learners with special needs; although 71.5% of the teachers lacked the knowledge of special needs they were still enthusiastic about teaching these learners.²⁴ Thus, the current study aims to investigate the inclusion of children with special education needs in mainstream primary school classrooms in Nigeria.

METHOD

This study used qualitative methods to explore the inclusion of children with special educational needs in mainstream classroom in Nigeria. This is because the method is often used to inform policy and practice as it captures the perspectives of people involved in complex contexts.²⁵ A multiple case study research design was adopted as it yields increased accuracy, stability, and validity of study findings.²⁶ It helps to strengthen the findings as the researcher can analyse data within each case and across cases.²⁷ To carry out the current study, ethical approval was sought and obtained from Ikorodu local education district, Lagos State Nigeria. In addition, the principals of the four participating schools and participating teachers were contacted for approval before the execution of the study. The parties mentioned above were given a concise and detailed research profile to secure the needed approval and informed consent for carrying out the study. Following a purposive sampling technique, sixteen teachers were selected from four mainstream primary schools. Four teachers were recruited from each school. An inclusion criterion for the study is having a bachelor's degree with an endorsement in primary school education obtained from institutions that offer inclusive education modules, and at least one year of experience teaching child/children with special needs in a mainstream classroom. A total of 11 female and 5 male teachers, between the ages of 22 and 60, comprised the sample. Participants had between two and sixteen years of teaching experience. All participants hold a bachelor's degree in education and six participants hold National Certificates in

Education (NCE). In the Nigerian context, the National Certificate in Education (NCE) is a teacher training programme structured for three years for full-time teacher candidates.

Data were collected through individual semi-structured interviews, non-participant observation, and document analysis. Interviews were conducted with 16 participants in English. The interviews were recorded with the consent of the participants to improve the accuracy of data collection. The duration of interviews varied between 50-60 minutes. Accordingly, parental consent and learner assent forms were given to the learners participating in the observation process. During the observation, the researcher sat at the back of each classroom as a spectator, which allowed all activities to be observed and recorded. Teacher lesson plans, class timetables, learner workbooks, ESSPIN training manuals, and parent involvement records were obtained from all participants for document analysis.

All recorded interviews, observation checklists, and collected documents were organised into functional units. All audio-recorded interviews were then transcribed verbatim, and all observation checklists and written notes of observations, including notes from documents obtained, were converted into extended transcripts that could be read to identify recurring themes and common patterns. A thematic analysis method was used, which is an inductive technique to identify themes from data that can provide detailed and reliable information.²⁸ Data analysis is conducted in two stages in a multiple-case study design, within-case analysis, and across-case analysis.²⁹ Within-case data analysis is treated as a whole case. Each case in this study had four participants, and the data from each participant was first analysed using the above analysis model. The data analysis of the four participants was then compared and contrasted within a single case. After analyzing each case, a cross-case analysis was performed. The level of analysis in the design of a multiple case study provides a single description of cases, categories, themes, or topology that conceptualizes data from different cases.³⁰ The themes that emerged from the data are presented below.

FINDINGS

Four themes were identified from the analysis of interviews, non-participant observation, and document analysis, which are personal disposition, caring ethics, lack of training to manage learner diversity, overcrowded classrooms, and time-constraint.

Personal disposition

Most participants welcomed inclusive education and felt that inclusion eliminates discrimination and allows learners with and without special needs to learn together. Participants also argued that learners have the right to equal access to education, which is supported by the following selected excerpts:

“Inclusive education is a form of teaching or learning process, a situation where both children with disability and those that are not disabled are taught or learn in the same classroom. That is, children with disabilities in the form of different race, those from rural areas and the urban areas are mixed in the same class, being taught and learn in the same classroom, and also seen equal and deserve the same opportunity and experience.” YemiSchA

“I welcome the idea of this inclusive education because when we are talking of disability we are talking of some pupils who have deficiency, so in this case we don’t have to neglect them (learners with disability). We need to move them (learners with disability) closer so to make the teaching and learning effective.” JideSchB

“They (learners with disability) have to be included in the teaching and learning process so that no one is left behind. If you are saying equality, equality should come with inclusive education. ---- if you want to be free and fair in your teaching and learning process, all children should have equal access to education, irrespective of disability or not.” MideSchA

The researcher observed that most participants showed care and empathy in various classes. One participant had word cards written on large board, which facilitates visual learning for visually impaired learners. To ease the learning process for learners with hearing loss, they were seated near the front of the classroom. However, some participants felt that the placement of learners with disabilities affects the effective pedagogical process and that these learners do not fare well in mainstream classrooms. These participants believed that special schools would be better places for learners with disabilities where trained teachers would meet their needs.

“There is no way we can have someone that cannot hear or someone that cannot see in the same school. We have special schools for them and there is no way a disabled child is going to cope (in mainstream school).” BukkyScC

“But I don’t think it will be more effective in teaching and learning because there should be special schools to handle children of certain disabilities.” SegunSchD

“We have special schools for them (learners with disability). So teachers that went into special education will be able to handle those kinds of children.” BoseSchB

A caring ethics

Participants nurtured positive social relationships with their learners to get to know them as a springboard to foster learning readiness. Their caring ethics made learners express themselves freely.

“I make my class interactive class, not teacher-centre but student-centre, so I can listen to the opinion of students. This makes me know what students understand. It also helps slow students because they were able to discuss with their mates and their mates can explain what I am teaching to them (learners with special needs).” KemiSchD

The analyzed document reserved the use of an interactive approach to facilitate student engagement during teaching and learning.

Lack of training to manage learner diversity

All participants stated that they had completed a mandatory special education module as part of their professional teacher programs, but the training was superficial and theoretical. The documents analysed required training for teachers on inclusive education. However, participants revealed that they did not receive training on inclusive education or the inclusion of children with disability in regular education.

“Most of the training we received was based on theory from the textbooks we were given to study. They are based on theory. So these are the training we received. What I was trying to say is that the training is theory based on the subject content of the textbooks, like methodology in teaching pupils and so on.” SegunSchD

“There is no form of training whatsoever on inclusive education. What we had was special education and we are not into that fully.” MideSchA

“There is nothing on inclusive education but we did a little on special education. It was there, we know that those who are deaf, dumb or have eye defects should go to their own school and not to be mixed with the normal one.” BisiSchB

Overcrowded classrooms and time-constraint

Participants complain that overcrowded classrooms increase their workload, are time-consuming, make it difficult to provide individualized support to learners, and interfere with effective teaching and learning.

“The workload is really affecting us because the government wants us to mark their (learners) notes, give assignments, and give them classwork that we (teachers) must mark. They (government) want us to give them (learners) tests, so this is affecting our time. I said earlier that we have lesson periods. Each period is 40 minutes and some are 35 minutes. Before I mark their (learners) books, I want to give them (learners) individual attention and I want to explain better to some of them (learners) who do not understand and re-explain the lesson again, all these affect our time. You know! If we have 50 pupils in our class, I can give them enough class work.” BoseSchB

“It’s not easy controlling 90 pupils in a class. Normally 50 pupils are for one teacher but we have 90 pupils, controlling them is not easy.” DoyinSchC

The researcher observed that more than 55 children enrolled in all classes visited. There are some classes with as many as 70 or 150 children. The analysis of class registers obtained from participants also confirmed the number of learners in all the classes.

DISCUSSION

This study examines the inclusion of learners with special education needs in Nigerian mainstream classrooms. Participants are generally in favor of inclusive education since it recognizes learners' right to equal access to education. Inclusion eliminates discrimination by enabling learners with and without special needs to accept each other. Research has shown that inclusion includes access, acceptance, participation, achievement, belonging, and education for all children regardless of their differences.³¹ Consistent with previous research that has questioned inclusive education for children with special needs.³² Among the participants, some believe that learners with disabilities should be placed in special schools rather than mainstream classes because their placement hinders an effective pedagogical process. A study of Korean teachers found that some teachers believe that students with disabilities are better taught in special settings because special services may not be available in regular classrooms, leading to frustration.³³ To foster learning readiness, participants nurtured positive social relationships with their learners. Previous research shows that positive relationships are the foundation of both student and teacher well-being and an effective learning environment.³⁴ Despite that some participants resisted the inclusion of children with special needs; the researcher observed that participants reverberate caring ethics through their care and empathy during lesson presentations in various classes. This confirmed the findings of previous studies conducted in the same geographical location that the teachers had a positive attitude towards the inclusion of children with special needs.³⁵ This positive attitude may be due to the Omoluabi philosophy embedded in the Southwest Nigeria community where the study was conducted. Omoluabi epitomizes inclusive education, which characterizes respect, kindness, acceptance, good intention and good character.³⁶ Consistent with previous research showing teachers are ill-prepared for inclusive education,³⁷ participants revealed that their teacher professional programs did not adequately prepare them to manage children with special needs. However, previous studies have shown that teachers must be competent and prepared to teach diverse learners.³⁸ Participants indicated that the overcrowded learner population hindered their pedagogical practices and increased their workload. Previous research revealed that the large-class population hindered effective teaching in classrooms, making inclusive education impractical as teachers cannot manage learners' diversity.³⁹ Large class sizes prevent the provision of individualized support to learners, as compared to the UNESCO specification of a teacher-student ratio of 1:30,⁴⁰ all classes observed in this study were overcrowded, with at least 60 students per class and some classes with approximately 150 students. The situation can negatively affect the productivity of teachers, as most teachers complained about the noise created by the crowd in the classroom. This affirmed previous research that shows overcrowding results in disruptive behavior and disciplinary problems.⁴¹

RECOMMENDATION

An inclusive special education orientation program is recommended to educate teachers on special needs conditions and to sensitize the development of positive attitudes toward the inclusion of individuals with special needs. It is suggested that teacher education programs use teachers' caring and empathic attitudes toward including learners with special needs as a foundation for institutionalizing responsive teacher development and preparation, which can lead to improved service delivery. Teacher preparation programs must incorporate microteaching into the theory-laden courses they currently offer so that the theory can be illustrated and demonstrated practically. The government must hire more teachers in order to reduce crowding in mainstream classes and improve instruction quality.

CONCLUSION

This article focused on the inclusion of children with special educational needs in mainstream primary school classrooms. The majority of teachers are caring individuals who believe in inclusive education. The researcher admitted that the Omoluabi philosophy, a way of life ingrained in the neighborhood where the study was conducted, inspired teachers to be more accepting of learners with special needs. Teachers, on the other hand, were overburdened by their large class sizes and the demands of teaching diverse learners due to a lack of training. To address the issue, it was suggested that teachers be trained and that more teachers be hired.

NOTES

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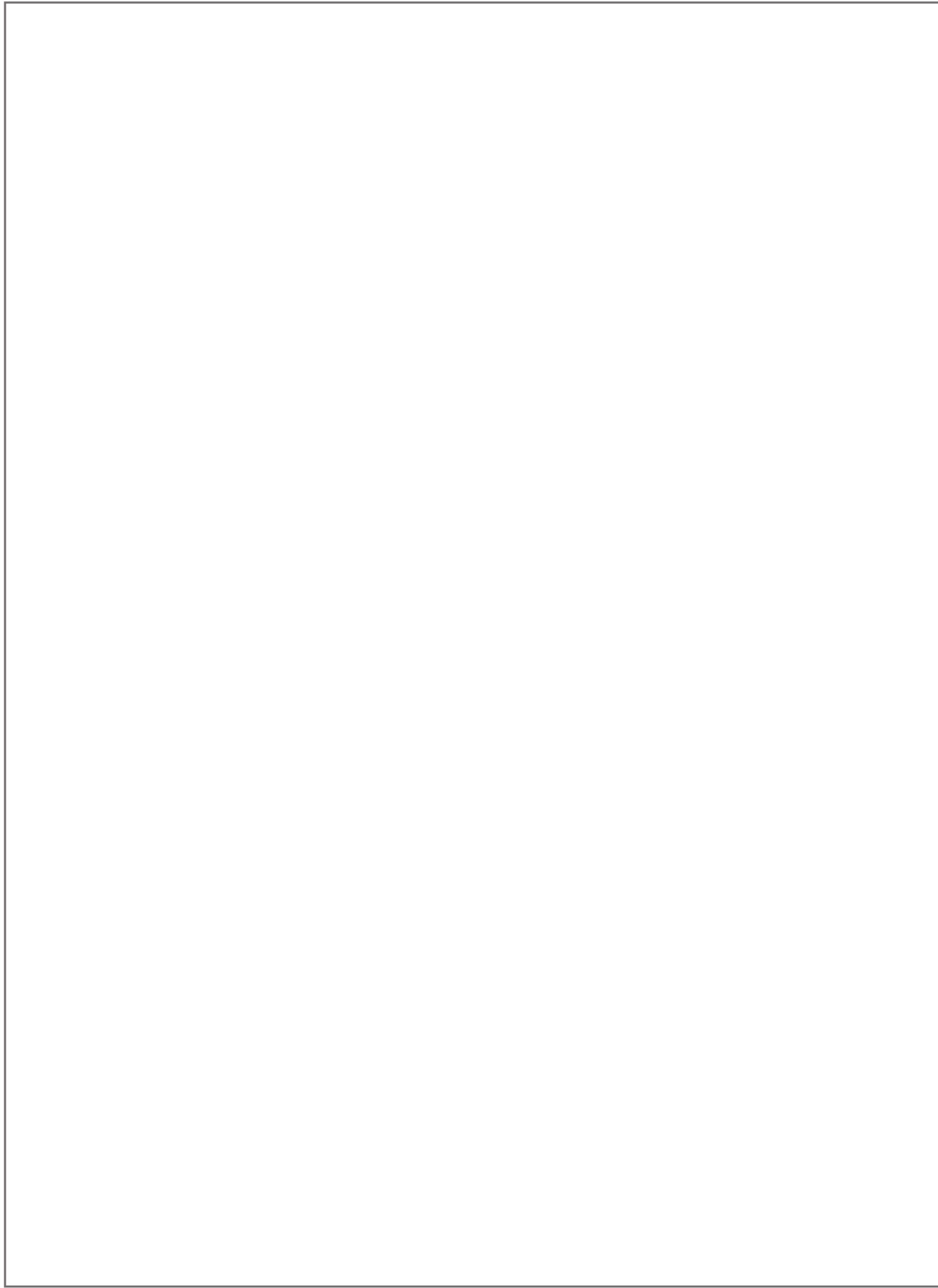
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