# **Online Education** Teaching in a Time of Change

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# Online Education: Teaching in a Time of Change



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## INTRODUCTION

# Online Education: Teaching in a Time of Change

This proceeding publication is the outcome of the virtual conference, Online Education: Teaching in a Time of Change, held in April 2021. It was coordinated the research group AMPS, its scholarly journal ArchitectureMPS published by UCL Press together with several universities: Ball State University, USA; Beaconhouse National University, Pakistan; University of Pretoria, South Africa; University of Kassel, Germany. It offered a platform for multiple and diverse perspectives and interpretation of online education and research as it stands today.

The unprecedented changes faced by the world in 2020 produced many challenges and opportunities for the global academic fraternity. Educational systems required a sudden shift in teaching methods, communicative techniques, the use of the latest digital tools, and a quick revision of learning outcomes. On the brighter side, teachers and students proved adept at embracing innovation, and "online education" helped academicians connect across the globe; although the success of the transference to online education was not uniform, with some struggling with questions of accessibility and the ability to explore the online possibilities of this new era.

In the midst of it all, platforms like the Khan Academy and Skillshare got more attention than ever due to their effective online education structure, and disciplines whose assessment and delivery modes are heavily lecture and test-based, tended to thrive. On the contrary, those disciplines that require a physical presence due to the nature of their teaching or reliance on peer-to-peer learning, tended to suffer. Skills-based courses and exercises such as model making lost contact with the "materiality" of their subject matter. Science programs, reliant on lab experiments struggled to replace the materials or prototyping they depend on and, for the main part, the dynamic interaction of the design studio was reduced to interaction through a smartphone or computer screen. Overall, the relocation to virtual classrooms, online studios and remote seminars affected the standard work cycles of educators and researchers to such an extent that the repercussions are still to be understood. It all affects the current debate on online education.

The papers collated in this publication, and the conference which it documents, reflect the diverse perspectives of educators at this point in time. They offer a synoptic view of researchers and professionals who together are reconfiguring the possibilities of the new and emerging pedagogical realm.

Zain Adil

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### ZOOM OFF BUT ZOOM IN: INTEGRATION OF VIDEOGAME TECHNOLOGIES IN ARCHITECTURAL PEDAGOGY IN A PHYSICALLY DISTANCED CLASSROOM

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### INTRODUCTION

Videogames have become a ubiquitous medium that goes well beyond recreation and saturates a wide range of daily life, expanding their versatility from recreational outlets for a range of casual and competitive gamers of all demographics through to advanced simulation and education tools in a diversity of disciplines. This paper posits videogames as a tool for architectural education in a physically distanced classroom. In game level design, concepts relating to storytelling in the game environment are similar to how architecture is created with a narrative. Game level design process and methodologies have an educational value for architectural satters as they investigate spatial use and function within the levels and that architectural narratives are conventionally presented in 2D imagery.<sup>1</sup> As a teaching tool, recreational videogames, when integrated with educational design exercises, may be an effective way to both impart developmental architectural concepts and engage diverse audiences with final output. Architects conventionally anticipate the construction process. Videogame design tools afford students greater design sensitivities including considerations of materiality and spatial functionality eliciting critical response during design reviews.

What is more evident is the impact of the current state of architectural praxis on architectural design. Videogames are now influencing the design of current and future architectural work. This virtuous cycle between these two different cultural mediums is not only rapid but mutually reinforcing. If gamification is the integration of elements from game design in non-game contexts, then architecture has progressively witnessed this in both the workflows of current praxis and in its pedagogy. A symbiotic homeostasis between the two disciplines is emergent. Videogames trace a lineage to architecture and the authors contend that contemporary architecture reflects an influence of videogame design to formalize this dyadic.

Currently 3D modeling, visualization, physics engines, and artificial intelligence infrastructures found in videogame design are increasingly integrated in many other disciplines, most notably architectural praxis. That the dramatic forms found in contemporary architectural works have mushroomed with greater frequency and less fanfare is primarily predicated on accessibility of these digital design tools found in both video gaming and Architecture, Engineering, and Construction (AEC) industries. This paper this relationship on how videogames have directly and passively impacted current pedagogical practice and expectations. From historic re-creations of the past to high fidelity presentations of current architectural contexts, this paper examines the influences of videogames on architectural education and impact on future architectural praxis.

### VIRTUAL FIELD TRIPS

### Present

Unlike their counterparts in the early days of videogame production, the current portfolio of games provides an exceptionally high level of detail in the interest of in-game experience that is useful in architectural education. Those liberties are taken with historical architectural precedents is not a surprise in the interest of prioritizing gameplay, however when videogames are digital re-creations of current cities, they often provide exceptional teaching opportunities where students can navigate locales they otherwise would not be able to afford to visit or get a range of perspectives. Digitally recreated environments in videogames introduce virtual trips for students. The largely accurately reconstructed New York City in *Spider-Man PS4* can be explored in first and third-person perspectives from conventional pedestrian to otherwise challenging aerial views.<sup>2</sup> The variety of vantage and access points offers a more holistic understanding of adjacent architectural elements as well as interplay between various infrastructures of the urban fabric of the city providing players with a new perspective to engage with the familiar city in an unfamiliar way.

On the other hand, the game series *Grand Theft Auto V (GTA V)* offers a cultural critique of various urban locales in Los Angeles by creating parodies of them in the fictional city of Los Santos.<sup>3</sup> Throughout the large map, players are able to see familiar buildings simulating real-life counterparts but are parodied or altered for licensing reasons.<sup>4</sup> A notable example is the US Bank Tower (Los Angeles) known as the Maze Bank Tower within the game (Fig. 1). The form of the in-game building appears similar to its real-life counterpart with the step-back tower design and towering presence within the city's center. The in-game building matches reality, with its location overlooking the city but differs in the architectural details such as the ornamentation on the archways. With slight alterations to building details, the organization of Los Santos as a whole is a caricature to the city of Los Angeles. This approach ignores the complexities and nuances of urban planning and allows for players to explore a digital fantasy of the urban experience and resembles the ideal of a modern city.<sup>5</sup>



Figure 1. The US Bank Tower in Los Angeles (Left) and Maze Bank Tower in GTA V (Right)<sup>3</sup>.

### Historical

There is no shortage of videogames that use architecture as component in contextualizing players. In many cases, historical moments and contexts can be best recognized within their geographic and built contexts. From the vast American landscapes with intermittent settlements seen in *Red Dead Redemption*<sup>6</sup> to towns reduced to rubble in *Call of Duty* games<sup>7</sup>, the in-game narratives are heavily complemented by and reliant on their architectural settings. This influence can be seen in a diversity of other games, most notably Ubisoft's Assassins' Creed (*AC*) series, which follows a fictitious story taking place in various significant sites and time periods throughout history, frequently times of social and cultural transition and expressed in the architectural backdrop. The juxtaposition of the

recognizable and the historic urban fabric and clashing cultures weaves through the narrative of these games. By walking around in the videogame, the audience perceives how the architecture participated in the past social and cultural contexts.

Produced in collaborative teams of archaeologists, historians, and cultural anthropologists, the games have increasingly integrated greater historic fidelity as epitomized by the recent inclusion of educational Discovery Tour modes. These tours encourage players to navigate the city, interact with NPCs, allowing the focus to be on the immersion into a historical period. This mode can be referred to in architectural pedagogy within the history and theory curricula in order for students to understand architecture in its original contexts.<sup>8</sup> This is especially instructive for partially or fully destroyed architecturally significant sites, such as the Acropolis in *AC Odyssey* <sup>9</sup> as shown in Figure 2 or the Library of Alexandria in *AC Origins* <sup>10</sup>, as the games provide students with an immersive representation of the buildings where they otherwise would only have access to 2D imagery or written documentation.



Figure 2. Ancient City of Athens in AC: Odyssey.9

The social life surrounding such significant buildings becomes invaluable in providing a holistic understanding of the origins of the architecture. For instance, *AC Origins* contextualizes the architectural elements of Ancient Egypt, including the marvels such as the Pyramids in Giza as well as typical residential housing, with the social life that surrounded the structures (Fig. 3). The visual experience reimagines the Egyptian settlements and quotidian life as an inspirational source of archaeology representation.<sup>11</sup> As the player travels through the settlements and cities, they see locals sleeping on the roofs of the buildings in the evenings and making use of the architecture as they would in the past. Alexandria, a city frequently imagined to be large and grand, is represented to its accurate scale, a much more modest town by modern standards .<sup>12</sup> The fidelity within videogames also goes beyond the graphic impact. The recent spate of games has exhibited an unprecedented amount of detail that showcases a high level of research into architectural practices from construction through to usage. In addition to the representation of the social and cultural life in Ancient Egypt exhibited in *AC Origins*, diverse collection of the past construction technologies and building assemblies of historic architecture are revealed, often a revelation to players and their understanding of the work today.



Figure 3. Roof and wall assemblies displayed in AC: Origins.<sup>11</sup>

Various *AC* reconstructions have been referenced on several occasions, especially in cases of lost or destroyed buildings. After the fire at Notre Dame Cathedral in Paris, the digital recreation preserved within *AC Unity*<sup>13</sup> was a nearly identical replica of what the cathedral looked like in the 18<sup>th</sup> century, save for a few playable modifications, becoming one of the sources drawn upon for the building's reconstruction.<sup>14</sup> Additionally, the *AC* games have provided precedent for other endeavors, such as the *Archaeology Alive* Exhibition at the Whitchurch-Stouffville Museum. A cross-disciplinary, interinstitutional collaboration between faculty and students from archeology, architecture, sound design, and videogame production from three Canadian post-secondary institutions, resulted in an immersive, multi-sensory, interactive, and navigable reconstruction of a Huron-Wendat Longhouse.<sup>15</sup> Conducted as a part of the Advanced Architecture Option studios, the course made use of this exceptional tool to examine a critical dimension in current Canadian architectural discourse, specifically through the integration of findings on Indigenous curricula.<sup>16</sup> The award-winning collaboration not only brought about an interactive output but also generated academic discussion and research on the materials and methods of construction of architecture from the past via videogame engines.

Within professional architectural contexts, the ability to integrate 3D scanning of heritage buildings in adaptive reuse design interventions is not uncommon. The same point cloud and photogrammetric technologies at play in videogames such as *AC* have become accessible and indispensable for architecture firms and research groups as the shift to building within and upon existing urban contexts is more prevalent. For instance, Building Information Modelling (BIM) and laser scanning has been introduced to digitally document and study Parliament Hill.<sup>17</sup> While these documentation technologies used in the AEC industry are also readily available in architectural education, they have been useful in providing insights on historical precedents from around the world. For most architecture programs around the world, inculcating students with an awareness of non-Western traditions and historic context is mandatory, as such, the use of gaming technologies including virtual reality and advanced 3D modeling and scanning has been prolific in exposing students to architectural precedents throughout history in an interactive, immersive, and familiar medium.

### **PROJECTED AMBITION**

Videogames are principally reliant on world building in order to convey their story arcs and action, thereby being inherently tied to architecture and urban design.<sup>18</sup> Beyond re-creating the past and present, videogames give life to conceptual architectural movements or styles, visualizing what architectural environments could be if they manifested. *Bioshock*<sup>19</sup>, is a first-person shooter game that takes place in Rapture, a city submerged under the sea, presenting an alternative past where a city migrates underwater during the era of art deco and skyscrapers as a "utopian hideaway for American elites".<sup>20</sup> Capturing the aesthetics and ambition of Art Deco architecture, Rapture combines mimicry of well-known buildings, with more imaginary architectural propositions such as Hugh Ferris' *The Majestic Hotel* and Fitz Lang's *Metropolis*. Much of the infrastructure extends vertically, mostly in the form of skyscrapers, presenting the newfound fascination with tall buildings when the possibilities first emerged. Rapture's homogeneous architectural style captures a city in standstill, epitomizing societal ambitions manifest in the built environment.

Similarly, Remedy Entertainment's *Control*<sup>21</sup> becomes a platform of the realization of the Brutalist dream, embodying many of the ideas from modernist and Brutalist designers. The game's storyline occurs within a building titled "The Oldest House" in New York, inhabited by an organization that investigates human collective consciousness. Both the organization and building itself, embody the control of the state over the people, and so the Oldest House's architecture is entirely inspired by Brutalist ideals. The gameplay in *Control* occurs largely on the interior of the building, who's

relatively varied spaces encompass many architectural precedents. Within the game, the building itself acts as an antagonist, a "Brutalist Monster" which the player must navigate through to succeed in the game. The Brutalist style was selected both due to its imposing, cold, and impersonal appearance and materiality and its association with many government buildings and social projects. Brutalism is adored by many architects as its 'pure' architectural representation allows designers to have full command over the goings on and occupation of spaces, which is reminiscent of the purposes of the building itself within the game. Combining architectural elements and tropes from Breuer, Ando, Scarpa, and more and enclosing the interior spaces into an exterior façade reminiscent of the AT&T headquarters. "The Oldest House" is an exploration into both Brutalism and its legacy but also acts as an instance of impossible architecture that was able to emerge in the digital format.

Distinguished architectural critic and designer Lebbeus Woods stated, "I'm not interested in living in a fantasy world... what interests me is what the world would be like if we were free of conventional limits. Maybe I can show what could happen if we lived by a different set of rules." <sup>22</sup> The videogame world proves to be one such a world, which is neither constrained by building codes and physics, nor cost and functionality. Thus, videogames prove to be a medium easily conducive to the immersive and navigable 3D representation of impossible or radical architectural propositions and ideas. One such a game is *Half Life 2*<sup>23</sup>, which presents infrastructural interventions within the city, drawing heavy inspiration from Woods' ideas and work. Although few of his designs were constructed in the real world, they are excellent precedents for designers building the digital worlds.

### **BUILDING CONSTRUCTION**

Beyond referencing historic context, this same level of rigor in construction is carried through in architectural design in architectural curricula. As mentioned earlier, current gaming technologies are essential for students in their design of spaces, specifically in their work within design studios. In some cases, small scale architectural challenges emerge at the core of gameplay. A prime example is *Battlefield 4*<sup>24</sup>, one of the earlier adopters to destructible environments that could be triggered by an in-game sequence or by player interaction. Within *Battlefield 4*, a building can only be effectively deconstructed when targeting load bearing elements such as structural columns, walls, and floors (Fig 4). For instance, if a non-structural glazed wall is destroyed, the rest of the building's structural frame will not collapse. The integration of games into more technical aspects of architectural education, will allow students to independently problem solve and thereby better understand architectural construction.



Figure 4. The collapse of a building in Battlefield 4<sup>25</sup>.

Although many games provide an exterior reconstruction of the architectural facades of buildings, many games also undertake accurate building reconstruction, some reaching such a level of accuracy allowing students to be able to reference architecturally relevant topics such as structural loads and framing, building envelope assemblies, and mechanical systems. For instance, *Last of Us Part II*<sup>26</sup>,

set in a post-apocalyptic version of Seattle, embraces an accurate representation of constructability. As players roam within the dystopic reality, they can gleam not only the assemblies of the damaged buildings they occupy but also accurate depictions of the damage.

For instance, broken columns in concrete are visibly missing while the interior rebar, which serves as the tensile strength for the reinforced concrete, remain as damaged concrete would appear in reality. The attention to detail in building envelope assemblies also is faithfully modeled after realistic construction details, with sensibility in components and their placement. A variety of construction types and assemblies are represented, ranging from wood-frame in residential buildings to metal steel stud wall assemblies in commercial structures (Fig 5).



Figure 5. Destroyed wall exposing the construction assembly.<sup>2</sup>

Videogames can also showcase systems in buildings from HVAC systems to fire prevention sprinklers, much of which is hard for students to understand without in person experience. In some cases, the ducts are shown correctly in terms of their construction and placement in floor assemblies and mechanical shafts, however in reality, they are not as clean and traversable for people. The altering of reality in videogames extend further in *Mirror's Edge*<sup>28</sup> which utilizes rooftops of buildings as a parkour map, putting a spin on how mechanical systems are laid out on buildings. It is an exaggeration of HVAC organization on rooftops but showcase the need for back of house systems in buildings while showing key components such as mechanical units, stairs and railings to provide access over pipes and conduit, and much more. Similarly, the *Splinter Cell* games<sup>29</sup>, integrates mechanical systems as a critical element of the gameplay, using them as interactive objects that players can climb to reach advantage points and secret passages (Fig. 6).<sup>30</sup> The inclusion of systems not only adds a level of realism to the game, but also provide a much more engaging setting for the player, all the while giving architecture students a platform for immersion, discussion, and critical examination of architectural assemblies.



Figure 6. Mechanical Systems being interactive elements in Splinter Cell Black List.<sup>31</sup>

### CONCLUSION

As an enduring medium steeped in the convergence of other cultural assets, architecture is constantly evolving with new technologies and media that saturate daily life. With their rapid and widespread adoption, videogames have gone from utilizing architectural tropes in their infancy to increasingly

influencing contemporary architectural practice. Videogames have not only become a dominant medium in mainstream culture but also serve to influence current architects as they develop into the designers of the built environment. While this paper introduces the historical and technical fidelity that architecture students are drawing upon, it also posits an incredibly exciting prospects for both industries as they share an intertwined future.

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### BEHIND THE SCREEN. REFLECTIONS ON DIGITAL EDUCATIONAL SPACE BETWEEN HERITAGE, ART AND IMAGE DURING THE #CULTUREQUARANTINE.

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### INTRODUCTION

The Collins Word of the 2020 was "lockdown", "because it is a unifying experience for billions of people across the world".<sup>1</sup>

"Lockdown, with its heavy, clunking syllables and heavier associations, is the condition we've most dreaded in 2020 - a state of national stasis, where almost everything that constitutes normal public life is suspended. [..] We're quite literally housebound. It's not a shock to remember, then, that lockdown was originally a piece of prison vocabulary: it's when inmates are confined to their cells because of some disturbance on the wing."<sup>2</sup>

The theme of this article is introduced by the Collins definition because, in a synthetic way and at the same time representative of a phenomenon much wider than the sample considered in this work, it describes the scenario in which the research moved: a heavy condition of stasis. This perception finds confirmation in the action research conducted with museum educators, teachers and teachers in training, and in the answers given by different cultural actors at the international level.

After a prolonged phase of discomfort, in which the relationship between teachers, educators, curators and the recipients of their actions was reciprocally perceived as cold and meaningless, the aim of this article is to show how the apparent immobility of bodies and actions in front of a screen found in performative methodologies the tool to fill the void given by distances. It is an act of rediscovery of the body and gesture as a metaphor for reality.

Through the observation of the change of perspective on the digital and the new role entrusted to corporeity, the article describes how in an altered space-time it was possible to have pleasant and at the same time meaningful formative experiences.

### Digital before and after the advent of the pandemic

Before the lockdown condition of public life, for all educational and training agencies (museums, schools, universities) digital technology was perceived as an important, but an ancillary, resource. As Theodor Adorno already pointed out concerning other fields of application, the art world promotes critical thinking by definition.

This condition justifies a sceptical attitude towards the use of technology, which involved in the first instance (about twenty years ago) the reasons of conservation, documentation and archiving, subsequently, the debate extended to the themes of intellectual property and professional skills, with a mainly communicative function, until arriving at the recent contemporary period in which the dilemma on the use of technologies contemplated the role of the public and above all the quality of fruition. In a remarkably brief time and bound by necessity, the object of reflection was no longer whether to use technologies or not, but what was the best methodology to use them.

In fact, during the lockdown, if the main objective of educational and cultural agencies was to maintain the status of cultural and identity praesidium, the question was how to involve different audiences starting from the assumption that the aesthetic experience is an indispensable element.

How the museum can be a social resource, a node in a system of relations, an activist as the case may be, and above all, an educational agency has long been a matter of reflection. The proliferation of visitor studies and research on Audience Development methodologies and approaches shows how attention to audiences and especially to their needs has become a fundamental element in museum strategies and programming, almost on a par with the study and care of collections.

During the pandemic, we have witnessed a production of (digital) cultural content unparalleled in human history for its copiousness and variety, the credit for which goes mainly to the educational sections of the various museums around the globe, often decimated by their precarious staff, due to the lack of opening and especially the absence of school groups and tourists.

The list of possibilities, dependent solely on a device and a good network connection, includes webinars, performances and various proposals on social media, meetings on Zoom, podcasts and even radio art.

All this variety stems from a significant fact: compared to other sectors, the world of culture has been somehow ready, since the languages that have characterised the quarantine have been the subject of reflection for some time. We have witnessed the affirmation of the *museum of everywhere* (Dziekan and Proctor 2019,177-192), in the blink of an eye, we have gone from "digital adoption" to "postdigital adoption." It means that contemporary life can be defined by a hybrid and problematic approach, through computation (Berry and Dieter 2015, 1-11).

Overcoming the heated debate about who is the proper repository of knowledge and, therefore, about who has the right and the duty to transmit it, museums through formal channels, but much more often through social media, have transformed themselves into platforms of creativity to inspire, foster critical and possibly participatory dialogue, keeping alive their community.<sup>3</sup>

Museum were present, often asynchronously and with little digital expertise, experimenting, sometimes improvising and often having to cope with financial difficulties.

As social distancing continues, e-Learning, in all its forms, has become the essential showcase for educational activities, in the same way as the various social platforms for museums. Alongside the new distance but synchronous proposals, based on meetings with artists and curators or experiential activities managed by the educational services, we would like to highlight the most recent experience undertaken by the Castello di Rivoli Museo d'Arte Contemporanea, through The DIGITAL COSMOS project: a new museum itinerary entirely based on digital curatorship that "puts at the centre of its programme the contemplation and experience of real works of art designed to be online, but without the obligation of interaction and active participation of the public". The digital world, previously kept apart from institutional activities, now assumes the status of a space specifically dedicated to artistic and aesthetic experience.

# FROM THE STILLNESS OF BODIES AND ACTIONS TO NEW SOLUTIONS TO FILL THE VOID OF SPACES

In the chapter entitled L'armatura, la pelle, the dancer Dominique Depuy describes the importance of the sense of touch in constructing danced space (2011,41-48). To represent the process by which an educated gesture (a choreographed gesture), occurs, he imagines the skin to be an armour that imprisons the body. This metaphor is not only useful to visualise a state of matter, such as the presence of a body with its movement, but above all, it shows a state of constraint that is very similar to the one in which teachers and educators found themselves, during the lockdown. The impediment of which Depuy speaks represents an opportunity to find new solutions: "it is impossible to respond with formulae, passe-partout gestures, we must invent, play cunningly, without dodging the problem posed, but questioning it, integrating it, incorporating it" (Dominque Depuy 2011,44). The skin, through which "the tacit enterprise of the tactile" takes place, goes beyond the level of abstraction typical of this historical moment and by the involvement of touch (beyond sight and hearing) leads back to a common sense of knowledge. As Jean-Luc Nancy affirms (2011), the act of touching occurs even before the gesture and, above all, occurs precisely in distance, in absence. When two bodies separate (the archetype is that of birth), distinguishing themselves from each other, they discover otherness and, therefore, the possibility of being able to touch each other. The reconquest of this sense, through the computer screen, was one of the objectives of the actions described below. It is no coincidence that at the time of distance, many cultural institutions that found themselves deprived of the physical presence of their audiences felt the need to revitalise their halls through acts of dance. By way of example, and without any claim to being exhaustive, the following should be noted:

The project "Capolavori in Ballo" (Masterpieces in Dance) by the MOTUS company: a multimedia work and a performance in which dance combined with art to show some lesser-known aspects, often details, of the masterpieces conserved in the Pinacoteca di Siena. For the exhibition "Anselm Kiefer: Field of the Cloth of Gold", at the Gagosian, Hugo Marchadand and Hannah O'Neil danced to Florent Melac's choreographies, leading the spectator to ideally walk through the landscape created by Kiefer's works. Movement succeeds in giving a third dimension to wheat fields or threatening skies. Le Grand Palais de Paris, closed to the public for works until 2024, is shown through "La Ronde" the work created by Boris Charmatz. "#dancinbo la danza e danza a Bologna" was a four-part television format in which the city of Bologna is told through dance in places of art, architecture and monuments. During Black lives matter, the Tate Gallery broadcast on its social channels the performance by Enam Gbewonyo set to music by Liz Gre in which the fusion of sounds and movements created "an ode to Blackness and response". It was a work inspired by Lynette Yiadom Boakye's painting "Stillness", exhibited at the time. With the éreale project, on YouTube, the Royal Museums of Turin remained engaged with their audiences through a video in which dancers, acrobats, fencers and opera singers acted in the emptiness and silence of the rooms, describing and interpreting them.

One of the first hybrid exhibitions (both in the presence and at a distance) offers a further opportunity to reflect on the themes of this article: The Paradox of Stillness: Art, Object, and Performance at the Walker Art Center, Contemporary Art Museum in Minneapolis. This exhibition explores the notion of "stillness", from the point of view of performative and visual gesture. "Stillness and permanence are common qualities of painting and sculpture. Consider, for example, the frozen gestures of a historical tableau, the timelessness of a still life painting, or the unyielding bronze or marble figure. Translating these traditional mediums into actions, artists use performance to investigate the interplay between the fixed image and the live body".<sup>4</sup> We are therefore witnessing the materialisation of the metaphor of reality, thanks to the body and objects. As the choreographer and dancer Yvonne Rainer affirmed, the

body "must be handled like an object, so that objects and bodies can be interchangeable", in this sense space can be understood through the practice, or taking up Agamben's theories, the use and care of bodies (Giorgio Agamben 2018, 1005-1280). It is a conceptual operation that contaminating material and immaterial elements, through the perceptive experience of the body, come to a more meaningful knowledge of space. The gesture of the dancers is certainly the most evident form of this relationship between space and body. In this sense, an example that was considered in designing the training activities discussed below is *Hand Movie*. This is a 1966 video by Yvonne Rainer in which, in front of a fixed camera, a hand moves. The movement of the hand combined with the viewer's gaze determines the infinite possibilities of the action. A fixed camera, like the one on the trainers' laptops, the bodies of the observer and the one acting, as in distance learning.

### THE SPACE MEDIATED BY THE SCREEN, LIKE A FRAME.

We have interpreted the screen of our computers, thinking about literature in the field of screen studies, and looking at the now historical theories on frames.<sup>5</sup>

Georges Simmel, probably the first to reflect on the frame, noted the relationship between it and the public gaze. According to Simmel, the frame draws the eye, not to itself, but its content, assuming the function of isolating it from the space outside it. This media function has a connotation of unreality, as recalled by Rudolf Arnheim who, observing the phenomenon from the point of view of the gestalt theory of perception, shows how the iconic spatiality circumscribed in the frame is often optically unreceivable and cannot be assimilated with the reality of the viewing subject. From our point of view, this aspect was a further reason to reflect on the need to find footholds and valid metaphors of reality. This medium has been conceived as a hybrid between inside and outside, in which the experience of a sensory nature, in particular the tactile one, has represented a valid solution. Transferring the thought of Josè Ortega y Gasset to our medium, the screen-frame can be perceived as a frontier capable of neutralising the disturbing elements, favouring the attention towards what he defines as "the aesthetic island", understood as a strip of land sprouting right in the middle of the sea. In choreographic language, the frame is the structure in which the gestures take place. This point of view makes it possible to change the approach to the management of the training/educational exhibition. Talking about structure leads to understanding the screen as part of a linguistic code. This conception has made it possible to overcome the restriction determined by the formal twodimensionality of the frame screen, rediscovering a space of concentration with strong symbolic potential, in which gestures and words follow a rituality proper to the educator's profession.

### THE EXPERIENCES OF ACTION RESEARCH

In contemporaneity, pedagogical and other practice and research had endeavoured to overcome the so-called Cartesian dualism between *res cogita*ns and *res extensa*.<sup>6</sup> In the era of quarantine, there has been a return to a rigid dualism between mind and body, in transmissive styled. The setting of lessons and, the supposed acquisition of knowledge has long been based on intellectual processes and symbolic practices, in which phenomenological experience has been denied. As Dallari states, "To be attentive and to be concentrated means to be still and to forget to be bodies" (Marco Dallari 2002, 96). In the following space, we will dedicate ourselves to the description of some training experiences, carried out following the dictates of action research, with the aim of finding effective answers to the problems of contingency. The case studies reported here follow in time the evolution of quarantine in Italy. At the end of the first lockdown (May/June 2020), the writer had the opportunity to carry out a training course with twenty-seven museum educators from the municipality of Milan.

The course consisted of six meetings to update the educators. It based on topics, methodologies and actions at the international level and supporting the planning of future activities. After the first shocking period of closure, it was believed that in September everything would be back to normal. This thought also applied to the educators who, during the proposed activities and through two questionnaires, had shown absolute reluctance to do distance activities, synchronous or asynchronous activities. Despite the wide range of case studies proposed, for these twenty-seven ladies, the only possible activity was the one in presence to the detriment of all the rest. The turning point in the writer's journey took place between November 20 and January 21, thanks to a training course for twenty-two teachers with Pirelli Hangar Bicocca and performer Marcella Vanzo. The project, entitled "#fareinsiemesquolapubblica"<sup>7</sup> (doingtogheterpubblicschool), through a process of a laboratory and collaborative nature, between all those involved, it aimed to offer primary school teachers a new approach to their teaching. Starting from the performative practice of the artist, who engaged the trainees with simple activities of an almost playful nature, the teachers were able to measure themselves against contemporary art, which is less frequented in training and refresher courses, conceiving it as a tool and not just a discipline, useful for interdisciplinary teaching activities. Theory and practice alternated circularly and dynamically thanks to the expert support of pedagogues and art historians. Through two questionnaires and the observation of the results reported in the work with the children at school, it was possible to document a positive change. The stillness and the blockage in proposing interactive activities, based on finding solutions to problem situations or researching real experiences, had fallen. The small exercises which brought the body and the use of objects concerning space back to the centre of teaching practice were fundamental in the third training, this one with twenty-seven museum operators from all over Italy. A focus group with some of the participants showed that the contamination of languages and methodologies from different disciplines made the activity dynamic and attractive. In this case, the activities proposed mixed experiential exercises of a sensory nature with suggestions deriving from visual research on some contemporary artists which emphasised senses other than sight and hearing. The request to work with tools such as photography, storytelling, drawing and the visual interpretation of words allowed a different relationship with the space mediated by the screen, changing attitudes and approaches to the different disciplines. All these experiments have been incorporated into the distance learning course in Art Didactics and Pedagogy, aimed at university students who want to become teachers. In addition to the contamination between disciplines and tools, the search for an objectuality through the screen and the link between reality and the surrounding environment as a fundamental element of an active and experiential type of teaching, work was done on the creation of rituals. A fundamental element of performative methodologies, ritual, due to its close relationship with a time decoded by symbolic actions that are repeated, has a strong educational value and is fundamental for the creation of a community. This last point was one of the aims researched to establish a relationship with students. As the philosopher Byung- Chul Han states "rites are processes of embodiment, bodily preparations [...] they are inscribed in the body, incorporated, internalised through the body. Thus, rites create embodied knowledge and memory (Byung- Chul Han 2021, 22-23).

### CONCLUSION

Not long before the advent of the pandemic in 2019, reflecting on the disappearance of rituals as a symptom of community erosion, Byung-Chul Han noted how digital communication represents a reverberation chamber inadequate to create a resonant environment and useful only to reinforce an "echo of the self" (Byung-Chul Han 2021, 22).

This vision clarifies the sense, expressed by teachers and educators, of a lack of meaningful relationships through the screen. The researches carried out by the Italian Educational Research Society,  $(SIRD)^8$ , by the various platforms of confrontation among teachers set up by different universities (such as the Politecnico of Milan and the Normal of Pisa), as well as the action research work briefly recounted above, highlight in addition to the state of stillness described by Collins, the difficulty of managing a temporal dimension of work perceived as almost infinite. Alongside this perception, teachers highlighted the unease of managing educational environments and involving students. To overcome this crisis, on the one hand, there has been questioning and overcoming of the criticality of the use of technologies in the world of art and education through numerous proposals, sometimes specially designed, sometimes somewhat improvised, and on the other hand, it has been necessary to rethink the approach to teaching. The performative practice, through its transmissive capacity, that is to say, that capacity of the performer to suspend the habit of the body, has represented the key to this rethinking.<sup>9</sup>

As the choreographer Virgilio Sieni states, transmission is an "exercise in listening, waiting and welcoming. All this must be experienced, practised and put into dialogue with time, duration and repetition. [...] The only thing that coincides with time is the body because it follows its course." (Pitozzi Enrico 2019, 30).

The performative approach allowed a reification of the space mediated by the screen frame. It is also particularly appropriate for its balance between presence and absence and its processual character, whose main feature is to always renew itself according to circumstances. These aspects make it possible to overcome the feeling of loss of connection with reality brought about by digital environments. Above all, it allows the reactivation of the body, after a moment of suspension, as an active tool to produce knowledge.

### NOTES

<sup>1</sup> "The Collins Word of The year 2020 is..." https://www.collinsdictionary.com/it/woty.

<sup>2</sup> "Lockdown." https://www.collinsdictionary.com/dictionary/english/lockdown

<sup>3</sup> For an overview of this topic, please refer to the forthcoming text Alessandra De Nicola, Piero Magri, Franca Zuccoli "Heritage assets, fairs and museums. Places of encounter and presence in times of pandemic."

<sup>4</sup> The paradox of stillness. https://walkerart.org/press-releases/2021/walker-art-center-presents-the-paradox-of-stillness-art-object-and-performance

<sup>5</sup> For example, the work of George Simmel, Josè Ortega y Gassett, Ernest Bloch, Jacques Derrida, Rudolf Arnheim.

<sup>6</sup> According to which cognitive processes were separated from perceptual-experiential ones.

<sup>7</sup> Pirelli Hangar Bicocca project website https://pirellihangarbicocca.org/universita/fare-insieme-squola\_pubblica/

<sup>8</sup> We are referring to the work of Capperucci 2020, Girelli, 2020, Lucisano, 2020.

<sup>9</sup> In this sense see the work of Giorgio Agamben (with) choreographer Virgilio Sieni about *the Accademia del Gesto.* 

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### FROM THE DRAWING BOARD TO THE SCREEN: ARCHITECTURAL PEDAGOGY DURING AND AFTER THE PANDEMIC

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### INTRODUCTION

In the context of the global pandemic, the thrust on online learning and delivery of education has taken an unprecedented turn. Teachers have suddenly transformed into designers and tutors equally; they are using unfamiliar tools and devices. Not just the teachers, even students are finding it hard to adjust to an "online" environment where interaction and learning from peers and seniors (or juniors) is totally missing. On the other hand, the online platform has facilitated the collaboration of expertise from any part of the world, for a jury, review, or a conference.

This paper will serve as a detailed analysis of the SWOT -Strengths, Weakness, Opportunities and Threats or Challenges in online teaching and learning of Studio based courses in Architectural studies. This is part of a larger study that utilizes both qualitative and quantitative research methods to probe and evaluate the experiences of both teachers and students (from different geographies) to the introduction of online learning methods during the pandemic and the future of such a mode of teaching and learning, specifically in the field of architectural education. Taking the case of an institute of architecture in the UAE the current paper will discuss the various facets involved in the design and studio-based courses with respect to hands on exercises during the early semesters, to contextual analysis required for urban design or planning based studios in the higher semesters. Between solving the problem of pandemic and an anticipated paradigm shift in the form of virtual and augmented reality, which could arguably be the future of architectural education, this paper and study, we hope, will force us to pause and gauge both the merits and demerits of traditional as well as contemporary methods of architectural education.

### Stakeholders in Online Education

In education, the term stakeholder typically refers to anyone who is invested in the welfare and success of a school and its students, internally or externally which include administrators, teachers, staff members, students, parents, families, community members, local business leaders, and elected officials such as school board members, city councilors, and state representatives. In a word, stakeholders have a "stake" in the school and its students, meaning that they have personal, professional, civic, or financial interest or concern.<sup>1</sup> After distance education became a ubiquitous

approach to address the challenges of the pandemic situation, many higher education institutions worldwide switched to distance learning and put on-campus classes on hold. This caused a major struggle in architectural education because of the practical nature of the program where the in-studio approach is the most dominant and acceptable way of teaching architecture. Overnight, the instructors of design and other studio-based courses were obligated to teach remotely.<sup>2</sup> With the enforced shift into the online environment of teaching and learning during the pandemic the two primary stakeholders directly affected are the students and the teachers. These two stakeholders were expected to adapt to the virtual studio culture instantly and continue to produce outcomes based on the regular academic curriculum and within the same prescribed duration of the program. This unplanned experience of both the students and teachers of architecture needs assessment and evaluation, as it may mark a shifting momentum to develop architecture education and the profession in unprecedented ways.

# SURVEY CONDUCTED TO ACCESS THE EXPERIENCE OF BOTH STUDENTS AND TEACHERS

This study evaluates the experience of teachers and students of architecture for teaching and learning in an online environment from various schools of architecture in India, Dubai, and South Korea. The study started with organizing a focus group meeting of ten expert participants comprising five students and five faculty members. Based on the focus group discussions, two separate questionnaire surveys were prepared, one for the students and the other for teachers. The survey sample included the faculty members and students from various schools of architecture in India, Dubai, and South Korea. A simple statistical analysis was conducted, and the results showed that online teaching during pandemic had been performed regularly in synchronous meetings format. To explore the various aspects of these experiences regarding the challenges and opportunities encountered by students and faculty during the pandemic a SWOT analysis was carried out based on the survey feedback.<sup>3</sup> This SWOT analysis forms the basis of further discussions that collectively aim to arrive at recommendations that may help in institutionalizing an approach towards the future of architecture education in productive ways.

### **Experiences and SWOT based on Survey Findings for Teachers and students** Strengths:

• On a scale of 1 to 10 more than 78 % faculty and 73 % students were comfortable with teaching and learning in an online mode.

• 44% teachers felt that the online environment is more organized in terms of keeping record and students following timelines. In terms of explaining their thought process with clarity in an online mode, 38% of students felt it easy and often used similar visuals from the internet or make up a quick 3D/illustration to explain their thoughts.

• Almost all the faculty felt that they can closely work their students as a class as well as on an individual basis in an online mode. 35 % students also felt that the online mode is very efficient when working in a group since they could share ideas and collaborate on a common online file.

• On a scale of 1 to 10, 72.3% of the teachers felt that their students have moderate levels of understanding specific technical details of a project with the aid of digital technology. While this came to be 75 % when asked to the students.

### Weakness:

• More than 55 % of the faculty and 43% of the students preferred the physical studio environment.

• More than 80% of the faculty members and 48% of students felt that the attention span is lesser in an online mode.

• More than 80 % of the faculty felt that it was much easier in the physical studio to explain concepts in terms of layout, circulation, form development, etc. While the others felt that they often needed to explain the same concept several times till it became clearer to the students. Similar is the case with students where 15.6 % of them found the online mode difficult to explain their design and 47% felt that they tried their best but weren't sure if their explanations were correctly understood.

• Almost all faculty and 91% Students felt that they can get clarity only when they see and understand concepts by visiting a site, demonstration through physical model making or hands on exercises. And 19% of the students reported technical difficulties in using unfamiliar software's/online platforms.

• 60% of the faculty members felt that online teaching stretches beyond work hours and disturbs their personal lives and research interests. While 47 % of the students reported difficulty to meet their team members when working in a group at a common time since they are used to working physically.

### **Opportunities:**

• 44% of the faculty and 55% of the students feel that both online and physical mode have their pros and cons. While 2.3 % of the students prefer the online mode, since it helps to be better organized when it comes to presentations, following timelines and working in a systematic manner. 5.5% students also feel that virtual site visits will be much more workable and save time.

• 16% faculty and 9% of the students felt that the attention span is based on the interest in the subject irrespective of the mode of learning which is an opportunity for the students and teachers to work with new methodologies of teaching.

• 50% of the faculty and 37% of the students have become familiar with online platforms and software's. While 33% faculty and 30% students are often discovering new applications and are open to exploring more of such avenues to increase efficiency. 45% of the faculty have been introduced to some new software/application by the students, signaling a new teaching-learning paradigm.

• 56 % teachers felt that they were able to network and organize more lectures/ webinars/ workshops/ talks and feedback sessions from experts all around the world. 41% of students claimed to have attended such online events. All students confirmed that they get more diversity in terms of feedback from varied people in an online mode than physical mode. The opportunity lies in being able to teach from any location (home, coffee shop, co-working space) and enroll students from various backgrounds and geographical areas.

• 28% of the faculty felt that they can manage- work, home and find more time for research.

• 83% Faculty and 69% students preferred to continue with blended learning, while 4% preferred to continue with online learning.

### Threats:

• On a scale of 1 to 10 the faculty evaluated a moderate level of understanding for their students in an online mode. And nearly 30 % of the students were not comfortable learning in an online mode.

• A few Faculty members suffered from a lack of privacy.

• 10 % of students feel that it is very difficult for them to follow anything online when it comes to understanding concepts in terms of layout, circulation and form etc. in an online environment, while 47 % claim to understand but not with as much clarity as in the physical studio. 32% try hard to understand and need to go through the recordings. And only 10 % completely understand and follow whatever is being taught.

Survey feedback results seemed to indicate that both the faculty and students were satisfied with online teaching in theoretical courses. However, both groups were less satisfied with the design and basic design courses. To further dwell into this a case study of the School of Design and Architecture, Manipal Academy of Higher Education, was carried out. This study helps to understand the various facets involved in the design and studio-based courses with respect to hands on exercises during the early semesters, to contextual analysis required for urban design or planning based studios in the higher semesters.

### CASE STUDY OF DESIGN BASED STUDIO COURSES FROM SCHOOL OF DESIGN AND ARCHITECTURE, MANIPAL ACADEMY OF HIGHER EDUCATION, DUBAI Early semesters students

This section is focused on two specific subjects in the first year B-Arch studio: Architectural Design and Architectural Representation. The teaching of these subjects in the first year--as is well known within the architectural fraternity world-wide--requires a hands-on approach.<sup>4</sup> This has been severely impacted by the COVID-19 situation and following are the points that warrant attention in this regard.



Figure 1. Design process discussions through sketches shared virtually

Firstly, when it comes to the "Indian" education system, students joining a B-Arch course most likely would have undergone a NATA (National Aptitude Test for Architecture students) test, which can be likened to an entrance portal (mandated by the Indian Council of Architecture), that makes them eligible to join a B-Arch course in India.<sup>5</sup> A by-product of this has been a proliferation of NATA coaching centers, due to which many students already know how to "draft" a plan, an elevation, or a section. So, typically, teachers who teach in the first year of a B-Arch course, must conduct several sessions where the students are taught basic design before they could think of "drafting" a plan or an elevation. There is a lot of "unlearning" (for the student) involved in this laborious doctored process. This "doctored" process involves sketching, abstract thinking, model-making, conversion of abstract sketches and models to drawing, and demonstrations from the teacher at all the above stages along with a lot of one-on-one, and face-to-face discussions. What is at stake are not only the assessment

and development of skill levels (with respect to drawing and model-making), but also assessment about the thinking capacities of these completely new students, and tailoring exercises to suit each. This process needs interaction at a close level.

In the case of first year students, the above process is impossible in an online session. Furthermore, in an online session, the faculty/teacher cannot judge if the students have understood certain concepts or not. The reception of knowledge is always a suspect in online mode of education--especially when it is related to first year students of architecture. Even with the use of technology such as the iPad and cameras etc. we found that much was lost either in the patchy resolution due to internet or uploading issues, or even the lag that resulted because of working across different systems such as the IOS and Windows. One can argue that a comprehensive system can perhaps resolve this problem--however, it is our contention that no amount/quality of online delivery can match the face-to-face learning that is afforded by the physical architectural design studio environment.

### **Higher semester students**

As the students move to higher semesters one crucial component which is physical in nature posed a lot of challenges in the online mode - site visits. Any design process would start with analyzing the site which requires the students to visit the site physically. For an architecture student site visits are inevitable. They are one of the most beneficial, authentic, and accurate ways of experiencing a built environment and gaining practical knowledge.<sup>6</sup> As much as site visits are mandatory for a better learning, it is also undoubtedly one of the best and most fun experiences for an architecture student. The study becomes easier with the work getting divided and one is exposed to a variety of perspectives from different members of the group.

### Challenges in the absence of a site visit

The Urban Context studio in the 4th year of the architecture program suffered severely due to the absence of site visits during the COVID-19 phase. The already intense coursework of Urban Design became more challenging for students as it was difficult for the students to understand the scale and the complexity of urban context through an online mode.<sup>7</sup> Because of the lack of face-to-face interaction, students had difficulty in coordinating with team members which led to extra hours of work. As part of the studio the students were expected to work on the Mobility, Morphology, Open Spaces and Socio-economic aspects in four groups of 7-8 each. In the absence of site visits students had to initially rely on the information available online which was very limited, and adversely affected the final analyses. The students realized the necessity of site visit and despite the rules and regulations due to the pandemic, some of them were able to go to the site individually to take pictures, videos and to record their experience of the site, while the rest of them stayed connected throughout via Microsoft Teams to provide complete support and gain understanding about the context.

### Restrictions in conducting a site visit during the pandemic.

Students who visited the site had to adhere to all the health and safety norms and take all precautions. Driving through the site and taking photographs and getting down only when necessary was their solution to tackle the situation. Since they could not go in a group, they had to split up into individuals or pairs for getting the required data. The students had to be highly conscious about wearing masks and constantly using sanitizers. A student mentioned that the visits were no longer attended with a free mind and above all they lost the fun part associated with site visits - the silly jokes, small arguments, the laughter, the photo sessions, the mini breaks etc.

Due to the lockdown and the enforced restrictions students could study only half of what existed on the site. A lot of shops were shut, areas were closed, gatherings in and around the site were reduced and public spaces remained empty and the social distancing measures showed a completely different picture of the site. Despite these issues they managed to interact with people following precautions. While the pandemic challenged the students to work with certain limitations, it also allowed them to exploit the full potential of online tools and alternative resources such as google maps, google earth, street views, and photographs sourced from various origins, etc. <sup>8</sup>



Figure 2. Restricted Site Visits with empty streets and public spaces

### Discussion and way forward

There were mixed opinions about site visits and the notion of physical site visits being necessary changed slightly. Students adapted to the new normal and found that site visits can be done virtually by contacting friends who lived in the area, or by using street views and images posted by various people online (blogs, travel videos, etc.). To discuss the way forward, the role of virtual and augmented reality in the context of architectural site visits is a nascent idea that can be put to practical use in future. However, it can still be argued if it can deliver a holistic understanding of place, in all its experiential potential, such as is possible only in a real, physical site visit.<sup>9</sup> A blended mode where theory courses can be continued online but the physical or the practical component of any course is not compromised, is perhaps the best way forward.

### CONCLUSION

This paper is a work in progress, and the data presented here cannot be considered conclusive in any respect. It will require one more set of post-pandemic (hoping that such a situation will eventually prevail) evaluation if some definitive conclusions are to be drawn. Not only that, but the data will also have to be filtered through certain social or political theory/ies to see if there is a possibility of better understanding the implications of such raw data. If anything, the current paper reflects the ongoing pandemic situation, and a certain restrained submission to such a situation which may be associated with the feeling of an impending doom, or of sheer choice-lessness.

Sifting through the questionnaire and the resulting data, one can clearly understand that many respondents--teachers and students alike--have opted for a blended mode of learning. During certain slightly relaxed phases of the pandemic (especially after the first wave) there was a hope of everything returning to normalcy. Worried policy makers, health officials and parents did not necessarily agree, however the economics suggested that we all return to normalcy to keep the

machine running. And hence the situation of the "new normal" where a "blended" mode was suggested and even implemented--which continues to be the "new normal" that we are dealing with nowadays. So, students can opt to learn from the comfort of their home so they are not exposed to the virus and can choose to come to the campus if they want to. There is no compulsion mandated either by the University or by the policy makers--although time and again, indirect assertions are made to encourage students to come to the campus. While building a herd-immunity is helpful, variants of the mutant virus have really made it difficult to understand and/or predict the direction and geography of the next wave.

In these really tumultuous times, health--physical and now, even mental--is of the utmost priority. The adage "health is wealth" has never sounded so sweet and convincing as now! Out of sheer desperation, the blended mode is perhaps the only choice available that at least promises a little physical interaction and some face-to-face discussions and on-site demonstrations. The other benefits of the "new normal" is that the world seems to have suddenly arrived "online" in an unprecedented manner. Experts are busy giving dates and managing time, and time-zones, to deliver their expertise to students online from different geographies. Perhaps now, more than ever, educational institutes must think of formally acknowledging such realities and perhaps create a separate budget and nomenclature for such associations- that could benefit all the stakeholders.<sup>10</sup> This is something that can continue even in a post-covid situation; however, it remains to be seen what that "normalcy" will feel like, and if time, which seems to be both fluid and evasive now, will permit such associations then.

### NOTES

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### ARE STUDENTS SATISFIED? A SURVEY ON THE EFFECTS OF ONLNE STUDIO-BASED LEARNING ON STUDENTS IN A PRIVATE UNIVERSITY IN MALAYSIA

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### INTRODUCTION

Studio learning and its studio culture form the crux to architecture education. The closure of design studios and the sudden shift from face-to-face to online learning in March 2020 due to the Movement Control Order (MCO) during the COVID-19 pandemic in Malaysia posed a threat for architecture education. Ad-hoc approaches took place, attempting to replicate the spatial dimension of the studio, including the studio experience and design tasks, to a digital space.

Resulting from such shift, this paper examines the satisfaction of students on online studio learning in a private university in Malaysia via a survey questionnaire. The findings are significant as it leads to firstly, identifying the impact of current learning amongst students hence enabling short-term interventions to be proposed; secondly, exploring opportunities for the future as the new normal will not be the same as pre-COVID 19. In the likelihood that social distancing measures will continue into 2021, these findings will provide information that may help schools of architecture develop planned responses in the post-COVID 19 environments.

### **EFFECTS OF ONLINE STUDIO LEARNING ON ARCHITECTURE STUDENTS**

Prior to the COVID-19 pandemic, there have been attempts of conducting studio-based learning virtually. Firstly, asynchronously through digital spaces where students share their work.<sup>1</sup> Secondly, through common formal online spaces (such as e-portfolios or Moodle databases) to simulate peer learning environment.<sup>2</sup> While there have been reported success in virtual online studios through these examples, the extent by which the COVID-19 has resulted in is unprecedented. Arising from these, there has been studies conducted on the effects of online studio learning.

In the survey administered by the University of Bath, about 798 students from 29 universities responded. This initial findings of the of the study revealed that across all items measured, satisfaction among students had decreased following the move to remote teaching. Most significantly affected was the peer learning, ability for students to learn from each other, to feel part of a community and emotional and motivational support of their peers. The study concluded that despite commendable initiatives by universities for adapting to online teaching, the absence of a physical learning space resulted in an overall negative impact on student learning. The study reported that overall student satisfaction fell by 58% following the move to remote teaching, 79% of students said the sense of

studio community had been negatively affected and only 7% of students preferred remote delivery to its face-to-face equivalent.  $^3$ 

Another study published in January 2021, reported on a student survey conducted by Dezeen and Bath School of Design which studies the impact of online studio learning on their studies and wellbeing. The survey was sent to 450 students. Only 31 students responded. The findings revealed that students are frustrated but generally positive towards the move to online learning, hoping to return to more of a normality soon. The study reported that 13% of the students found it hard to concentrate and motivate themselves. Some students also reported that they felt frustrating not to go onto campus, not being able to socialize with your course mates, generally missing the social aspect of university including the naturally occurring conversations that they have with their tutors and peers about work in the studio. Students expressed their frustration as they were not able to use the to use any of the practical facilities on campus (screen-printing, photography etc.) and due to that they had learn 3D Modelling and rendering. However, almost half of the students (48%) students also reported that learning to present the works digitally improved their digital communication skills. Among the positive responses reported by the students are they got used to online learning now and the tutors are providing the support, doing the best they can. The students also appreciated the online learning as it is allowed ready access to a variety of tutors.<sup>4</sup>

In another global student survey by Archinect to uncover how schools were dealing with the coronavirus outbreak, particularly on how students and educators in the architecture field are handling the transition. The finding of this study revealed both positive and negative responses. Among the positive feedbacks were ease of transition as students were provided with laptops and WiFi cards which assisted them to prepare during the short break they had. Also, while some students found it hard due to limited prior experience with online education, other students described the transition as smooth as they had good support from the school which facilitated teachers and students to adapt fast. The feedbacks showed that easy transition was made possible with the support and learning resource aid from the universities.<sup>5</sup>

The study also reported there are a segment of student who had frustrating online learning experience particularly associated with the rough rollout, lack of necessary infrastructure, and an overall anxious outlook such as limited licenses for the learning platforms (MS Teams) which affected their works particularly group works. Other reported negative experiences or challenges are lack of routine and proper consultations in studio time, working day in, day out in isolation makes it difficult to focus and some lacked internet access off campus making it very difficult.<sup>6</sup>

Iranmanesh and Onur investigated three aspects of Virtual Design Studio (VDS) namely, students' evaluation of the virtual studio experience, the effectiveness of VDS in achieving the studio's expected learning outcomes and the evaluation process for final design projects. About 360 students from eight consecutive design studios participated in the study. Findings of the study shows despite enhancement students' ability to conduct independent research and in learning new softwares, a significant drop in peer learning experience among students.<sup>7</sup>

A Jordanian study by Alnusairat, Maani and Al-Jokhadar investigating Architecture students' satisfaction of online design studios during the pandemic among 615 undergraduate students highlighted that the students find the online studio learning more challenging. They were not confident about their online learning experience and expected additional guidance and support. Reasons for the disengagement include technical factors, such as poor network quality and lack of familiarity with the new applications. Study also shows that remote working and learning from homes are also relevant due to the tutors' lack of expertise in online teaching, and the limitations of peer interaction.<sup>8</sup>
## ARCHITECTURAL DESIGN STUDIO LEARNING DURING THE PANDEMIC AT TAYLOR'S UNIVERSITY, MALAYSIA

In Malaysia, architecture education is governed by the Council for Accreditation of Architecture Education (MAPS). During the pandemic, various special notes were issued, providing compulsory instructions and guidance to accredited schools of architecture. MAPS noted the disparity on the availability of information and communications technology (ICT) infrastructure between different education providers and reinforces that the online teaching as replacement should be viewed as temporary, and that the dynamic studio learning environment could not possibly be simulated through a virtual studio or any online medium.<sup>9</sup>

Adhering to the instructions by the Ministry of Higher Education and MAPS, the architecture programmes have been implemented using different sets of formats from March to October 2020 following the development of the COVID-19.

In the School of Architecture, Building and Design at Taylor's University, prior to COVID-19, design studios are held face-to-face twice a week, 5-hour studio per session. During the March semester, with the Movement Control Order (MCO), the delivery of the design studio transitioned from face-to-face to 100% online, with minor revisions to the assessment studio briefs. This was done at a fast-paced and rapid response to the crisis. While, in the August semester, when the nation was under Recovery Movement Control Order (RMCO), delivery of studio was in two-fold adhering to the Special Note 4 by MAPS. Firstly, for Semesters two to five, studio sessions were alternated between online and face-to-face (50-50%). Secondly, for Semesters One and Six, studios were conducted face-to-face. In all cases, studio lectures were delivered online.

Prior to the pandemic, Taylor's University has been utilising blended learning and has incorporated online learning as part of the modules. Thus, the academic team is equipped with basic skills of online delivery. There were also intensive webinars conducted by its Centre for Future Learning, to facilitate the transition from face-to-face to online learning during this state of crisis.

Almost a year into online and blended learning due to the pandemic, at the end of 2020, the studio leadership team mooted a re-thinking studio-based learning project to develop a way forward in the new normal of post-pandemic of studio learning. As part of this, the project was divided into 3 parts including: interviews with studio academic team; survey on students' satisfaction survey; and focus groups with studio academic team. Conclusively, the overall goal is to develop an implementation model for blended teaching and learning for short-term and long-term studio-based learning delivery. Taking the student satisfaction survey as the focus, this paper examines the effects of online studio-based learning, guided by the question of: Are students satisfied?

#### STUDENTS' SATISFACTION SURVEY

Specifically, within the context of teaching and learning, surveys are used to study the impact of online studio learning to students. Guided by the published surveys conducted globally, similar nature of study is significant to gauge the effects on online studio-based learning to students in Malaysia. The questionnaire design is adapted from surveys conducted by the University of Bath and Archinet. Consisting of predominantly likert scale questions and several open-ended questions, the questionnaire is framed into 4 sections:

1. Demographic information (Demographic data will be collected to enable categorization and resampling after collection).

2. Studio Learning (Environmental Factors, Learning Opportunities, Feedback Activities, Support Services, Peer Learning) comparing the physical studio learning versus online/remote learning.

3. Studio Life (Perceived importance of Studio Life, Perceived impact of Studio Life).

4. Transition, Challenges and Advantages of online learning.

The questionnaire was administered from Nov-Dec 2020 following the end of the academic year, where the online survey is disseminated to 590 students who are taking architecture design modules in 2020.

#### FINDINGS

A total of 230 students consisting of undergraduate from Semesters 1- 6 and post graduate students from Semesters 1-4 participated the study completing an online survey questionnaire. Most of the participants for the study are from the undergraduate year 1 (29%) and year 3 (35%) and followed by from Year 3 (20%) and postgraduate (17%) (see Table 1).

Level of Studies	f	%
Undergraduate		
Year 1	66	29
Year 2	46	20
Year 3	80	35
Postgraduate	38	17

Table 1. Distribution of Respondents participated in the study

#### **Studio Learning**

The survey asked students to describe their transition to online based studio learning. It was observed that almost half of the students (52%) said that the transition was difficult while only one third (29%) of them find it smooth.



Figure 1. Overall Student experience of the only transition

The overall student satisfaction for studio learning fell 38% following the move to online teaching. Less than half of the students were satisfied with the online learning whilst almost one third (28%) of them were not satisfied with online learning. This finding shows that the students preferred in-person or face to face (F2F) mode of studio-based learning compared to online. Nevertheless, even with this large decrease in the proportion of satisfied (very and fairly) students, nearly half (44%) of students were satisfied with the online based studio after shift to remote instruction as shown in Figure 2.

The study investigated architecture student's satisfaction and challenges associated with the unplanned transition to remote instruction during COVID-19 particularly in studio learning. The findings of the study revealed that almost half of the students find the sudden transition to online based was difficult.



Figure 2. Overall student satisfaction for studio learning fell 38% following the move to online teaching

This result contradicts some of the findings reported by the Walter.<sup>10</sup> This could be due the student failed to get the need resources such as and support to assist their transition to online learning. The drop (38%) in the overall student satisfaction for studio learning following the move to online teaching conquers with the study by Grover & Wright and Fairs which reported a decline in student satisfaction with online based studio learning. However, the drop (38%) in the reported in the study overall satisfaction is still lower than the sharp drop (58%) with only 7% of students preferred remote delivery reported in the UK study.

The study also hypothesized that the impact of transition would be more severe on the year one students, however findings show similar response were reported. There were no significant differences in the responses between first year students and existing students (Year 2 and above) who had prior physical studio learning.

The survey also asked students to rate their satisfaction with multiple aspects of their studio learning after it went online, as shown in Figures 3 and 4. Finding revealed that most factors questioned were considered to have been negatively affected, with peer learning (43%) most negatively affected - opportunities to collaborate with other students on course work, where almost half of the students thought opportunities were worse or much worse online. This was followed by moderately affected negative factors are learning opportunities (23%), students support (21%) and feedback activities (20%) and the least affected being the environmental factors illustrated in Figure 3. The activities related to peer learning should be kept at face to face due to the adverse negative impact. While the activities related to learning and feedback need to be reviewed in detail to identify activities that can be conducted online versus face to face.



Figure 3. Summary of change in student satisfaction factors during the online studio-based learning

Among the items measured within the peer learning factor, students learning experience working in a team (48%) and observing other students' teaching (47%) were most negatively impacted. The students also reported that the transition also affected skills sharing in solving technical issues (47%), sharing resources (42%) and getting their peer advice on their design works (42%). Within the learning opportunity factors students felt that the group tutorials (30%), design reviews (27%), and individual tutorials (25%) are affected most. In terms of their experience with support services and feedback activities, all the measured items were moderately affected (23%-18%). Interestingly the only positively affected factor reported by the student is the storage space (14%) as most of the students stayed in their houses or rooms and the need for storage was also limited as the outcomes of the design studios was in digital format.

During online classes, the students faced with technical issues associated with the learning platform and internet connection, and often much time was wasted on resolving the state issues causing frustration. The issues were aggravated further by their inaccessibility central student support and lack of pastoral advice from tutors causing them to be demotivated in their studio learning shown in Figure 4. These findings conquer with the finding by Fairs' 2021 study.<sup>11</sup>

Overall, the findings relating to studio learning indicates that the transition had great impact on studio learning, students were not entirely ready to move their entire studio learning online despite having been used to online learning in some of the modules. This could be due the nature of the studio learning, which requires much interaction between their peers and with the tutors. Students low level of satisfaction level might be due to several reasons, including the level of support received from instructor, one to one feedback, feedback from reviews, working in groups and technical help, it and technical support from the school lectures, access to online resources, access to facilities in school, pastoral care from tutors and networks access and connectivity.



Figure 4. Change in student satisfaction of all items measured after the transition to online studiobased learning

#### **Challenges and advantages**

The survey also included structured-response items that asked students to rate their experiences with a specific set of advantages and challenges they may have faced in their online studio-based learning. From the findings it was seen that the student identified three greatest advantages of online learning, flexibility (81%), save time and cost on going to school, save resources on printing board and paper for tutorial and presentation (76%), and better time management (42%) shown in Figure 5.



Some of the reasons for this could be due to the ready access to tutors, peers, course materials and with reduced traveling to schools and sites they were able to spend to time to more effective use. These finding are line with earlier studies by Fairs conducted in 2021.<sup>12</sup>

Their greatest challenges, the most pervasive problem reported by students was difficulty working in groups (77%) this is consistent with their reporting how the online studio negatively affected their peer learning. The second most challenge most students faced is staying motivated to do well in their studies (71%) and the internet connection (65%). Issues associated with the network in their place of residences could be due to lack of due to the lack of supporting infrastructure. As shown in Figure 6, other challenges were less prevalent.



Figure 6. Challenges faced during online studio-based learning

These could be due to the lack of the tutor's expertise is using the online platform for group activities as well as the student reluctance to participate in group discussions, lack of proper or sufficient infrastructure either at home or campus to support the smooth online learning. The student s motivation to do well in the studies could be all the factors associated online studio learning particularly not being able to meet and works with their peer, lack of face-to-face conversations with tutors and peers, studying in isolation, not being able to know how peers are progressing and technical factors such as poor internet connections, etc. This finding corroborates with study by Alnusairat, Maani & Al-Jokhadar and Walter.

#### Perceived studio life (Importance and Impact)

The emotional, motivational, non-curricular aspects are significantly related to studio culture or studio life. The survey also asked students to rate the of perceived importance and perceived impact of aspects of their studio life. The survey had eight (8) questions associated with students perceived importance studio life (figure 7). All the items measured in this section was rated as important by majority (above 80%) of the students (see figure 5. However, four (4) aspects were identified as being important by almost most all the students (above 90%). They are shared relaxation outside and inside of the studio (sports, going out, meals, drinks break etc.), emotional and motivational support

from others in the studio. This suggest that there are tendencies towards arriving the need to build a sense of community, shared spirit from both and emotional and personal motivation level.



Figure 7. Perceived importance of studio life

The findings are also consistence with the top key aspects of perceived impact of studio life. Therefore, based on what the students perceive as important and as the impact they rated almost similar.

#### CONCLUSION

While the student satisfaction survey revealed that student's satisfaction of online studio learning has been negative when compared with face-to-face learning, the overall evaluation of the online learning reflected in the School's formal student survey has not been adversely affected. Instead, the teaching and learning ratings were slightly higher compared to previous years. This clearly shows that face-toface is pivotal, and there are also advantages when online learning is implemented into the studio programme.

Moving forward, the survey findings, together with interview with design tutors and focus group with studio leaders, will be analysed to develop a design studio implementation model suited for blended studio learning. The acceleration of the use and acceptance of technology and online-based learning resulting from the pandemic thus can be an enabler for future development of blended studio learning. Moving towards the new normal and in alignment to the technological transformations within education and the built environment disciplines. the move towards a renewed studio-based learning model is inevitable.

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### BRIDGING THE "MOBILITY GAP" IN EUROPE THROUGH INTERNATIONALISATION AT HOME: A CASE STUDY OF AN INTERNATIONAL ONLINE MICROMASTERS PROGRAMME

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#### INTRODUCTION

Internationalisation of higher education (IoHE) is conceptualised as a process whereby cross-cultural challenges are addressed, deliberative pedagogies are developed, the curriculum and the broader higher education experience are enriched to encourage individual and collective agency and engagement with the complex challenges facing society.<sup>12</sup> Many Universities in Europe now consider internationalization to be their strategic priority, although not all prioritise it to the same extent.<sup>3</sup> The unevenness in the adoption of internationalisation across the continent implies an uneven distribution of its benefits, which include: quality of teaching, learning and research, enhanced experience and understandings of staff and students and improved cross-cultural understanding.<sup>4</sup> In consequence, the unequal access to IoHE has served to reproduce the overall inequalities in higher education, as the opportunities for international mobility for collaboration and knowledge exchange are available to a relatively limited number of students.<sup>5</sup> Four countries, the United Kingdom, Germany, Russia and France, host more than half of the student mobility in Europe.<sup>6</sup> In contrast to them, countries from the Central, Southern and Eastern (semi-) peripheries of Europe lag behind in terms of attracting foreign students.<sup>7</sup> One reason is that the mobility grants and loans made available through EU projects such as Erasmus Mundus, have not been able to counteract structural inequalities such as high-income inequality, high tuition, living and travel expenses. In consequence, more than 50% of students in Europe have been deemed to be non-mobile.<sup>8</sup> This in turn influences their employment prospects, due to the 'mobility imperative' defined as the strong association of international academic mobility with career success.

Thus, unequal access to mobility contributes towards the reproduction of inequalities and 'social difference within the globalizing higher education system'.<sup>9</sup> In parallel to this process, the pervasive diffusion of Information and Communication Technologies (ICTs) has brought about paradigmatic shifts in higher education (HE). The integration of digital platforms, methods and tools within the educational system has opened up new avenues for teacher/student interaction. As one such avenue is Internationalisation at Home (IaH), it is necessary to understand its utility and functions in addressing

the 'mobility imperative' for the non-mobile majority of the Higher Education (HE) community. IaH is defined as the use of advancements in technology in order to enable individuals to gain international and intercultural mindsets without necessarily going abroad.<sup>10</sup> It employs virtual mobility and collaborative online learning as the new tools for an international experience at home, in a virtual classroom.<sup>11</sup> In view of the opportunities presented by IaH, it has become necessary to examine if and how it can address the 'mobility gap' in Europe.

## Higher Education Mobility outside the core of the EU: Lithuania, Slovenia, Turkey and North Macedonia

A recent example of efforts aimed at achieving IaH is the higher education project within the EU Erasmus+ project "Internationalisation at Home through Online MicroMasters and Virtual Mobility -Turkey, Macedonia, Slovenia and Lithuania (MASTER@HOME)".<sup>12</sup> The project developed and implemented two international online Micro Masters programmes in the period 2018-2021: (1) the Entrepreneurial Ecosystem and Innovation Strategy, and (2) Digital Communications and Marketing. The programmes were jointly conceptualised and conducted within the virtual campus of four higher education institutions. Two of them are from EU member states (DOBA Faculty of Applied Business and Social Studies in Slovenia and Vytautas Magnus University in Lithuania Lithuania); two are HE institutions from countries candidates for EU membership (University of Istanbul in Turkey and the Institute of Communication Studies in North Macedonia). All four countries fall outside the core of Europe, which is otherwise referred to as its (semi-)periphery. Beyond this they each have distinct characteristics in terms of the internationalisation of their higher education, staff and student mobility, as well as the digital access on which IoH depends (Table 1). In Lithuania the outbound mobility ratio for Lithuanian students is 8.8, with 10,395 mobile students abroad. The inbound mobility rate is 5.3 with 6300 mobile students hosted in the country. The first three countries of origin of foreign mobile students in Lithuania are Belarus, India and Ukraine.<sup>13</sup> In Slovenia, the outbound mobility ratio for Slovenian students is 4.2, with a total of 3195 mobile students abroad. The inbound mobility rate in Slovenia is 4.5 with 3420 mobile students hosted.<sup>14</sup> The large majority (around 73%) of foreign students come from South East Europe. In Turkey the inward mobility rate is 1.7 with 125,138 mobile students hosted in the country.<sup>15</sup> 50% of all foreign students in the country come from Syria, Azerbaijan, Turkmenistan, Iran and Afghanistan. In North Macedonia, the total number of mobile students abroad is 5704, with an outbound mobility rate of 9.5. The inward mobility rate is 5.2 with a total of 3096 mobile students hosted in the country.<sup>16</sup> 42% come from Turkey. At the same time, they differ according to digital literacy rate, which is one of the preconditions of IaH. Slovenia is ranked on the very high 9th position (out of 157 countries) on the Digital Access Index for 2020 whilst Lithuania is ranked 36th. The two non-EU countries North Macedonia and Turkey are ranked 57/157 and 67/157 respectively.<sup>17</sup>

	Inbound mobility rate	Outbound mobility rate		
Lithuania	5.3	8.8		
Slovenia	4.5	4.2		
Turkey	0.6	1.7		
North Macedonia	5.2	9.5		
Germany	10.00	3.9		
France	8.8	3.8		
UK	18.3	1.6		
Source: Global Flow of Tertiary-Level Students, (UNESCO,2020)				

Table 1. Student mobility rate in the four countries studied and some of the countries from the 'core of Europe'"

Although the quantity and type of mobility is diverse across the four countries, their common characteristic is that they all lag behind when compared to countries from the European core such as the UK, Germany and France where the share of international students is 18,3%, 10% and 8,8% respectively. This suggests that they can benefit from IaH which aims to decrease the so-called 'mobility gap' both by increasing the quantity and the quality of internationalisation of HE.<sup>18</sup>

#### TWO INTERNATIONAL MICROMASTERS - IAH OUTSIDE OF THE CORE OF THE EU

The aim of the overall MicroMasters project was to improve the quality of higher education through internationalization at home and virtual mobility in order to allow non-mobile students to benefit from an international curriculum at home by 1) Creating a new model of internationalized teaching and learning in a virtual environment; 2) Enhancing individuals' potentials to effectively enter an interconnected, cross-cultural market in a digital era. IaH was thus integrated in the conceptualization and implementation of the programmes. The EC's recommendation was followed in developing a 'comprehensive internationalisation strategy' that includes cooperation and partnerships, and 'the internationalisation and improvement of curricula and digital learning'.<sup>19</sup> Thereby, an Internationalized Virtual Education Model was adopted allowing virtual mobility for students who would otherwise be immobile. A holistic approach aimed at internationalisation was followed in devising all the elements of the programme, from the curriculum, the management and support services, to the teaching and learning in an international environment at home. A set of virtual components and ICT supported activities enabled Virtual Mobility and Collaborative Online Learning and allowed for real time peerto-peer intercultural communication and intercultural understanding of the students.<sup>20</sup> A Learning Management System (LMS) supported the delivery of virtual mobility and students' collaboration with foreign peers and lecturers. In addition to the teaching and learning materials (e-textbooks, articles, videos, text files, slides etc), Open Educational Resources (OERs) were developed as videos. Active Project Based Learning (PBL) was followed in all the phases of the project, engaging students in the investigation of authentic problems through collaborative assignments, including small group discussions, group quizzes, group presentations, informal partner work, and peer editing activities.<sup>21</sup>

The two MicroMasters placed an emphasis on the role of both lecturers and administrative staff in internationalizing the education programme successfully, and provided a blended capacity building for staff to ensure their effectiveness in a transnational and intercultural environment. An important aspect of internationalisation was the base of 20 lecturers from 4 countries: North Macedonia, Turkey, Lithuania and Slovenia. In order to ensure internationalisation lecturers from all four HEIs were included in implementing each of the courses. The second internationalisation aspect pertained to the diverse structure of students enrolled in the virtual campus who came from 9 different countries: North Macedonia, Turkey, Slovenia, Lithuania, Serbia, Bosnia and Herzegovina, Croatia, Nigeria and China.

#### Methodology

The study draws on insights obtained through a survey questionnaire, which collected a total of 153 questionnaires from the students enrolled in either of the two MicroMasters programmes. Additionally, it is based on semi-structured interviews with Lecturers (N=9) and Students (N=17). The Updated Kirkpatrick Model is used for evaluating the training outcomes. Kirkpatrick's model stresses evaluation on the levels of reaction, learning, behavior, and results. Thus, the effectiveness of the training programmes is assessed at the following four levels: (1) response/reaction of the trainee to the training experience; (2) the learner's learning outcomes and increases in knowledge, skill, and attitude towards the training experience; (3) the students' change in behavior and improvement (whether the learning and determines if the MicroMasters had a positive impact on the trainees.<sup>22</sup> In view of the focus of the present inquiry on IoH on the (semi-)periphery of Europe, we add it as an extra layer under Level 4. The effectiveness and results of online instruction are evaluated also in relation to the criteria of IaH. Due to the addition, we refer to the model as the Updated Kirkpatrick Model.

## Updated Kirkpatrick Model - Level 1. Response/reaction of the trainee to the training experience

The survey questionnaire (N=153) aimed to assess the reaction of the trainee to the training experience. The large majority of the student expressed satisfaction were with several aspects of the MicroMasters programmes: a) the preparation and organization of the courses (Figure 1); b) the adequacy of the study materials (Figure 2); c) the assignments, activities and/or projects for acquiring new skills (Figure 3); d) correspondence of the assignments to the curriculum (Figure 4); e) the learning management system (LMS) (Figure 5). The students' most positive assessment was for the LMS system (69% satisfaction rate), which is an important indicator for the effectiveness of the online environment. Overall, the answers obtained within Level 1 of the Kirkpatrick Model portray a predominantly positive student evaluation of the training experience.



Figure 1. Satisfaction with the preparation and organization of the courses. Source: own.



Figure 2. Satisfaction with the materials made available (books, articles, videos etc.) for acquiring new knowledge. Source: own.



Figure 3. Satisfaction with the assignments, activities, and/or projects for acquiring new skills. Source: own.



Figure 4. Satisfaction with the correspondence between the homework and the lessons. Source: own.



Figure 5. Satisfaction with the LMS for online learning. Source: own.

## Updated Kirkpatrick Model - Level 2. The learner's learning outcomes and increases in knowledge, skill, and attitude towards the training experience

In order to evaluate Level 2 students were asked to assess the levels of competence and knowledge developed as part of the course. As seen in the table below, the students feel a high level of competence. Among the expressions obtained, the most pronounced participation is in the expression of personal development, where 58% have expressed a high level of satisfaction. Considering that all other skills and abilities are a part of the personal development process, it is seen that a sufficient perception of success is achieved.



Figure 6. Assess the knowledge and competencies developed in the course. Source: own.

As part of the semi-structured interviews, all 17 students reported improvements in their skills and knowledge as a result of the programmes. With regards to the obtained skills they emphasized improvements in the following: international teamwork, project management skills, digital marketing strategy, social media marketing and influencer marketing, time management, online communication, work under pressure and improved English language competencies. With regards to the obtained knowledge in digital communication and marketing, methodologies of business development, knowledge about different cultures and experience in working with people from different cultures and backgrounds.

<u>- Student from Turkey</u>: "The programme has helped in providing me with the theoretical knowledge, as well as an opportunity to apply this knowledge through the assignments. Also, my team-work and interpersonal skills have been improved by working with a team from different countries."

<u>- Student from Lithuania</u>: "With this course, but maybe also thanks to our team, I definitely improved my team management skills. Although my education background is in communications, I lacked marketing knowledge, and this course gave me insides in it."

<u>- Student from North Macedonia</u>: "I have improved my knowledge about different cultures and gained experience in working with people from different cultures and backgrounds. As for strategic communication, I have gained a lot of knowledge about digital marketing and communication."

### Updated Kirkpatrick Model - Level 3. The students' change in behavior and improvement (whether the learning transferred into practice in the workplace)

In order to address Level 3 of the Kirkpatrick Model, we relied on the answers obtained from the Semi-structured interviews with both students and lecturers.

7 out of 9 lecturers strongly agreed that the lectures and assignments allowed the students to accomplish the results foreseen in the curriculum. They also agreed that the assigned topics were in accordance with the students' capabilities for completing the assignments. 6 of the 9 lecturers stated that the course definitely contributed to the professional development of the students. The biggest concern shared by the lecturers was that the students failed to make sufficient use of the resource made available during the course.

In order to obtain the student's perception, the following question was asked as part of the semistructured interviews.

a) In your opinion, have/will the MicroMasters benefit your future career advancement? If so in which way? What specific knowledge did you acquire in the micro master that you used in practice? Six out of the 17 students interviewed have already seen benefits in their career:

- "All the knowledge gained over the project already helps me in my professional career, and it will help me expand into digital marketing related fields in the near future."

The remaining 11 students are optimistically confident that the skills and knowledge obtained in the MicroMasters will benefit their future career advancement:

- "I am on the eve of changing my work and I think the programme/s will guide me doing the change in a better way."

# Updated Kirkpatrick Model - Level 4. Results including the ultimate impact of training and whether the MicroMasters programmes achieved successful internationalisation at home

All lecturers stated they communicated frequently with the students via the communications program (Microsoft team) and LMS, and also via email. Moreover, all of them emphasized that students had improved their cultural understanding by the end of the course. According to the lecturers the students obtained a range of other skills such as: taking responsibility for team management, building international networks, learning from each other, leadership and data mining. It is noted that all achievements are further developed in the intercultural communication process. From the perspective of the lecturers, the biggest problem faced by the students was the ability to work under time pressure and their communication skills.

In order to assess the students' perception of the international experience the following question was asked during the semi-structured interview:

3. Do you find that the MicroMasters has provided you with an international experience? If so in which way?

All 17 students agreed that the programme provided them with an international experience and even emphasized that this was one of the MicroMasters' strongest aspects:

Student from Turkey:

-"That is the best part of this course. I met very interesting people, with different understandings, cultures and habits."

Student from Lithuania:

- "It provided me with the insightful knowledge of working in the international team, when having the different international experience we all have different expertise to share with one another." Student from Slovenia:

<u>-</u>"I adore the fact that the programme is international and that we are part of mixed teams. I think this works perfectly. We have different ideas, backgrounds, and meeting new people is always good. Same goes for lecturers from different countries."

Students from North Macedonia

-"It makes you feel that you belong to an international community!"

Finally, students were asked to evaluate the advantages and disadvantages of online education.

4. In your opinion, what are the benefits and downsides of virtual/online education in comparison to face to face traditional education?

The students emphasized the benefits of virtual/online education. Some did not find any downsides of online education:

- "The Online approach allows building an international experience (international professors and team members) in an easy way. I don't see any downsides in comparison to face-to-face education."

The majority of students recognised the benefits of online education but also acknowledged the value of traditional face to face interaction:

-"Online education is cheaper and time-saving, but we lack human contact. Non-verbal communication is a very important segment of any communication and cooperation."

For one student the downsides were more prevalent, but was still appreciative of the opportunity in the context of the coronavirus pandemic:

-"I prefer to be in face-to-face contact with people rather than online. There were times when I had difficulty expressing myself online. Despite all this, we are struggling with the pandemic worldwide. I am very happy to receive online training in this time frame."

#### CONCLUSION

Advancements in ITCs have brought about numerous new possibilities to offer a more equitable international higher education. Viewing IaH as one such possibility, this paper has examined its utility and effectiveness as well as its capacity to reduce the "mobility gap" in Europe. Taking the case study of the Erasmus+ project consisting of two 6 month MicroMasters programmes, it examined the utility of IaH in countries outside the core of Europe. The analysis, which utilised the Updated Kirkpatrick Model, demonstrated that the two MicroMasters have effectively addressed all four levels, including the internationalisation aspect. Thus it can be deemed to be an example of a useful and a successful international educational platform, which offers a possible pathway towards reducing the mobility gap between the European core and its (semi) peripheries in ways which also improve the quality of education in these geographies. The importance of this inquiry is all the more pronounced by the coronavirus pandemic, which has both reduced mobility and has intensified the reliance on online education in delivering international higher education. When planning for the future IoH has to be considered also in the context of two limitations. Firstly, the majority of students prefer a combination of online and face-to-face education. Secondly, online education is not equally accessible, as it depends on differential access to digital resources and varying digital literacy across countries. These factors act as intervening structural hurdles which restrict the potential of IaH. Therefore, whilst it can be concluded that IaH can contribute towards reducing the "mobility gap" in Europe by providing effective international education, its differential and comparative impact and utility across national contexts is yet to be investigated.

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# IGNITIONS ON EDUCATIONAL EXPERIENCES DURING THE PANDEMIC

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#### INTRODUCTION

The Covid-19 pandemic state was declared by the World Health Organization in March 2020.<sup>1</sup> This decision was followed by a series of changes and restrictions imposed by governments around the world. One of them was to change to a remote mode of teaching across a wide range of courses. Such a shift, which some have called "emergency remote teaching",<sup>2</sup> <sup>3</sup> took educators by surprise and ignited the necessity of rethinking and adapting their contents, materials, methods, and pedagogical approaches on the fly, as the semester was already under way.

Such a scenario was not different for the educators of the Faculty of Fine Arts of the University of Porto (FBAUP), in Portugal. On March 12, they received the official communication that schools and universities must close,<sup>4</sup> and had just a few days to prepare before starting teaching remotely. Although a few teachers cope better with the constraints of the situation, since they had already adopted educational applications – or at least had some experience using them; others received the news with shock – especially those whose classes demanded the use of specific materials, equipment, or spaces.

This paper presents a study aimed at understanding how the teachers of FBAUP responded to the challenges provoked by the first wave of the Covid-19 pandemic. It first introduces the applied research methodology; then, it synthesizes six categories of the promoted educational practices; and, finally, it discusses some general postures embraced by the teachers as a consequence of remote teaching and what were their perceived impacts on students' performance.

#### METHODOLOGY

At the end of the semester, by June 2020, a task force composed of a supervising teacher, two researchers and a technician in communication design was formed. Its goal was to understand how the FBAUP teachers dealt with the transition from presential to remote classes, and what were the teaching and learning experiences implemented by them. A study was then planned and divided in two phases: i) analysis and collection of data, and ii) conversation with teachers.

#### First phase: analysis and collection of data

#### Analysis of questionnaires

Two weeks after remote classes started, the Director of the Faculty shared a questionnaire with teachers and students of all cycles of study aiming at understanding, among other issues, students'

access to technology and how the teaching/learning experience were running so far. This initiative was a helpful starting point and allowed us to skim through the students' responses seeking for the classes that were adapted in an efficient way amidst the circumstances provoked by the lockdown.

#### Contact with faculty members

In parallel to the above-mentioned task, we spoke to four technicians who were responsible for art and design offices to understand in which manner their experience with teachers, students, and the office itself changed with the remote classes. In addition to that, we sent emails to i) the members of the monitoring committee (which are usually composed by two teachers and two students) of first degree and master's degree courses, asking them to share examples of positive/creative experiences promoted by the teachers during the classes; and ii) to the teachers themselves, asking them to share their experiences and students' responses regarding the remote classes.

#### Collected data

After the analysis of the questionnaires, we created a list with all mentioned classes (n=48). The higher number of mentions for a class was 15 (n=1), followed by 11 (n=1), 9 (n=3), 8 (n=2), 7 (n=2), 6 (n=5) and 5 or less (n=34). Regarding the contacts with Faculty members, the emails (n=14) sent to the course monitoring committees resulted in 6 answers (n of teachers=5, and n of students=1), where 3 (n of teachers=2, and n of students=1) indicated promoted practices. We also received responses from teachers (n=10) sharing their promoted experiences and practices.

As a result of the first phase of the study (see Table 1), we selected 20 teachers who represented 7 courses and 3 cycles of study and invited them via email to participate in the second phase. All of them responded and accepted our invitation. Two teachers, however, were not available during the scheduled dates, so they received the general questions by email and returned their impressions via a pre-recorded video.

Teachers					
n=20	Male	n=11	55%		
	Female	n=9	45%		
Classes					
n=26	Classes per course				
	Bachelor's in Fine Arts	n=9	34,6%		
	Bachelor's in Communication Design	n=9	34,6%		
	Bachelor's in communication sciences	n=2	7,7%		
	Master's in Art and Design for the Public Space	n=2	7,7%		
	Master's in Fine Arts	n=2	7,7%		
	Master's in Image Design	n=1	3,85%		
	PhD in Fine Arts	n=1	3,85%		

Table 1. Overview of teachers and representation of classes per course.

#### Second phase: conversation with teachers

#### Online interviews

From July 15 to 24, we scheduled and ran online interviews with the teachers aiming to gather deeper insights on their impressions, experiences, and responses to the shift for remote classes. For this task, we used the Zoom video conferencing platform. Averaging 45 minutes long, the interviews were conducted with the participation of two researchers. Since we sought to gather participants' insights to

learn more about a specific experience, the interviews were planned under a semi-structured format, <sup>5</sup> and guided around three main questions: the challenges faced by teachers, how did they respond to them, and what were the results of the experience.

Each interview started with the researchers contextualizing the study and generally presenting the three mentioned questions. After that, the teacher was encouraged to share his/her stories, feelings, experiences, learnings, and, as they touch on significant statements, the researchers could follow up with more specific questions.

#### Collected data

In the beginning of each interview, the researchers asked teachers permission to record the conversation. This was made by using the 'local recording' functionality provided by Zoom, and we ended with nearly 14 hours of recorded conversation. In addition to the videos, both researchers took notes during the interviews marking relevant topics to facilitate the process of data analysis. After the interviews, we kept in contact with teachers to get extra material, such as examples of students' projects, list of exercises, tutorials, and website/blog addresses, hence we could better understand the promoted practices and its results.

#### SYNTHESIS OF EDUCATIONAL PRACTICES

The analysis of the collected data and insights from the interviews were based on systemic,<sup>6</sup> and semiotic theories,<sup>7 8</sup> and aimed at revealing possible tendencies, recurrences, problems, and constraints that intersected the different teachers, courses, and cycles of study. We then structured and analysed all the gathered material and synthesized teachers' responses into six categories of educational practices that might provide a general overview of how they responded to the circumstances of remote teaching. These are: generate networks, rethink materials and tools, reuse archives and materials, produce documents, create environments, and provoke dialogs.

#### **Generate networks**

In a context without the presential interactions with others; a context where the collective dimension of learning seems to vanish, since the students were working from home, commonly isolated, and facing conditions most teachers were not aware of; how could teachers promote reflection and ways of creating and sharing?

*Generate networks*, refers to the creative practices developed from remote collaborative work. Teachers restructured the exercises, practices, and peers' encounters in a way to encourage creative responses based on students' own practices that were then developed or continued with/by their colleagues. It was also applied to promote creative dialogs from the exchange of textual, sound, or visual contents produced by each student. These were implemented, for example, by creating text instructions to be used in drawing or sculpture exercises; or by producing a series of photographs based on a previously given image. They also encouraged the use of digital platforms to promote interaction and collaboration among peers.

#### **Rethink materials and tools**

With the school closed, students were unable to use the studios, laboratories, machinery, materials, and tools they needed to develop their projects. How could they, then, work with limited use of equipment and without seeing the proper demonstration of engraving, carving or print techniques, to name a few?

*Rethink materials and tools* is related to creative practices coming from the exploration of equipment, supports and alternative work tools. Teachers found an opportunity to explore what they have not explored in the past, to rethink essential processes and tools related to their art and design practices, and to discover what students could do with so little. They promoted both research and creative practices to investigate the usage, design, and adaptation of daily utensils to the discovery of alternative spaces, tools, and materials.

#### **Reuse archives and materials**

Students were also unable to borrow equipment from school, and, in addition to that, they faced rigid restrictions regarding the use of public spaces. Even if they owned specialized audiovisual equipment (which was not the case for most), they were limited by what they could find at home or what they could see through their windows, or at their balconies. How could they produce original content and develop audiovisual projects in such a context?

*Reuse archives and materials* refers to creative practices developed from the resignification of preexisting contents. Students were provoked to experiment with alternative instruments or ways of producing content as well as to explore personal or public archives of imagens, videos, and sounds, and to experiment with the audiovisual language to give these contents a novel plasticity, significance, narrative.

#### **Produce documents**

The impossibility of using the school's infrastructure impacted not only the access to its resources, but also how teachers presented contents and demonstrated processes. Since they were also unable to access the classes, reproducing their way of teaching remotely would just not work. So, how could they manage the use of digital tools to provide extra materials and facilitate both project development and autonomous study?

*Produce documents* is related to the practices of producing materials to support asynchronous activities. This was implemented from both teachers' and student's perspectives. On one hand, teachers produced their own documents, whether working alongside technicians to create video tutorials and manuals; or providing virtual tours from their art studios or offices to demonstrate techniques and tools that students could use or explore at home. On the other hand, some teachers asked students to register their own practice and research. This was made with the usage of diaries, notebooks, photographs, videos, or blogs.

#### **Create environments**

The presentation of students' projects and discussions of the iterative stages of its creative process started occurring in a remote mode. In such a context, technical factors such as the age of an equipment, the quality of the camera and the internet connection started playing an important role for the quality of such presentations. Since teachers cannot control those aspects, what types of environments could be used to minimize such impacts and favor content sharing through digital platforms?

*Create environments* refers to practices of creating spaces for sharing references, archives, and ideas. Teachers and students worked on their digital competence and explored digital platforms to allow them to collaborate, express ideas, and present work in both synchronous and asynchronous ways. Teachers also helped students in managing their home environments to adapt provisional workspaces and develop autonomous habits of study.

#### **Provoke dialogs**

Despite losing the physical presence and the non-verbal communication signs it provides, the interaction through digital platforms has the potential to gather people located from different physical spaces. How could teachers take advantage of these platforms for the promotion of remote encounters?

*Provoke dialogs* refers to the practices of promoting spaces for the connection of researchers and students. Teachers used this as an opportunity to encourage the exchange of ideas between students from different classes and even distinct cycles of study by promoting informal presentation sections. They also prepared open seminars with the participation of invited international scholars, making possible an initiative that would demand higher efforts and resources if done in a different context.

#### DISCUSSION

Educational practices represent general actions resulting from the stances adopted by the teachers as a response to the constraints imposed by the lockdown. Although these emerged from the way each teacher managed the dynamics of their own class, they revealed to be transversal across the diversity of teachers and classes. One of the reasons for that is because teachers had to adapt their way of teaching and, in most cases, to revalue what they usually expected from students. Below we briefly discuss some of those adjustments and highlight teachers' perceptions on how they reflected on students' behaviors. It is worth mentioning that we do not mean that these postures are exclusive of remote teaching or were not put into practice before, rather they happened to be recurrent on teachers' discourses hence seemed to gain some light in times of covid.

#### Openness to experience and reinforcement of research

The lockdown period intensified the development of openness to experience and exploration of design and artistic practices as research activities. Students were instigated to reflect on the global scenario of social isolation and stimulated to develop their projects as a way of thinking about their own experiences of confinement, thinking about how everyday conditions – even the most radical and painful – could be introduced into their practices. This does not mean their projects had to represent, illustrate, or respond to the changing scenario provoked by the pandemic, rather they might be informed about what was happening in the World and develop their critical thinking by means of investigation. The perceived results were consistent to prior research, which relates the trait of openness as a predictor of creative achievement across the arts and sciences,<sup>9</sup> and to the ability and interest in attending and processing complex stimuli.<sup>10</sup> The alignment of the project proposals to the context of social isolation increased students' engagement, allowed them to perceive some aspects that would probably go unnoticed in other situations, and helped them to cope with the lockdown situation. In addition to that, Covid presented an opportunity to explore how artistic and design tools can be applied for the comprehension of the structural and systemic changes of reality.

#### Return to basics and historical references

The reinforcement of students' research skills was essential not only for the understanding of the global context they were experiencing, but also for coping with the initial shock provoked by the lockdown and developing their projects with the scarce resources they had at hand. This was particularly relevant for the practices of rethinking materials and tools and reusing archives and materials. The students were introduced to historical references where artists and designers came up with novel solutions, methods and tools when facing conditions of isolation and scarcity of resources.<sup>11</sup> <sup>12</sup> Then they were encouraged to research and explore new approaches for art and design

based on their own experience of confinement. Such investigative approaches gave students the freedom to explore novel technologies, symbolic approaches, and alternative dimensions of work. Some improvised solutions which were commonly seen as weaknesses in pre-covid times, turned out to be seen as valuable features in a post-covid era.

#### Autonomy, motivation and self reflection

Carrying out research activities also reflected on students' autonomy, and impacted positively on the production of documents and rethinking of materials and tools. Often related to distance learning systems, since its materials have to anticipate potential learning needs and supply for students working in isolation,<sup>13</sup> autonomy is an attribute of the learner's approach to the learning process.<sup>14</sup> Without having the opportunity to see the demonstration of techniques and usage of machinery and tools in person, students had to find ways to reflect on and develop their projects autonomously. This was an opportunity to encourage metacognitive skills and tutor students who will be potentially less dependent on teachers and school's infrastructure. Collaboration also played an important role in that regard, whereas students discussed their ideas openly during classes and could build up autonomy and self reflection in interaction and dialogue with others. They responded well to the circumstances and teachers were generally impressed by their effort, imagination and motivation. One may have in mind, however, that according to Niemi e Kousa, when referring to students' motivation, teachers talked about outer motivation and students' outcomes. Students, on the other hand, meant inner motivation, and even those who thought remote teaching was implemented successfully had problems with learning management and motivation.<sup>15</sup>

#### Emphasis on the process

The number of constraints attached to remote teaching forced teachers to rethink their activities and promote instructional practices as the conditions permitted. They had to reflect in action,<sup>16</sup> in a process where meaning emerges from practical operations, and in which doing and thinking are complementary. Likewise, students worked through the frame of experimentation which led to the emphasis on the process over the final result. Teachers shared fundamental theoretical aspects in classes and progressed to a practical action focused on the art and design problems of students' projects. Students were encouraged to document and systematize their process, helping them not only to gain verifiable insights but also potentially contributing to forming students more conscious about the creative process in general and their own thought processes in particular. These documentation were then considered by teachers to follow and guide the projects. Due to the chaotic aspect of the design process,<sup>17</sup> teachers reported they were required to help students manage the negative feelings expected from the creative experience.

#### Synchronous and asynchronous dynamics of teaching

Although 93% of students, in Portugal, have a connection to the internet and access to a computer they can use for education,<sup>18</sup> teachers expected that not everyone would have the conditions to be able to join and interact in the online classes - including teachers themselves. In addition to that, studies reported that video chats have a much higher cognitive load, since users need to work harder to send and receive signals.<sup>19</sup> As a consequence, the time period of classes was usually reduced and asynchronous dynamics of teaching were implemented. The computer-mediated communication became prevalent, and teachers' started exploring and adopting multiple solutions: live classes, pre-recorded videos, blogs, virtual forums, emails, instant message applications, mobile calls. Such an approach evidenced the challenges teachers have with Information Technologies.<sup>20</sup> In that regard, the

Educational Technology Center of the University of Porto provided assistance and promoted a series of webinars on educational platforms for helping teachers to create, publish, and evaluate content. The creation of online spaces facilitated the generation of networks that, as suggested by Hine, formed communities of cohesive social entities that were shaped by each class' circumstances.<sup>21</sup> By being more available for students, teachers reached the end of the semester with higher levels of tiredness, confirming studies which report that distance teaching requires greater work and effort compared to face to face.<sup>22</sup>

#### CONCLUSION

All in all, if this period was marked by moments of uncertainty, difficulties, and constraints, it also ignited collaboration and empathy in a context where learning progressed in the course of an experience of education that valued the process over the final result. An essentially exploratory process that was promoted through autonomous research, in which students were active agents of their own learning. It was also a period where digital technologies and educational platforms were paramount for teaching, communication, collaboration, and exchange of resources. The experience of emergency remote teaching led to the development of digital literacy, educational methodologies, management of time, and metacognitive skills. It presented an opportunity for the FBAUP community to explore and discover new ways of teaching and resulted in creative and transformative postures that will hopefully contribute to the conversations regarding this "new present" of education and what the post-pandemic university could – or should – be.

#### NOTES

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## ONLINE EDUCATION SHIFT: EFFICACY AND ACCEPTANCE OF ONLINE EDUCATION SETTINGS.

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#### INTRODUCTION

The work will summarize the following topics; Discussion of data from universities on how they addressed learning modalities and student interaction on campus in the Fall of 2020 as a result of Covid 19 restrictions imposed by states and the Center for Disease Control recommendations. Summary of what pros/cons and student and faculty polls suggest were outcomes and impacts of these covid 19 restrictions. The authors institutional accommodations for covid-19 is summarized followed by university data based on polling of faculty regarding their instruction modalities, and the authors observations from peer interaction discussions and personal observations of classroom outcomes and accommodations to increase access and effectiveness in hybrid class instruction.

#### UNIVERSITIES AND FACULTY/STUDENT ISSUES IN RESPONSE TO COVID-19

Universities like other frontline providers of services to large numbers of individuals were forced to make rapid decisions on how to adapt their normal practices to new restrictions on large groups and measures to check infection risk and not over burden the limited health care support that hospitals could provide. Universities were faced with concerns about how these measures would provide safety for the faculty, students and staff, the impacts on risk management, limited funds and impact on enrollment. McKinsey and Company offered suggestions on how universities could mobilize and manage this process They focused on how a top down central task force group can be involved with those involved in day to day decisions and interactions through a 'nerve center' representative who would report back and to smaller department level organizational units., see figure 1.



Figure 1. McKinsey and Company Report, 3/30/2020

Data on how universities in the USA adjusted to covid 19 conditions for instruction was reported in the Chronical of Higher Education reported how institutions of higher education adopted different approaches for the fall semester 2020 in response to the coronavirus pandemic. Approximately 34% of colleges and universities implemented primarily online instruction, one fourth (23%) provided predominantly in-person instruction, 21% used a hybrid model, only 10% were fully online and 15% cited other(5%), fully in person (3%), and undetermined (7%). <sup>1</sup>



Figure 2. Chronical of Higher Education Journal. 10/1/2020

The survey indicated that those were solely online in Fall 2020 said they received a slightly poorer quality of education than those who had in-person instruction. Poll data indicated about threequarters of students overall rated the quality of their education "excellent" or "very good" in the term. Online only respondents while largely positive dropped off to 71 % compared to 85% for completely in person for the Excellent level rating of instruction. Dissatisfaction was highest among students whom the pandemic "forced online" when under normal circumstances they would take all in-person classes, according to the report, which polled about 6,000 current students -- nearly 4,000 of them seeking bachelor's degrees and about 2,000 pursuing associate degrees -- during late September and early October. Nearly 22 percent of student respondents were taking classes "completely" or "mostly" in person when they were surveyed, while about 60 percent attended classes "completely" or "mostly" online, according to poll results.<sup>2</sup>



State of the Student Experience Fall 2020 report/Gallup and the Lumina Foundation

Figure 3. Lumia survey Delivery mode results

The organization, Educause, dedicated to using technology in higher education reported in a Fall term 2020 survey of 8,392 undergraduate students from 54 institutions across the US. The survey authors asked student respondents to identify the most and least effective uses of technology in their best course, as the class in which they indicated they learned the most. The respondents' best experiences' were generally related to the use of the learning management platform, use of videoconferencing applications, the access to recorded lectures and availability and access to specialized software. On negative side, responses from students' worst technology experiences' fell into three categories: explicit technology issues; instructors' who failed in attempts to use technology; also for poor course management and pedagogical choices. The authors advocate for the following practices: A. Invest in hybrid. " Students are going to expect a variety of options in their learning experiences, and institutions should "invest in the design, development and implantation of hybrid course models and the people who support them. B. Connect faculty with instructional designers/ technologists. Faculty development programs should focus on "technology-intensive teaching experiences" that "serve all faculty regardless of their levels of experience and skill." C. Put students at the center of teaching. Students' worst experiences with technology during fall 2020 were "inevitably linked to policies, practices, and approaches to teaching and learning with technology that were designed without the student experience in mind, the best experiences were infused with empathy, care and flexibility."

A summary of problems other than mishaps; WiFi outages and device failures, from the report is below the 15 instructor practices cited by students as their worst learning experiences with technology:<sup>3</sup>

1. The use of unofficial platforms and too many external applications or sites;

2. A lack of instruction, guidance and/or support for activities such as breakout rooms, discussion boards and collaborative assignments;

3. Unsatisfactory administration, proctoring and collection of exams and other assessments;

4. Not anticipating technology limitations when teaching certain subjects, accommodating disabilities or meeting the learning needs of all students;

5. Use of long lectures with massive slide decks;

6. Lack of instructor engagement, communication with students and feedback on assigned work;

7. Lack of technological support and refusal to accept tech issues as excuses for late work or absences;

- 8. Assignments with little scaffolding or connections to learning outcomes;
- 9. Underdeveloped class plans and agendas;
- 10. Attempts to replicate face-to-face experiences in online learning environments;
- 11. Instituting camera-on policies;
- 12. Imposing strict deadlines with severe penalties for late work;
- 13. Failing to maintain the pages within the learning management system for an online course;
- 14. Refusing to accommodate and/or belittling students with disabilities; and Lack of clarity in the processes and procedures for completing and submitting assignments

In January 2021 *Hanover Research*, a private research consulting firm released a benchmark analysis survey of distance learning approaches among nine business schools located in North America, the United Kingdom, and Europe. The seven questions used in the survey are shown in Figure 4. Their summary of results are as follows:

1. Expanding blended learning may provide an opportunity to pilot different pedagogies and course offerings to determine if it is feasible/desirable to scale offerings to on-campus students and/or expand offerings to develop stand-alone degree programs or expand executive education offerings.

2. Consider surveying current student and faculty to better understand the successes and challenges they have faced with remote learning during COVID and to gage student and faculty preferences about remote learning in a post-Covid environment.

remote learning in a post-COVID environment.

3. All reviewed peer institutions provide their faculty with easily accessible resources (e.g., online guides on distance education, webinars) and services (e.g., consultation with educational design expert, workshops) that facilitate the creation and design of distance education courses.<sup>4</sup>



#### RESEARCH QUESTIONS

Figure 4. Hanover Graphic of key survey questions.

The Canadian Digital Learning Research Association, conducted their 2019 National Online and Digital Learning Survey which had an 70% response rate, with 164 of 234 public Canadian post-secondary institutions responding. The survey highlighted the importance of learning management systems and video capture technologies<sup>.5</sup> The survey results are shown in Figure 5



TECHNOLOGIES USED IN ONLINE COURSES

Figure 5. Canadian Digital Learning Research Association, conducted, 2019 National Online and Digital Learning Survey .

#### Online/ Education vrs. Onground an Overview

A recent qualitative analysis study regarding the effective practices In Online education (Sun & Chen 2016) summarized the following key areas for effective online educational experiences.<sup>6</sup>

1) well-designed course content, motivated interaction between the instructor and learners, wellprepared and fully-supported instructors;

2) creation of a sense of an online learning community; and

3) rapid advancement of technology.

On face value it could be perceived that these issues differ little with characteristics of an on-ground course. If these are unique to online education a question would be how would course evaluations and course assessment practices identify if these outcomes (1,2) were part of a class?

To revisit briefly the impetus for online education the primary reasons for distance education as developed by Moore and Kearsley were as follows:<sup>7</sup>

•increase access to learning and training as a matter of equity

• provide opportunities for updating skills of the workforce

• improve the cost effectiveness of educational resources
- improve the quality of existing educational structures enhance the capacity of the educational system
- balance inequalities between age groups
- deliver educational campaigns to specific target audiences
- provide emergency training for key target areas
- expand the capacity for education in new subject areas
- offer combination of education with work and family life
- add an international dimension to the educational experience

The authors institutional affiliation founded during the post 1930 Progressive era in the US identified with the equity issue and serves students also addressing a number of these aspects of education for non-traditional students. The Post covid-19 environment might now create a new reason for online courses as related to mitigation of disease transmission due to pandemics. For one of the faculty consequences, while online conference attendance is not always encouraged as it may not leave time for personal interaction and relationship building, it has been a means to reduce travel costs and time for travel, and the need to find substitute instructors.

#### Summary of Institutional Policies and Protocols at the Author's Institution

To provide a institutional framework as a background in this work the author the will provide the following summary of the institutions process of shifting instruction modalities for covid- 19. The author is a faculty member in a small private technological university in the midwestern/east central region of the United States. This region of the USA was impacted significantly by the economic downturn in 2008-2009. Like many small private universities overcoming enrollment declines and unemployment that impacted the affordability of private education to the middle-class segments of the student pool, in particular for declining rustbelt regions of the country. While the local four-year college enrollment declined, area community college enrollment increased 25% in this period. The university was largely a commuter school through the year 2000. In recent years it has expanded to develop more on-campus housing, developing an athletic program, expanded graduate degrees, and established new health science degrees. The university worked to overcome enrollment declines by establishing foreign university partnerships for student exchange programs and stepped up articulation agreements for transfer students and regional US, community colleges and in Canada as well as building the endowment fund. Financial stress was evident but the university operated without losses I am told. The most recent 2020-21 conditions however hurt already reduced enrollment from a high in 2005 at 3,600 students approx. now at approx. 2,700 students in 2021 and forced budget cuts and layoffs as well but to a higher level than 2009-2010. The university founded in the 1930's during The Great Depression was affiliated with the major auto industries for the training of young engineers and was focused on providing access to students who could not afford resident colleges or were returning students with families and full-time employment. Evening classes were prevalent and the shift of online learning has been in development for close to 12 years. About three years ago the college administration decided the M.Arch degree was to be shifted to totally online. Online education is perhaps seen today as an extension of the focus of providing access to college for those who could not attend traditional universities The University decided, not unlike most, to stop on-campus instruction in March 2020 and extend spring break by a week to allow faculty to shift to all online instruction while they also provided tutorial instructions to faculty on running online classes. The university's Faculty Senate then adopted a task force to solicit views and opinions from the faculty on how to proceed in adopting policies for instruction and covid 19 accommodations. The focus was generally of discussions centered on comparative notes with other institutions on how they would

transition, discussion on which class types carried the most risk for transmission, i.e. large lecture classes, how would Social Distancing be possible w/out taxing available classroom space, and what types of classes would adapt well or with difficulty to online instructional modalities, e.g., physics of chemistry labs. The university and college administration periodically provided information on issues and considerations regarding the shift for the Spring 2020 term. The administration adopted policies on how students, faculty and staff could be considered for covid -19 at risk special accommodations, and issued covid-19 campus- prescreening steps undertaken before coming to campus, and described the pandemic response for the term would largely fluctuate and may be subject to revision through-out the term. The Universities E.Learning unit for online education support offered tutorials and instructional support constantly in the term and over the summer. All of this coincided with the University Higher Learning Commission Accreditation as well creating additional work. Summer classes 2020 were taught online and the University Commencement was virtual, faculty were encouraged to post a brief farewell wish to students in a ten-minute Zoom video, with academic regalia optional, the university collected these and posted links to them. Tenure-track faculty scheduled for review were given a one-year deferment due to covid-19 conditions, consistent with what other academic organizations, e.g., The American Collegiate Schools of Architecture (ACSA) endorsed.

The Faculty Senate discussions in part surrounded a debate regarding who has the right to decide what covid- 19 provisions would be implemented for instruction. Some favoring faculty should make the decision others stating no this is a decision the administration - as university officers- should take responsibility for. In the end the College Dean in the authors academic unit issued a requirement that the faculty report all instruction modalities to be adopted for Fall 2020 course they taught be stated in a outline or hybrid format, the Dean and the Provost would review them for approval. Like many universities the University and College administration were not in favor generally of all online class format as this discouraged students from returning to campus and may dissuade students from enrolling and living in on-campus housing and potentially taking a term off, causing more potential difficult financial consequences for an enrollment driven university. Large lecture classes were generally held online except for exams due to concerns for academic honesty. This reduced demand for large lecture halls which were few in number and now could support 30-50 students rather than 100-200 with social distancing. Seminars and Studio courses were largely hybrid and some activities went online. All faculty had to prepare for students who would be on-ground and those who would be given clearance by the Dean of Students to be off-campus due to covid 19 exposure. The state did not classify university faculty as 'essential workers' and limited this classification to K-12 teachers, yet many states did include university faculty. Municipal and county areas had varying covid 19 measures, the university adopted the local counties requirement that anyone visiting campus must use the 6 question covid 19 symptom online screener before reporting to campus. The covid 19 at risk classification requirements for students was not stringent and some it appeared were students who preferred to be off campus to avoid commuting due to work schedules, would have preferred an online class in general. Faculty were required to submit covid -at risk clearance only by completing multiple forms and proving evidence from a physician they were at risk. The author was granted a covid-19 at risk accommodation. All university meetings were online as were university/college wide lectures. One academic unit mandated the faculty to be in their offices as usual. Most academic units did not, and colleges rotated staffing their main offices. Athletics were on hold for games in the Fall 2020 but resumed in Spring 2021 for some teams. Requirements for physical models architecture classes were dropped as the college shop space as well as printer services were closed for a time and

had limited opportunity for social distancing. The university for the Fall 2020 term allowed students to take all classes Pass/Fail. Faculty views on this were mixed.

#### **Online Instruction Experiences and Faculty Survey Data**

The author's Institution, a Private Technological University in the East Central region of the US, recorded survey data on the transition to Remote and Online Learning. The faculty perspective, both fulltime and part-time, on the transition to online and support from the university administration and online earning unit and computer help staff was largely positive with regard to instructional issues in making the adjustment based on the primary survey questions. The response rate was 28%. A summary of the results follows below. <sup>8</sup>

**Do you Have Prior Experience Teaching Online**: With 61.3% indicated they had not taught online before 30% indicated they had at the institution and 8.7% indicated they had at another institution.

When I Learned the University was Moving to Remote/Online Delivery I was... With 52.5% of respondents indicating they were confident they could be prepared, 32.5% expressed concern, a varying rage of perspectives varied from approx. 4% and lower values.



Figure 6. Charts from "Shift to Remote Learning, Lawrence Technological Universities, by the e.learning unit, Online Learning Faculty Survey, Summer 2020.

#### Now were 4 weeks into teaching remotely, I feel...

Respondents said 46.3% my course is going pretty much as I intended w/out disruption to my instruction. With 27.5% stating that "There have been some modifications but overall the course is proceeding as planned, and 8.8% stating they had to make changes to preserve the integrity of my course.

#### In general, it seemed to me that my students ...

Were fine with the move online and continued to work as expected 51.3%. Struggled a bit at the beginning, but caught on quickly and are doing well 26.9% The balanced were 3% or less for six varying responses.



Figure 7. Charts from "Shift to Remote Learning, Lawrence Technological Universities, by the e.learning unit, Online Learning Faculty Survey, Summer 2020.

#### Communication from the University regarding Transition to Remote/Online Learning

Respondents indicated 65% they strongly agree and 26% would agree.

The remaining two questions concerned the help and assistance provide by the e.learning unit and the computer helpdesk. 54% strongly agreed their support needs were met, and ave. Of 18% agreed, with ave. 23% indicating they did not require assistance.

The Institution where the author is affiliated also reviewed course and faculty evaluation data results for the College of Architecture, Art and Design and compared student responses from prior years.

Regarding the tools used for online learning the faculty response was 71.3% indicating they used the university issued laptop, 95% indicated they used ZOOM for lecture capture, and 92.5% indicated the used the universities CANVAS® course management software platform for the course, and 43.8% indicated they used the Google Drive as well.

The university at present does not appear to be completing more surveys from faculty or students on online learning going forward.



Figure 8. Charts from "Shift to Remote Learning, Lawrence Technological Universities, by the e.learning unit, Online Learning Faculty Survey, Summer 2020.

The Department of Institutional Resources at the author's university, collects and prepares data on university course evaluations prepared a summary of College course evaluations at the authors institutions from 2013 to Fall 2020. The data is based on a five-point ranking scale (5) highest – (1) lowest and does not indicate a strong variation from the most recent pre-covid term, in terms of course and faculty ratings, the author showed fall 2020 term classes as this was the transition year. The results surprisingly the course evaluations noted small improvement by comparison to Fall 2019. One noted shift was the decline in the response rate -26.1%, the lowest value for a regular term since Fall 2013, related perhaps to students being disconnected from the college experience, see Figure 9.<sup>9</sup>

			Co	<b>Course Questions</b>				Instructor Question Ratings							
Term	Res	ponse Rate	Score (Q1)	(Q2)	(Q3)	(Q4)	(Q5)	(Q6)	(QI1)	(QI2)	(QI3)	(QI4)	(QI5)	(QI6)	Ave
Fall 201	.9	48.3%	4.25	4.29	4.37	4.19	4.20	4.25	4.55	4.24	4.35	4.26	4.43	4.43	4.38
Fall 202	20	38.3%	4.32	4.35	4.40	4.20	4.30	4.34	4.58	4.35	4.41	4.31	4.50	4.30	4.30
% Variat	tion	-26.1	+1.6	5 +1.4	+1.86	0.2	+2.39	+2.1	+.66	+2.6	+1.37	+1.1	+1.6	+3.0	+1.85

#### Annual Course Evaluation Student Survey variation from Fall 19 to Fall 20 @ Author's Institution.9

Figure 9. Faculty Course Evaluation Data from the Office Of Institutional Resources Lawrence Technological Universities, fall term 2020.

#### **Discipline based Issues for Architectural Education**

Reportedly based on surveys of faculty and administration across the US the general perception is that architecture programs were able to prepare for the shift to online, with ZOOM® based lectures and student meetings, the use of chat rooms for communication between students , however they did reduce on campus support for printing and physical models. The reporting was positive that the use of online reviews went well and the format allowed for more choice of external jury members.

As the media reported numerous students and parents did not agree with 'Zoom University" practices as an alternate to on-site instruction, reported up to 200 universities faced lawsuits with claims for tuition rebates. Students at Yale, Cornell and the University of Miami also sued their universities regarding issues with studio time allocations.

The increase in time commitment is preparations was summarized by Phil Bernstein, lecturer and associate dean at the <u>Yale School of Architecture</u>, he reported that "said that although faculty are doing their best to accommodate students, they "report having to invest significantly more time and energy to create, teach, and manage courses and student relationships online."<sup>10</sup>

#### Physical and Psychological Effects of Online Modalities

Sandford University professor Jeremy N. Bailenson reported findings on his study of the effects of prolonged exposure to Zoom video classes and conferences.<sup>11</sup> Results for the study which involved 500 participants completing a fifth teen question questionnaire based on a his 'Zoom Exhaustion & Fatigue Scale. The following factors were most likely to contribute to fatigue;

- 1. Excessive amounts of eye contact is highly intense.
- 2. Seeing yourself on chats in real time is fatiguing.
- 3. Video chats reduce our usual mobility
- 4. Cognitive load is much higher in video chats

5. Mitigation of these effects the authors suggest can be made by taking breaks in the session and modifying the settings, occasionally muting or turning off the video ( this however faculty generally contested by wanting video on for most class sessions).

#### Authors Experience and Perspectives on Online/Remote Education

The author has taught studio/ lab component course for four years for 16-32 students. The class was a graduate course and similar to an undergraduate 'capstone course'. In the Spring of 2020 studio courses were held an online studio for the last eight weeks of the term, for the Undergraduate version for this studio course with 14 students. In Fall 2020 he taught a 57person lecture/lab class with 57

students and a hybrid (largely online) junior level studio class with 16 students (all in his section were on-ground) where lectures and face-to-face student meetings were on-ground and the four main project reviews were held online. All on-ground conditions required masks for everyone and social distancing measures. The faculty/student studio interaction normally involves an individual meeting with a student approx.. 10-15 mins long to review the work in progress, today that is mostly done with a laptop and on occasion some physical drawings. The covid-19 on-ground setting for this in order to ensure social distancing was in a designated 'crit review space', a room where a small group of 4-5 students could meet for teamwork, and in an individual sessions that held a large wall mounted PC monitor 5' x 9'. In this case students and faculty could see and discuss project images at a 6' distance. For students who were online, faculty would meet in coordinated ZOOM sessions. The author's Spring 2021 studio courses were the senior level 'capstone' studio on-ground in the same hybrid format just described for the junior class, but with  $1/3^{rd}$  of the class meeting online . In addition he taught the graduate level version of this class teaching the online Lab component.

### The Following Observations were Evident During Fall 2020 and Spring 2021 semesters

Large lecture classes were predominantly online for many reasons. Lack of space available, potential for infection spreading, were in the authors class 1/3 of the students opened to be fully online. The author held all course instruction online, his TA graded and exchanged homework digitally and answered questions online. The faculty in the Department of Architecture were generally not in favor of online exams and the author was concerned about maintaining academic integrity and while the university had partnered with providers of online proctoring services, his experience in a prior semester was that when incidences of possible academic dishonesty were identified -by violating exam rules- these were difficult to determine the motive, enforce, and adjudicate in honor code violation hearings. The author held online exams for the 57 person lecture/lab class where open book exams were allowed, and a strict timeframe was observed with an additional 5-10 min. of time added for students to return and print exams. The instructor created five versions of the exam so only four students had the same exam, the faculty rotated and randomized which four students would have the same exam in each of the four exams in the term. By the end of the term no evidence of swopping or copying was observed and no unusually high grades were seen, course ave. GPAs were consistent with the past courses. Students were diligent with meeting times for submission, and no late penalties or excuses were seen. What was noted was the 1/3 of the student cohort that were totally online have lower overall exam averages by 10-15pts than those on-ground, the past academic scores for perquisite. Classes was not screened for that cohort as a result they may or may not have been students with poor performance in the class perquisites.

This effort required additional time 3-4 times longer than normal on-ground classes to prepare and grade and report to students their scores. No online student was returned the graded exam as it was unmanageable in time required. Students were given the exam ans. Key, they retained their exam and the online students were sent a page by page summary of points earned for the exam. The administration though a digital online scoring answer key could be developed. The faculty member explained the possible combinations /permutations of answers for questions with 4-5 variables some requiring unit adjustments and 7-10 sequential calculations/equations was unrealistic to develop in a section of many possible alternate answers in a manageable time frame. Lab work was completed in teams of two with ZOOM session meetings, post lecture time and during and outside of class time.

Work on structures lecture class labs were of two types, one case study and two problem -based project centered applications of lecture content, student studies were comparable or better than past

terms. Overall grade distribution at the end of the term showed GPAs comparable to on-ground classes.

#### Conclusions based on Author's Instructional Experiences with Online/Hybrid Classes

1. The author was surprised and encouraged how often the digital lectures were viewed by students after recorded and posted on UTube<sup>TM</sup>. Student views were from 12%-83% of the class size for the large lecture/lab class. The university also ran into storage capacity limits for ZOOM and required faculty to remove stored lectures from the internet. Students also asked that individual lab/studio review sessions be recorded and forward back to them as well.

2. Both the author and his peers noted the extensive digital office hours expanded significantly for student meetings for lab and studio type project-based classes. While administration and faculty see this as positive generally it has significant impact on work load levels and time for service and research work. At present the university made no adjustments to the expected levels of faculty productivity and compensation equity, yet faculty and staff had a 2% loss of retirement benefits due to financial pressures during the period. In retrospect this became an expectation for 'on demand' instruction where faculty were expected to be available for extended periods. This may now be an ongoing expectation and their needs to be guidelines for what is expected for digital office hours.

3. The number of students in studio and lab classes that either fell behind and expressed difficulty in living through the pandemic describing strains both emotionally and mentally escalated significantly. The author was able o work through these with administration support from those who worked with student services and a number of late or incomplete work submissions resulted but were substantiated through documentation. Student athletes who lost their normal support base of teammates seemed to be affected, others experienced care responsibilities for sick relatives.

4. Online class preparations were not difficult for the author as he has developed digital presentations for classes. The main issue was when a class is split between online and on-ground students and some informal or spontaneous small session discussions have to be live on ZOOM and on ground at the same time, where these sessions are not as easily captured in digital formats. In a class where 1/3 of the class was online for personal review work of studio it was productive to conduct all the online class as a group which impacted their scheduling flexibility.

5. Online internet connectivity was improved at the authors home to insure no disruption in service. Students at times did not have reliable internet connections and this periodically meant schedule disruptions. Electrical service interruptions were also rare for students. Students all had scanners or used cell phone images when needed to send a hard copy image. Digital files were often sent for a review of student work for email exchanges for faculty input. While graphic annotation functions in ZOOM were helpful, more time consuming and detailed notes required use of graphic software where student images can be altered/revised.

6. Students in the lower level courses, i.e., junior year, compared to senior or graduate level had some difficulty in comparison to the upper level courses. The administration was also more concerned about the freshman and sophomore level courses being online. In addition, while the upper tier students did not appear to show diminished course outcomes the ability and performance gap to the lower end students did appear to widen somewhat in all courses.

7. The shift in K-8 school systems that occurred in Spring 2020 to all online instruction had a direct impact on stay at home parents- generally female older students. Multiple cases were reported in the term that meant deadline extensions were needed. Some states in the U.S. also had laws restricting children under age 13 being left at home without adults.

8. Economic impacts since 2009-2010 for students has been noted since 2013 when corporate firms started to re-initiate tuition support programs, based on reports from the administration corporate workers are now opting to take benefits as extra cash income and forgo continuing education tuition supplements. The wage gap in the US despite the economic recovery may well not be solved for middle-income students. Students who in 2019-2020 with of loss of wages or who were furloughed for work it was not evident how that impacted classwork, but may have impacted university enrolment.

9. Online project reviews for studio courses did assist in obtaining national or international reviewers and even local reviewers who could join sessions from home or the office. The Architecture Department paid a modest stipend for distinguished reviewers.

#### ACKNOWLEDGEMENTS

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### ARCHITECTURAL ASPECTS IN IMMERSIVE VIRTUAL ENVIRONMENTS – TEACHING ONLINE YET BEING IN PLACE

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#### INTRODUCTION

This paper discusses a course that addresses the role of Immersive Virtual Environments (IVEs) in the context of architectural design. The course objectives, designed for second to fifth-year undergraduates at the school of architecture, Ariel University, Israel, were to gain theoretical knowledge and design skills through active exploration of IVEs. By providing users a sense of social presence while physically remote, IVEs are potentially adequate to support the educational needs of design pedagogy, which highly relies upon interaction with the learner's community of practice. Since the course took place during the COVID-19 global pandemic, the IVEs became an essential component to meet these needs. The paper describes the pedagogical methods and background that comprise the course and the outcomes produced by the students.

#### **DESIGN PEDAGOGY**

Following the constructivist learning approach,<sup>1</sup> design pedagogy refers to a learner's professional community of practice as an eminent component of the learning process. The fundamental idea of community-based learning lies in how the community members sustain exchanges of professional discourse to support and encourage the learner's self-driven urge to learn.<sup>2</sup> Learning communities have become an effective instructional tool. Hod, Bielaczyc, and Ben-Zvi<sup>3</sup> outlined the constant negotiation between the individual and the group setting in a recent overview.

Since the beginning of design education, at the École des Beaux-Arts, followed by the Bauhaus school, that maintained an atelier format, the emerging interaction at the educational setting to foster learning serves the means to this end. Sessions involved students presenting their projects and expert tutors critiquing them, accompanied with vivid peer discussions and exposure to peer projects, all of which supported personal engagement.<sup>4</sup> Learning at the Bauhaus was achieved through a "learning-by-doing" approach, with significant emphasis on experimentation and discovery. Danaci<sup>5</sup> claims that this approach engendered a change in the rigid hierarchy of teacher-learner relations, transforming the teacher's role into that of a facilitator, a notion that emphasizes the community's role in the learning process.

Relying on the Beaux-Arts atelier model and the Bauhaus tradition, design education methods have largely remained unchanged. According to Schön,<sup>6</sup> this pedagogical approach is the key principle in gaining design knowledge. Accordingly, learning involves hands-on design activity and active tutor support through demonstration and discussion. Schön's work is acknowledged worldwide. However, critics claim that the focus on a narrow, teacher-centered approach that overlooks the educational advantages of a group setting.<sup>7</sup> Only in recent years has design pedagogy experienced a shift towards a community-based teaching approach, where some design tasks are carried out in groups,<sup>8</sup> indicating an important return to the atelier format. In addition, contemporary design pedagogy encourages the explorative use of various learning environments to enhance learning <sup>9</sup>, requiring that the learning design accounts for the educational characteristics of different learning environments in a discerning fashion.

Design learning can be described as occurring within two domains, as illustrated in Figure 1: the teaching approach, framed through the educational settings; the content, meaning the learning objectives, which is supported by the intent to provide students with real-life situations for practice.



Figure 1. design education schemata

#### **IMMERSIVE VIRTUAL ENVIRONMENTS**

IVEs enable users to experience a sense of presence, or being, in a situation, as conveyed in a digital display.<sup>10</sup> Accordingly, presence is defined to include the *place-illusion*, described as: "The strong illusion of being in a place in spite of the sure knowledge that you are not actually there", and *plausibility-illusion*, which refers to the psychological illusion that events happening in virtual reality are actually happening. One's experience of being in a situation with other users is defined as a "social presence."<sup>11</sup> Presence, claims Heeter <sup>12</sup>, is better supported by the system's capacity to allow interaction with and awareness of other users. This aspect of social presence is thoroughly investigated with regard to multi-user platforms,<sup>13</sup> contending that the proximity to other users has a substantially positive impact on eliciting social presence.

The unique affordances of IVEs are found advantageous for the constructivist learning approach, for allowing learners to handle tasks and interact with the community of practice.<sup>14</sup> In the context of design pedagogy, IVEs have shown educational benefits in disciplines requiring spatial understanding and complex problems.<sup>15</sup> IVEs were found supportive of enhanced design activities<sup>16</sup> and design development,<sup>17</sup> in increased complexity,<sup>18</sup> collaborative ideation between remote and co-located users,<sup>19 20</sup> increased interaction<sup>21</sup> and creativity,<sup>22</sup> and enhanced learner-centered communication,<sup>23</sup>

indicating that IVEs should be integrated into the syllabi as means to maintain the atelier model and support the learning process.

Despite the advantages mentioned above, the lack of methods to evaluate the IVEs' contribution to the learning outcomes creates difficulties in integrating IVEs as educational environments.<sup>24</sup> Few studies report the design of a pedagogical approach that accounts for IVEs' affordances. The design conversation method<sup>25</sup> served as means to support communication in educational codesign sessions held in a hybrid IVE that affords remote and co-located learners and tutors to codesign,<sup>26</sup> demonstrating the way learning design can account for the emerging relationship between the educational setting and desired learning activity.

#### NON IMMERSIVE ONLINE LEARNING ENVIRONMENTS

In this chapter, non-immersive online technologies refer to computer-generated environments that allow users to communicate and interact with each other over a digital display. Video conferencing platforms (E.g., Zoom) provide an answer to the need for human interaction. Additional platforms such as MIRO allow users to communicate ideas and comments through a shared display. Differ than IVEs, these environments do not provide a sense of presence or social presence.

Due to the restrictions caused by the COVID-19 pandemic, the use of immersive and non-immersive online technologies has vastly grown. The pandemic enforced education in many disciplines, including architectural design, to avoid the educational setting at the university and explore alternative remote settings to meet the educational needs. Studying the impact of non-immersive online settings on design learning during the COVID pandemic, it was found that the setting supported students in conducting explorative design activities; however, it led to a decline in peer participation.<sup>27</sup> 59% of the students testified that online chats do not serve as a sufficient substitute for face-to-face interaction with the tutor (Ibid). Using both immersive and non-immersive environments during the course provided the students with the opportunity to conduct comparative analyses between the settings and thus gain better a understanding of the affordances carried by each setting.

#### **COURSE DESCRIPTION AND OBJECTIVES**

The course was developed in the stream of computational design of the school's curriculum. It was set to provide the students with means to rethink the role and opportunity set by IVEs in addressing societal and spatial aspects, as argued by Chastain and Kalay.<sup>28</sup> The course was designed to point to the aforementioned aspects as support for architectural design studio courses for the 2<sup>nd</sup>-5<sup>th</sup> years of study. The instruction time was two hours per week.

Following the framework suggested by,<sup>29</sup> the course syllabus was designed so that the affordances of the learning environment can benefit to achieving desired pedagogical objectives. Seen in Figure 2 are the course intended outcomes, and the learning design, derived by the IVEs' affordances under the pedagogical framework of design. Accordingly, the IVEs and non-immersive online settings were used during the course sessions to handle the tasks and enhance communication and collaboration opportunities.

The course was designed to meet the following objectives: (a) gain theoretical knowledge; and (b) gain design skills. In order to achieve these objectives, the students were exposed to theories dealing with Virtual Reality (VR) and related design theories, actively explored and analyzed various IVEs, and designed an architectural artifact while integrating IVEs in the program. Following the atelier format, the tasks were done in groups. Hands-on sessions were held in selected IVEs and non-immersive online environments, accompanied by active exploration and discussions, serving as the means to gain knowledge about the way IVEs are used and experienced.

The vast growth in the use of IVEs and online settings during the pandemic changed many daily routines, such as working, meeting, or learning, requiring architects (and students) to rethink how architectural artifacts provide an answer to these activities. These changes served as a case study for this objective by using IVEs as an educational setting and a component in the design task.



Figure 2. Framework for design learning, after Fowler, 2015



Figure 3. Selected Analyses of immersive environments



Figure 4. The physical environment that surrounds learners during the use of a non-immersive online environment



Figure 5: Analysis of immersive and non-immersive online settings in facilitating attention and consentration

#### **COURSE OUTCOMES**

Sixty-three students participated in the course, resulting in fourteen design projects. The projects' educational values are discussed in terms of integrating IVEs in the design task and the IVEs' educational support.

#### Analyses of immersive and non-immersive online settings

Figures 3-6 depict selected analyses of online and IVEs made by the students. Analyses of IVEs mentioned aspects concerning privacy, safety, identity, navigation, endless possibilities of being in space, time perception, accessibility, unplanned encounters, advantages for sustainability. Using the IVEs was found addictive and leading to a loss of the sense of volumes, although these were visible.

Analyses of non-immersive online settings mentioned the following aspects: The ability to record a meeting was seen as an advantage. Informal communication was experienced in WhatsApp mobile application, whereas increased formality was experienced in Zoom. Special attention was given to the ability to concentrate in the discussion provided by each setting. The ability to do additional tasks in parallel to using an online setting was seen as a factor causing difficulties in concentration. Figure 4 depicts the learners' physical environments while using immersive and non-immersive online settings. The multiple equipment and other attendees that comprise the surrounding demonstrate cause for distractions and parallel activities. Comparatively, the IVEs were experienced to facilitate increased attention to the course tasks and reduced attention to parallel activities or surrounding activities (Figure 5).

Figure 6 depicts a comparative analysis of two IVEs explored by a group. The students identified navigation in IVEs as a component that supports the sense of presence. The possibility to encounter strangers was mentioned in relation to a real-world experience.

The different aspects arising from the analyses demonstrate the role IVEs play in supporting learning activity outside the educational environments provided by the academic institution, a significant factor when considering learners' difficulties.<sup>30</sup>



Figure 6. Comparative analysis of two IVEs

#### **Design projects**

The design brief given in the course required the development of an architectural artifact that integrates Virtual Reality (VR) in a public square in Tel-Aviv. As a support course, emphasis was given to preliminary design phases rather than concrete design phases. Eleven projects designed pavilions to be used as public VR stations. Three groups designed a mobile application that affects spatial arrangements at the physical site. Interestingly, several groups saw advantages in having VR or related mobile applications to report the status of the pavilions to potential users (E.g., vacant rooms or supplies) to overcome over-crowded spaces, or queues.

The following sub-sections will describe selected examples.

#### Project 1. VR Stations for working and studying

Driven by the changes in social distancing caused by the pandemic, the group designed multiple working and studying stations suited for remote and co-located collaboration (Figure 7). Designed to allow learning and working under traveling limitations, the stations were located in public boulevards, near residential areas. Different sizes of the stations supported a changing number of participants.

#### Project 2. A mobile application for outdoor sitting

The group designed a mobile application concept able to reserve sitting spaces in public pavilions and outdoors under social distancing restrictions (Figure 8). The existing public square was designed to include multiple pavilions connected by routes. Following the social distancing limitations, the application reported whether the desired space was free for reservation. Light in physical pavilions reported vacancy.

#### Project 3. A city pavilion for VR and coffee

The concept designed by the group focused on reviving city life through a pavilion that supports both real and virtual encounters. The design included a two-story pavilion with coffee spots and private VR rooms for individual use (Figure 9). The group dealt with issues concerning privacy while using the VR rooms, in contrast to offering spaces for social gatherings.



Figure 7. Working and studying VR stations



Figure 8. A mobile applications for outdoor sitting



Figure 9. A city pavilion for VR and coffee

Although the projects were on a small scale and in a conceptual design phase, they provided stimuli for integrating up-to-date issues concerning current socio-spatial needs and reflecting the way IVEs may affect the design of built environments.

#### DISCUSSION

The outcomes achieved in the course demonstrate a wide range of aspects that arise from integrating IVEs in architectural design pedagogy. The learners highlighted the IVEs' support in concentration and attention during a learning activity, indicating that IVEs' important role in the learning process. Similar conclusions were seen in studies testing learners' flow in an IVE <sup>31</sup> and learners' engagement.<sup>32</sup>

Challenges in this course included a limited instruction time, and being the only course that discussed VR in the curriculum, leading to the need to use both design tasks and analysis tasks to foster learning. To increase the focus on analytical exercises and reduce the focus on a project design, it is suggested that such a course accompanies a major design studio course. Students thus can achieve better integration of VR as a design component.

Integrating VR in the design brief was challenging for many students. First, since VR is still uncommonly used in daily routines, the students could not rely upon personal experience, as commonly done during design activity.<sup>33</sup> To overcome this difficulty, they relied on the experience gained during the IVEs explored in the course. In addition, the course presentations included up-to-date resources and regulations arising from the COVID-19 pandemic, technological developments, and their implications on daily routines. Second, the fact that some IVEs detach the users' awareness entirely from the physical setting (E.g., when using a head-set) presented difficulties in addressing the implications posed by these IVEs to the design of physical spaces. Most design artifacts addressed aspects concerning safety and privacy by designing rooms suited for individual use with vacancy reporting abilities.

#### CONCLUSION

This paper discusses a course that addresses the role of IVEs in the context of architectural design. The learning design was done under a pedagogical framework that considered the IVEs' affordances in relation to intended learning objectives,<sup>34</sup> while keeping the pedagogical approach set by the architecture domain. Based on previous results in evaluating IVEs' educational affordances,<sup>35</sup> the course used several IVEs and non-immersive online settings as the educational environment. Hands-on experience through teamwork was supported by the IVEs' capacity to provide social presence. Current societal and spatial needs provided stimuli for gaining design skills and theoretical knowledge related to IVEs and their role in architectural design and current societal issues.

The IVEs capacity to support flow and increased attention, identified by the students, point to the significant role that IVEs can play in design pedagogy that heavily relies upon situated learning approach. Since IVEs are still rarely used in our daily routines, the students experienced difficulties in integrating them as components in the design. As the role of architects is found in designing better environments,<sup>36</sup> design pedagogy has to account for the growing role of IVEs in our daily life and rethink the opportunities they provide for architectural design.

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## EDUCATION POST COVID : ONLINE BUT OFF GRID FOR INDIA'S MIGRATORY PASTORALISTS

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#### INTRODUCTION

The COVID 19 pandemic has imposed fresh new challenges for educational institutions. Across the world, these institutions are looking at ways to reorganize themselves, go online, reorganize curriculums, make classroom sessions "safe", stagger sessions. The problem is aggravated by the fact that public transport, school buses and similar modes of getting to school, themselves raise the risk of spreading the disease.

At the other end of the social spectrum, for communities such as migratory pastoralists attending regular school has always been a challenge. A primary reason being, they are often several kilometers away with their families and animals on migration with no schools nearby.

In India, since 2009, the Right of Children to Free and Compulsory Education Act  $(RTE)^1$  promises free and compulsory education to all children between the ages of 6 to 14. India is also signatory to the Sustainable Development Goals<sup>2</sup> (SDG's) which promises reduction in inequalities, decent work and quality education to all. However, education is most often considered as being delivered only through schools making it difficult for communities such as pastoral nomads to access formal education. For those children who do manage to attend school quite often a residential or boarding school it often signifies an exit from pastoralism altogether.

#### The setting

India has several nomadic and migratory communities. They are an estimated 7% of the total population and include pastoral nomads who keep livestock as well other itinerant communities<sup>3</sup>.

Amongst the several groups are the Dhangars a group of migratory shepherds who live in the western state of Maharashtra in India. The Dhangars mainly rear sheep, although they herd some goats as well. They also keep a few horses to carry their belongings, a few dogs for protecting their flocks and some chicken for eggs and meat. Their families migrate anywhere from 3 months to 9 months in a year with their families. Women and children travel with the flocks. While men herd sheep, women set up camp, fetch water, cook, clean, wash, sew, take care of young animals and chicken.

Dhangar children who migrate with their families do not attend school. Until about 15 years ago there was a high rate of illiteracy in the community which spurred the project on pastoral education by



Figure 1 . Map of India highlighting the land of the Dhangars



Figure 2. Dhangar families on migration

#### Nomadic communities and education

As has been observed by other researchers in other countries learners from nomadic pastoralist communities face peculiar difficulties in accessing and continuing with education programmes whose designs suit sedentary communities. Ingrained assumptions about the importance of sedentarism underlie educational policy. Mobility itself is seen as oppositional to the norms of education and the provision of educational service<sup>4</sup>.

The Present Formal Education system which is mainly considered as being delivered through schools has curriculums and programmes designed for nonmigratory populations. Residential schools have been considered an option but typically for children from nomadic households, there is an

exceptionally unfavourable trade-off in curtailing informal learning and enduring forced separation from their family environment in order to seek the advantages of formal education within a school-based system<sup>5</sup>

#### AN EDUCATION PROGRAMME FOR THE DHANGARS

Our interest in the education of mobile pastoral communities in India and particularly the Dhangars started over two decades ago when we initially began work on animal health with pastoral groups. At that point we found many of them could neither read or write. They were medicating their animals relying on the pictures on the labels and often giving wrong doses of the wrong medicine. This in itself was a problem as many of these medicines were antibiotics<sup>6</sup> and were rapidly entering the environment and the human food chain through the meat and manure of these animals. As a group of veterinarians, we were already aware of the dangers of over use and misuse of antibiotics and we felt that if the shepherds and pastoralists could read and write they would be able to read the labels and follow instructions better and ensure better health for themselves and the environment. At another level, across the country, pastoralists were running into trouble over grazing rights and access to natural resources. The need to be able to read, to be educated, to understand one's rights and legal position was acutely felt by several pastoralists. Thirdly, several groups across the country were fighting for making the Right to Education a fundamental right for all citizens of India. It seemed the right time to look at the situation of the Dhangars and their education. We began to explore the needs of education and the barriers to formal schooling and education as felt by the Dhangar pastoral community with the idea that we could perhaps take the learning from here to other migratory pastoral communities facing similar problems as well as inform policy. Small research studies and pilots were conducted over several years with support from several people and organisations.

#### Barriers to formal schooling for the Dhangars

The first barrier to regular conventional schooling for the Dhangars is their migratory life style. As migratory routes are not necessarily fixed and can change, attending regular school becomes a problem for children who accompany their parents on migration. The second barrier is the absence of birth certificates or identity proofs. Dhangar children are often born when the family is on migration and their births are not registered as they are far away from where registrations can take place. Birth certificates are a necessary document for school enrollment. Dhangar families have recently begun to register the births of their children. In the case of girl children, child marriage which is still practiced by the community leads to several girls not attending school. Girls from some families especially the poorer families are married off when they are 13 or 14 and often have their first child before the age of 18. This is a huge barrier to their attending school.

Boarding schools have been considered an option by some who have worked on this subject, but it takes children away from their family and their surroundings and trains them for a life outside of pastoralism<sup>7</sup>. Following a boarding school education, children are reluctant to return to a migratory lifestyle. They would prefer to follow some other profession or life style but if those opportunities are not available or difficult to come by these children find it extremely difficult to readjust to a life as a nomadic pastoralist.

#### What migratory pastoralists would like to learn

In a series of interviews conducted with several families between 2009 and 2011 we found that Dhangar pastoralists had an intense desire to be literate. They wanted to be able to read bus numbers and signboards. As mobile phones became more and more accessible they expressed a desire to be

able to use mobile phones comfortably and confidently. They wanted to receive and send text messages and use new applications they saw others use in a felt desire to be connected. They wanted to be able to sign their names and get essential legal identification documents made such as citizenship cards, health cards and birth certificates for their children. They wanted to be able to register themselves for available government services and benefits. They also wanted to be able to read the labels of medicines for their animals and for themselves. There was a desire to learn about new developments in their regions and the world around them and to be able to travel to fresh regions with their livestock or for marketing their animals. They wished to possess a school leaving certificate which in itself is an important document in India. It is needed for applying for and getting a driving license for example. Several young pastoralists would like to possess vehicles such as motorcycles or trucks. Further, they wanted to learn about emerging trends in livestock management as about new markets especially in a rapidly changing world .

#### ANTHRA's<sup>8</sup> PROJECT ON EDUCATION FOR PASTORAL COMMUNTIES

Initially, we looked at possible models of education wherein a school could reach the children including mobile schools. We studied models and experiences from other countries. We soon realized these models were neither feasible nor easy to run. The infrastructure and the investment needed for even one small mobile school was enormous. Shepherds lived in remote and scattered location and each location would have needed a different mobile school We began exploring other models of education.

We supported the design and testing of educational aids such as the Nomad's Edu-Kit. The Nomad's Edu-Kit 2.0<sup>9</sup> is a portable, self-learning tool kit, which helps provide functional literacy. It was developed by a student of design and has shadow plays, audio stories recorded on mobile phones, familiar visuals association with familiar words and the construction and deconstruction of words using wooden blocks. The design and development of the kit took over a year with regular feedback and inputs from the community. During the piloting and testing of the kit some members of the Dhangar community said they preferred charts to learn the alphabet. Charts were designed and printed using words the community frequently used in their daily lives. These charts were very popular and continue to be in use 5 years down the line. They have also been made in other Indian languages.

All these efforts coincided with the time that mobile phone usage and mobile connectivity were growing at a phenomenal rate in India. In 2015-16 we seriously began exploring the possibility of online education for pastoral groups on migration who could not attend regular school. Initial surveys were undertaken on mobile phone access and usage amongst Dhangars. Interestingly, we found several shepherds invested in fairly expensive mobile phones and bought high end models. However, each group usually had one phone which was normally in the possession of a senior male member of the group.

Simultaneously, we explored distance learning models and online models. We found a lot of educational apps available in several Indian languages too. These were shared with the community. Other online packages were also pilot tested. There were also apps which could be downloaded and used offline. No model seemed perfect but each offered an idea which needed to be developed further.

#### Some benefits of online & distance education

As we explored the options, distance and online education seemed to be a much better option for migratory groups. Some of the obvious benefits which we noticed were that it did not require students to appear in school every day at a fixed time and a fixed place. Young and old learners or a group could sit and learn together within the community. Timings for learning could be adjusted to fit in

with the daily schedule of activities, for instance they could log in late in the evening when the days tasks were done, or in the afternoon when there was a break in the day's activities. They could log in from where ever they were .The pace could also be adjusted to the situation and students could go ahead quickly or take it slowly. As mobile phone usage and internet access improved the distance and online education got easier.

#### Some problems with online systems and mobile phone usage

Although shepherds were investing in mobile phones we found they had many problems to contend with. One of the immediate problems was access to good quality robust phones or tablets. Phones need to be upgraded every few years. It is also important to frequently upgrade, hardware and mobile phone applications. A phone is not a onetime investment but one that needs to be upgraded every few years. This can be expensive especially for several families whose incomes are not regular and fluctuate. Connectivity is another issue. Shepherds were often out of "connectivity" or range as they migrated through forests and grasslands. Charging phones was the third problem as they have limited access to electricity connections while travelling. Most of the time they were off grid. However, the Dhangar shepherds showed a great amount of ingenuity and enterprise here. They negotiated with friendly shopkeepers and charged their phones whenever they visited town which was every few days. They carried spare batteries and battery packs. From Anthra, we helped them source solar mobile chargers as well as good quality phones and mobile battery packs.

Another major challenge was access to good quality educational material in a language they could understand, access to websites and support services when difficulties arose and curriculums which constantly engaged students and their interests. We tried to address these problems as we faced them. We continue to be on the lookout for good quality educational material in local languages. We are also trying to develop some kinds of educational material inhouse especially related to livestock care to share with the community. As we are running a parallel programme on Maternal and Child Health, we have guided the group to online phone-based resource material such as the healthphone app<sup>10</sup> which advises the community on maternal and child health through small videoclips

#### **Initial findings**

The results were interesting and encouraging. Several Dhangar women participated in the learning programmes which were held in the evening and many began to learn how to recognize alphabets and to sign their names. Women's literacy was even lower than that of men in these groups and it was encouraging to see women come forth to learn. We also noticed that in the groups we worked with young people got more and more confident handling phones and using them. They started a WhatsApp group amongst shepherds, took pictures and selfies, made short videos and began posting messages and stories to each other and to us. We started receiving real time information of their situation, the problems they were facing and their successes. In turn we were able to send them messages, health advisories for their animals and for them. Many shepherds began writing by copying the letters on the chart. Several members of the group rapidly learnt how to read. Some used the mobile to get news updates and weather forecasts.

Although these were baby steps, a new world opened out for the Dhangars. They began setting aside a time of the day when they would sit together and learn how to read, they reached out to other Dhangar groups and invited them to join the programme.

Importantly, children were not separated from their parents and their families and could continue to learn several other things as well as shepherding from their parents. Depending on the groups they belong to pastoral men and women learn to milk, shear, skin, handle wool, spin, weave, felt, knit,

embroider, sew, quilt and do elaborate patch work. They learn about crops, medicinal plants, grasses, weeds and poisonous plants. They learn to recognize trees, wildlife scat and markings. They learn about clouds, the weather, water courses and grazing lands. They learn to deal with bureaucracy and administration. They also learn music, songs and dance. Indeed, they are learning constantly. Additionally they also learn cooking, cleaning, washing how to nurture, nourish and nurse animals as well as humans. They learn to provision, protect, fetch firewood and water, load and strap a horse before they go on migration. They learn to manage money and resources. Online or distance education complements and enhances this learning.

#### CONCLUSION

#### Education post COVID 19

Distance learning and online education are not new concepts and have been available for several years now. They have also been suggested by several researchers as one of the better solutions for educating pastoral communities in different countries<sup>11</sup>. COVID 19 has merely precipitated the situation forcing all educational institutions globally to look for online solutions. While the transition will be relatively easy for the wealthy in wealthy countries, poorer countries, with poor education budgets, poor infrastructure and poorer schools will struggle. Availability of suitable phones, internet connectivity, availability of electricity and access to phones remain valid concerns. If there is more than one child of school going age in a household and you have only one smart phone, how is the resource to be shared? Will girls be discriminated against yet again? Will access to the phone and social media lead to other social problems as has happened in other societies? These are some of the immediate questions which come to mind.

However, for pastoral communities who migrate with their animals in several countries of the world, distance and online education remains an extremely viable option. Well run distance and online education programmes will enable migratory populations to access education by not having to give up their migratory life style or be separated from their families. It can enable them to get basic literacy and numeracy skills, enroll in education programmes, get certificates and progress to different levels depending on the situation. Different age groups can enrol too and acquire an education for which they might not have had an opportunity in the past. This will be a big step towards the promise of leaving no one behind.

#### NOTES

<sup>1</sup> https://www.education.gov.in/sites/upload\_files/mhrd/files/upload\_document/rte.pdf

<sup>2</sup> https://sdgs.un.org/goals

<sup>3</sup> Ghotge, Nitya and Kishore Kamal. "*Pastoralism in India :The Warp and the Weft*, Anthra 2016, http://www.anthra.org/wp-content/uploads/2017/01/Anthra-Booklet-for-web.pdf.

<sup>4</sup> Binchy, William. "Preface." In *Traveller, Nomadic and Migrant Education*, 224. Routledge, 2009.

<sup>5</sup> Krätli, S, and Dyer C. "Mobile Education: Strategic Options. Education for Nomads." IIED, n.d

<sup>6</sup> Antibiotics in India are often sold over the counter and without valid medical prescriptions

<sup>7</sup> Danaher P.A, Mairin K, and Leder J R, eds., *Traveller, Nomadic and Migrant Education* (Routledge, 2009).

<sup>8</sup> ANTHRA is an organization based in India working on issues related to livestock, livelihoods and related landscapes

<sup>9</sup> Surana R, "Nomad's Edu-Kit," *Nomad's Edu-Kit* (blog), accessed May 8, 2021, https://www.behance.net/gallery/33832006/Nomads-Edu-Kit.

<sup>10</sup> HealthPhone, "HealthPhone Mobile Apps," 2021, http://www.healthphone.org/.

<sup>11</sup> Swift J.and Krätli, S "Getting to the Hardest-to-Reach: A Strategy to Provide Education to Nomadic Communities in Kenya through Distance Learning" (Nairobi, Kenya: IIED, 2010)

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# ENCOUNTERS AND COLLISIONS: ONLINE EXHIBITION MAKING AND THE PHYSICAL SPACE

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#### INTRODUCTION

During Covid-19 students who were used to putting exhibitions in the physical space and the public realm had to reconsider how their exhibitions would work online. They had to find ways to interact with a potential audience whose presence had to be reconfigured for online platforms. This paper discusses how students shifted from architectural physical space to the online platform space while dealing with particular constraints they encountered when working on their exhibitions.

#### **Module Background**

At the University of East London level six undergraduate students follow the module system and I teach a module to level six fine art students entitled Contemporary Practice. As a professional research development module, it changes every year. One of the assessments for this module requires students to organise a public-facing exhibition off-campus. Students on this module have to work in self-selected groups and in those groups have to find their own exhibition spaces with guidance from me. Students are advised about exhibiting in the public realm, in white cube gallery spaces and alternative spaces such as cafes, pubs, in their homes, in garages, and other places they find. The working groups always considered the environment and buildings they encounter or engage with as exhibition spaces.

Every year there are some groups that choose to host their exhibition in a white cube gallery space. The sizes and locations of these spaces vary across London. Equally, every year there are groups that use alternative spaces whose size and location also vary. With the impact of Covid-19 in 2020 the question of how the students were going to organise the group exhibitions had to be reconsidered during the first, second and third lockdowns in the United Kingdom. As part of the module, existing students look at past exhibitions organised by previous students as case studies. One of these case studies was an exhibition at Hoxton 253 Gallery, a white cube gallery space that took place in November 2019-as illustrated in Figure 1.



Figure 1. Hoxton 253 Gallery November 2019.Copyright Author's.

While looking at the exhibition space, we discussed in a big group and later in smaller groups the materials used to construct the building: brick, stone, stucco, wood, plaster and steel construction. We discussed the framing of the interior walls, focusing on how the architecture enforced physical movement within the space. Alongside this, we discussed the art materials used to make the artwork, the location of the artwork within the space and the exhibition concept. Equally, in what way the presence of the human figure is construed within the space was discussed. We shared information and perspectives. This approach created an equal partnership in the learning process between the students and myself.

#### **Environmental Change**

By the summer of 2020 it was clear that the opportunity to show work in physical spaces was declining. Despite this problem students were still encouraged to look for spaces and to have a plan B where the exhibition could be moved online. However, one group was adamant they wanted to have their exhibition in a physical space and were forced by circumstances of the second lockdown to come up with a plan B. This exhibition at first was hosted in a building called the Safe House that looked like a squat, but later it was moved online to a website designed by the group-as illustrated in Figure 2.



Figure 2. Dreamscape Exhibition 2020, Safe House and Dreamscape Exhibition Website. Copyright Author's.

Previously the building had been a private home, which deteriorated and was later brought by an organization called Maverick Projects. The architectural internal framework of this building, the exposed ceiling beams, brickwork, including the broken plaster on the walls, wooden floors and stairway was essential to the group's exhibition concept, *Dreamscape*, which was looking at ideas of isolation, abandonment and dystopia. The framing of the architectural interior certainly structured the human presence within the space. Looking at this exhibition space – there are videos of the Safe House space on the student group's website and the Hoxton 253 white cube gallery space used in the earlier exhibition – the framing of the space and the human presence can be related to Mark Hansen's thoughts on architecture and the human body "This correlation of architectural framing and embodiment entails a certain understanding of architecture's technical dimension... this partly because buildings must still be built; more fundamentally though, it is because they must still be inhabited, which is to say calibrated to our embodied form of life. No amount of freedom from formal constraint can undo architect's constitutive correlation with embodiment".<sup>1</sup>

The human presence in both exhibitions is two-fold, the presence of students organising the exhibition and the presence of the audience who interact with it. However, the online presence, turns the artists and audience into users as they interact with it. Yet, whereas in the physical gallery space a visible human presence is required, for the online platforms the audience is invisible, but there are traces of the working group. These are traces of the students as they work with the online platform and the audience is imagined as they move around the architectural space on the online platform. This relationship between embodiment, architecture and online platforms is explored further in another student group exhibition called *Embracing the Unconscious and Spiritual Awakening*.

This group of students used the 3D virtual online platform Artsteps with YouTube, Instagram and website for their exhibition. Firstly, I want to focus on the 3D online platform Artsteps and connect it

to a report published by the Royal Institute of British Architects (RIBA) based in the United Kingdom. In 2019 the RIBA published the *Digital Transformation Report: Digital Transformations in Architecture*. This report discussed new ways for collaborative working. It focused on the importance of technology that supports and facilitates collaborative working processes. By bringing people and data processes together this would enable the design and client experience to come to life. Having multi-users in the planning and the development is intended to add more value to the architectural process. The idea of bringing multi-users to a planning process is important, but this is not happening between architects, software designers and other creative users.

Looking at exhibition images of *Embracing the Unconscious and Spiritual Awakening* the software template is very similar to standard architectural imagery – as illustrated in Figures 3 and 4.

Ruby and Marta's Exhibition.



**\*/**8\*

Figure 3. Embracing the Unconscious and the Spiritual Awakening 2020-2021. Copyright Author's.



Figure 4. Images of architectural drawings. Copyright Author's.

The framing of space, the positions of walls, the importance of how light is located is evident. Both the software template and the architectural imagery operate in the same way. In relation to the user/human presence, the idea of participation in space is about perceiving and experiencing a 'physical' structure. It is about giving meaning to a place in a certain unit. These architectural references to the interior and exterior are units in a wider architectural plan, where architectural features are recognisable and architectural construction is targeted to achieve a purpose. The physical structure in the real world, but also in the virtual world, makes us obey rules of the environment: they are enforced by implicit social conventions and design elements, especially how software makes us use it as a service as well as a product. What we end up with is a formalisation of space and architecture. This approach between architecture and software design has a very limited comprehension of how other creative users what to use architectural spaces including software.

#### **Alternative Ways of Working**

So, how do students find ways to work and subvert the formalization of space and architecture? The students had to rethink their educational tasks as collaborative instigators. When working on the Contemporary Practice group exhibitions, in a physical gallery environment in London, understanding how to work as a team is one of the main tasks. Allocating roles or sharing the responsibilities for curating, installing and marketing of the exhibition is part of the process. Negotiating contracts, dealing with public liability insurance, with transport, press information, audience development, artists and exhibition statements are some of the features related to curating, marketing and installing the exhibition. All these elements take place within a formal and informal learning structure. Flexibility for informal learning is essential because it is not always possible to plan every aspect of an exhibition, especially when dealing with audience development.

When placing exhibitions on online platforms, the issues of marketing, curating, contracts and audience development are different. Some core features of exhibition making emerge, but a tension is created between the similarities and differences. The curating and installing process requires a new way of looking at an online space. Documenting work and then positioning it is required for online platforms, as the exhibition still needs an audience, whereas designing posters for the exhibition is not necessary; neither are transport and art insurance. By working with and combining different spaces the students were thinking about how spaces can change. By locating a physical gallery space on a website and locating a 3D virtual online gallery space in an Instagram page, the group of students considered collaborative spaces as an institutional situated interaction feature between divergent perspectives – as illustrated in Figures 2 and 5.



Figure 5. Embracing the Unconscious and Spiritual Awakening 2020-2021. Copyright Author's. 1.

For the *Dreamscape* exhibition students located the physical gallery, by using videos and placing them within the website frame. They allowed this physical space to be part of the website, while simultaneously allowing the space to push against the formal boundaries of the website to create an alternative space within it. For the *Embracing the Unconscious and Spiritual Awakening* exhibition moving the 3D virtual online gallery space on to an Instagram page broke down the formalised architectural space, by moving the centralised content and turning it into a distributed content. Formal and informal learning continues, within the context of these similarities and differences.

Moving forward, the use of videos within the online space by both exhibition groups, was essential to their way of engaging with an invisible audience. The audio-visual videos made for *Dreamscape* exhibition show the artists talking directly at the camera as they sat by themselves in the space where their own artwork is on display – as illustrated in Figure 6.



Figure 6. Dreamscape. Light's talking about the exhibition. Copyright Author's.

This audio-visual encounter showed how the artists were authorising their own critical stance of the exhibition. They formed an exhibition group they described as an activist that was part of their creative process. Their approach echoes Ava DuVernay who stated "activism is inherently a creative endeavour. It takes a radical imagination to be an activist, to envision a world that is not there."<sup>2</sup> The framing of themselves within the camera is also doing something else. They had created an interrelationship of themselves, their bodies, the environment and the audience. This allowed their work to be subjective based on the artwork on display within the camera frame, allowing the work to be seen as work in progress, to be conceived as incomplete to enable questions about the exhibition, the spaces, physical and online to be raised.

The other student group did not describe themselves as activist. Instead, their use of YouTube on the exhibition website was combine the social presence and cognitive presence – as illustrated in Figure 7.


Figure 7. Embracing the Unconscious and Spiritual Awakening Website. Copyright Author's.

YouTube is a popular space for modes of communication. It allows for an ongoing re-organisation of space and exhibits the changing modes of display. The *Embracing the Unconscious and Spiritual Awakening* exhibition concept explored one student's memory of travelling into Central London for treatment to attend speech therapy when she was a young girl. Another student looked at spirituality influenced by her cultural background and other non-Western cultures. In the YouTube videos we see the collaboration between the two artists, they discussed their artistic practice and connection to the exhibition concept – as illustrated in Figure 8.



Figure 8. Embracing the Unconscious and Spiritual Awakening Exhibition on YouTube. Copyright Author's.

YouTube allowed them to broadcast themselves in an amateur-led and in a professional-led mediascape. It is used as a communication platform for staging messages to broadcast their visibility. As non-professional film makers, their need for visibility and to have a voice, turned them into amateur cultural producers, whose work is distributed to their exhibition website. Looking at the YouTube videos you see the students performing tasks to make their work; this involved the use of paint brushes, making work on the floor and moving around the space. These tasks are repetitious and take place simultaneously when the students are discussing their work. This creates a structural formation where the user/audience understanding of the exhibition shifts from the forms of the artworks to the meaning of the artworks. This is where the social presence and cognitive presence is combined. The cognitive presence allowed the user/audience to construct meaning thorough sustained communication and the social presence allowed the user/audience to connect socially, including emotionally. With the exhibition.

## CONCLUSION

There is a need for online platforms to be more flexible and ambitious in the templates they offer. Working with other disciplines in the design programme would provide greater collaboration possibilities and a wider understanding of other creative users' needs. The student exhibitions using various online platforms showed how this collaborative process can work. Having to work within certain constraints they found ways to subvert those constraints to produce the exhibitions they wanted. They had to reconsider how they worked as a team; they had to consider their own behaviour and comprehension of online platforms. Equally, they had to consider the behaviour of the user/audience as they interacted with their online exhibitions.

#### NOTES

<sup>1</sup> Mark B.N. Hansen, *Bodies in Code: Interfaces with Digital Media* (New York: Routledge, 2006), 177. <sup>2</sup> Ava DuVernay, "On Teaching and Being Taught: Reflection on Decolonising Pedagogy" in PARSE-intersection 2020, Accessed in March 29, 2021, https://parsejournal.com/article/on-teaching-and-being-taught/

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## DIDACTICS AND CIRCUMSTANCE: EXTERNAL REPRESENTATIONS IN ARCHITECTURAL DESIGN TEACHING

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#### INTRODUCTION

Design critiques correspond to the key moments of interaction between professors and students in architectural design teaching. In these sessions, communication is essentially supported by external forms of representation, such as sketches, diagrams, plans, sections, mock-ups, digital models, simulations, and animations of the design object. However, the present circumstance, determined by the consequences of the pandemic emergency, demanded from the educational institutions immediate transformations to adapt their didactic to distance education, conditioning the direct contact between professors and students – a fundamental aspect of architectural design teaching.

With this paper it is intended to present the results of a research developed as part of an ongoing Ph.D. thesis, on the relation between the forms of representation and the architectural design teaching. The research had as its object the didactic approach to design of two schools of architecture – the School of Architecture Urban Planning Construction Engineering of the Politecnico Di Milano, Italy (AUIC-POLIMI) and the Faculty of Architecture of the University of Porto, Portugal (FAUP) – and was guided by three main objectives: i) to consider the effects of the pandemic emergency on the organization of design studios and on the design critiques approach, focusing on the representative dimension; ii) to consider the new possibilities and losses introduced by the non-presential teaching modalities; iii) to consider some of the opportunities and threats for the future of architectural design teaching.

Visser<sup>1</sup> proposes a definition for the designer's activity as the construction of representations, external and internal, individual or shared, where the modalities are verbal, graphic or gestural. In line with this idea, Milovanovic<sup>2</sup> highlights that the design process is developed in the interaction between external and internal or mental representations. However, it is important to consider that the relationship between external and internal representations is not univocal, that is, an external representation is not the externalization of a pre-conceived idea in the designer's mind<sup>3</sup>. As Goldschmidt<sup>4</sup> argues, the production of external representations is itself part of the cognitive design process: the designer thinks through representation.

In the educational context, representation seems to acquire new attributes and purposes. As stated by Milovanovic<sup>5</sup>, the set of representations elaborated by the student constitutes the key element in the learning process: the interaction between professors and students is channeled through the representations used during the design critiques. In addition to serving as a means of design – or as already mentioned, a means of thinking –, student's external representations also serve as a record of the mental-path taken, as a means of communication with the professor, and above all as a support for discussion and collaboration between them – as a "trading platform", which Milovanovic refers to as the "representational ecosystem". The concept of "representational ecosystem" is proposed by Dorta et al.<sup>6</sup> as the set of produced external representations and their inter relationships, functioning as an environment for the interaction between the student and the professor.

## RESULTS

## **Teaching modalities**

Toward the end of the first semester of 2019-2020, the pandemic emergency required schools to immediately adapt to public health measures. At first, schools were closed, and it was adopted a non-presential teaching modality. As expected, the main challenge within architectural education was the conduction of practical classes, such as architectural design or hand drawing. At the end of the so-called "covid semester"<sup>7</sup>, an attempt was made to find a hybrid solution, the mixed modality, that would allow the practical classes to be carried out in person and the theoretical ones at the distance.

#### Non-presential modality

When the non-presential modality was adopted, the organization of design studios did not undergo significant changes. Didactics, although mediated by the computer, followed the same approach. Professors continued to monitor the students' work one by one, with the rest of the class watching or working. In order to follow the students' work process, and not just the results brought to design critiques, professors asked all students to place the process material in chronological order on a class drive – such as plans, sections, elevations, perspectives or model photos. This was a way for professors to perceive the path taken by the student in the development of the design idea. Students were also encouraged to go to the drive and see their colleagues' work.

With the virtual classrooms, where practical classes took place simultaneously, there was an improvement in the articulation between courses – students could leave and enter, speaking with the professors of architectural design, construction or structural systems courses.

It should be noted that the non-presential modality represented a major challenge for professors and students. The professors had a lot of work, going beyond the teaching hours, to be able to effectively monitor the work of the students. A lot of time in class was wasted with technical problems on both sides, delays or cuts in the internet connection.

#### Mixed modality

With the mixed modality, the practical classes were held in person, and the theoretical at the distance. The planning of the courses was adapted so that the didactic moments whose presence was more decisive took place at the beginning of the academic year, such as the launch of the exercises, collective visits to the intervention site or to a reference building or urban area. There was a feeling of constant uncertainty, and it was common for the professors to recommend students to prepare for the inevitability of new confinement.

Considering the distancing rules, the classes of about 25 students were divided into two rooms. The same professor had to follow the students' work in two different rooms. This raised problems when the professor needed to speak to the entire class.

There was also a need to ensure the monitoring of the students who, for some reason, were confined. The professors needed to dedicate extra-class time to these confined students, in non-presential modality. Although the approach to design critiques was the same as in the pre-pandemic period, the health restrictions did not allow students to follow the sessions effectively. When the professor was following a student's work, his colleagues could not get close. This was quite problematic, since an important part of design teaching is based on knowledge of the colleagues' work.

#### New mixed modality

In both AUIC-POLIMI and FAUP, a new design teaching modality is now being tested, combining features of mixed and non-presential modalities. The idea is that the practical classes can be in person, but guaranteeing online monitoring – not only for students but also for professors and assistants. For this purpose, cameras and microphones were installed in the classrooms, as well as a projection screen. This modality was implemented at the beginning of the second semester of 2020-2021, so it is too early to draw conclusions.

#### **Design critiques and representation**

The effects of the pandemic on design critiques were mainly relevant in the non-presential classes, since in the mixed modality the monitoring of the students' works followed the previously consolidated approach.

It is possible to identify an evolution of design critiques formats since the adoption of the nonpresential modality. At the beginning of the first general confinement, the professors of architectural design followed and commented on the students' work without intervening in it. Some professors, on impulse, drew on a sheet of paper and showed it to the student on the web cam. It was a very precarious form of interaction. Other professors printed students' work to draw on it. Then they photographed the sheets to show students during design critiques. It was also an ineffective approach. At a certain point, some professors started using digital platforms – such as Zoom – which allowed them to annotate or to draw on the shared screen. Professors used the mouse to make notes about the students' work, and often asked them to do the same. According to some professors, it seems that students have gained some sense of participation or disinhibition with this approach, not only commented but drawing more actively during the criticism.

Although it was difficult to draw with the mouse, it was possible, and from the first annotation strokes, professors began to draw plans, sections and even perspectives (Figure 1). Some professors started using the smart phone or the tablet to draw, with a digital pen, which allowed them to achieve impressive results (Figure 2). Sometimes the students themselves, after showing a sketch to the professor, immediately made a digital note to make their intentions clearer (Figure 3).



Figure 1. Shared screen during design critiques: Professor's drawings on student's representations.



Figure 2. Shared screen during design critiques: Professor's drawing on student's representations.



Figure 3. Shared screen during design critiques: Student's drawings on his own work.

During the design critiques, professors also started to draw on the photos of the physical models (Figure 4). This novelty was extensively explored and gave the model a new potential as a form of representation (Figure 5). The model, which by its nature is less flexible and dynamic in construction and manipulation, as stated by Rivka Oxman<sup>8</sup>, was then complemented with digital drawing.

In fact, distance education has led to the fusion of certain forms of representation, mixing photography, drawing, physical models, 3D models, etc. Figure 6 is an interesting example of this representational mixing: it is possible to see that the base is a vector drawing in AutoCAD, with some sketches in the right corner, some colored digital notes, and a digital red line made by the professor during the criticism.

Another possibility that was introduced was the manipulation of files under construction through digital drawing, opening a software and intervening directly in it – as an AutoCAD or a Revit file.

In the case of Figure 7, the student opened Revit, placed a perspective view suggested by the professor, and then both drew on the screen. Even in the theoretical design classes, some professors began to draw on the presentation slides, and sometimes invited students to do the same (Figure 8).



Figure 4. Shared screen during design critiques: Professor's drawings on model photos.



Figure 5. Shared screen during design critiques: Professor's drawings on model photos.



Figure 6. Shared screen during design critiques: Mixing different forms of representation.



Figure 7. Shared screen during design critiques: Professor's drawings on a Revit file.



Figure 8. Shared screen during design theoretical classes: Professor's drawings on his own presentation.

## DISCUSSION

Considering the effects of the pandemic in the organization of design studios, in the design critiques approach, and in the external forms of representation, it is possible to summarize some of the new possibilities introduced and the losses involved, such as the opportunities and threats for the future of architectural design teaching.

## **New possibilities**

In the organization of design studios, some of the new possibilities are:

i) the direct articulation between courses through virtual classrooms;

ii) receiving guests from different geographies to participate in design critiques or lectures has become much easier;

iii) professors and students share content and work on a collective drive, which they can access at any time.

In the design critiques approach, some of the new possibilities are:

i) the direct participation of the whole class in individual critiques;

ii) disinhibition, increased participation of students during critiques;

iii) professors and students can open the browser during critiques to show a reference design, a constructive detail, a part of the city, etc.

In the external forms of representation, some of the new possibilities are:

i) to draw on photos of the physical models;

ii) to draw directly on files under construction, such as AutoCAD or Revit files;

iii) to use different forms of representation, analogue and digital, to produce the design elements.

#### Losses

In the organization of design studios, some of the losses involved are:

i) increased amount of work for professors and students;

ii) difficulty in rigorous student assessments;

iii) mixing between the home environment and the classroom environment.

In the design critiques approach, some of the losses involved are:

i) the loss of dynamics of the critiques, caused by technical limitations or problems on both sides;

ii) greater difficulty for professors and students to make themselves understood;

iii) all the interaction made through the computer becomes tiring for professors and students, as it requires a particular type of attention.

In the external forms of representation, some of the losses involved are:

i) the difficulty of drawing on the computer;

ii) the difficulty of understanding aspects of representations such as scale and proportion;

iii) the accentuation of the role of the image at the expense of space, which was already a trend.

## **Opportunities**

Opportunities are mainly associated with the external forms of representation. The greatest opportunity seems to be related to the so-called traditional forms of representation, such as hand drawing or sketching and physical models. Instead of being forgotten, these forms of representation gained a new use and potential when combined with digital media. In fact, the need for distance education seems to have underlined the particular importance of hand drawing or sketching and its potential for wider use, both in the student's individual productions and in the interaction with the professor during design critiques – so, as a didactic tool. Also, the physical model, by its static nature and often referred to the mere communicational function, seems to have received a new relevance.

In general, it is possible to understand the present circumstance, determined by the consequences of the pandemic emergency, as an opportunity in itself. An opportunity for investigation and experimentation on the different approaches to architectural design teaching, in this case, focusing on the role of external representations.

## Threats

The set of new possibilities and losses revealed during this period seem to indicate that distance education tends to accentuate inequalities between students, both in terms of performance and from a socio-cultural point of view. Students with the most difficulties were the ones most affected by the pandemic – on the one hand, due to new requests placed on them, on the other hand, due to the difficulty of professors in following their progress. The socio-economic inequalities of the students were also evident. It seems important not to lose the social dimension of teaching. One of the issues has to do with sharing, with contact, with knowledge of the colleagues' work, with the establishment of links with professors, with the classroom environment. As Ortega y Gasset<sup>9</sup> argues, one of the university's missions is precisely the human and social training of the student.

Moreover, when referring to the positive results of distance education, it is necessary to bear in mind that when the non-presential regime was adopted, it was preceded by a semester of classes in presence or in a mixed modality. According to some professors, this initial period was essential for the

organization of classes, especially for students of the first years, considering their lack of experience and autonomy.

#### CONCLUSION

With this paper it was intended to present the results of a research on the relationship between forms of representation and architectural design teaching. Synthetically, the effects of the pandemic emergency on the organization of design studios and design critiques approach in AUIC-POLIMI and FAUP were shown, such as the new possibilities and the losses involved, and the opportunities and threats for the future of architectural design teaching.

Considering the results, it is possible to conclude that the non-presential or mixed modalities can work for short periods, but to be permanently adopted it would be necessary to rethink some fundamental aspects of the didactic approach to design. As already mentioned, one of the aspects that is compromised by these modalities is precisely the social dimension of teaching.

The results also show that the so-called traditional forms of representation can play a new role in architectural design teaching. Above all, hand drawing or sketching revealed an enormous potential for association with digital forms of representation. This may be a promising line of research in the context of architectural education.

#### NOTES

<sup>1</sup> Willemien Visser, *The cognitive artifacts of designing* (New York: Lawrence Erlbaum Associates, 2006).

<sup>2</sup> Julie Milovanovic, "Exploration of architectural design studio pedagogy: Effect of representational ecosystems on design critiques" (PhD thesis, Loire Bretagne University, 2019).

<sup>3</sup> Gabriela Goldschmidt, "Problem representation versus domain of solution in architectural design teaching" *Journal of architectural and planning research* (1989) and "Design Representation: Private process, public image" *Automation in Construction* (2014).

<sup>4</sup> Gabriela Goldschmidt, "The Dialectics of Sketching" Creativity Research Journal 4 (1991).

<sup>5</sup> Julie Milovanovic, "Exploration of architectural design studio pedagogy: Effect of representational ecosystems on design critiques" (PhD thesis, Loire Bretagne University, 2019).

<sup>6</sup> Tomas Dorta, Gokce Kinayoglu, and Sana Boudhraa, "A new representational ecosystem for design teaching in the studio" *Design Studies* 47 (2016).

<sup>7</sup> Zunino Corrado, "Università, i docenti: 'La Didattica a distanza ha salvato gli atenei'" *La Repubblica*, August 3, 2020, accessed January 7, 2021, https://www.repubblica.it/scuola/2020/08/03/news/universita\_i\_docenti\_ la\_didattica\_a\_distanza\_ha\_salvato\_l\_universita\_-263562579/.

<sup>8</sup> Rivka Oxman. "Re-thinking digital design" *Digital Architecture and Construction* 90 (2006).

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## SPECIAL EDUCATION TEACHING WITH THE EMERGENCE OF COVID-19

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#### INTRODUCTION

Special needs education has been a demanding task for both teachers and students even in a physical space in relation to providing tactile knowledge of materials and surfaces to conceptualize a myriad of sensory experiences for students' understanding. This task has become more challenging, as catering to needs for each student online in relation to one's individual mental, physical and emotional capabilities has proved to be an ordeal for academics and parents of special needs students in most virtual classrooms.

This paper, thus attempts to study the ways in which special needs education was carried out before the pandemic and stay-at-home regulations and track the trajectory on which such teaching has transformed on virtual platforms; arguing that the digital platforms can be an instrumental aid for students requiring special education and how in certain situations can be the best method of teaching, especially students suffering through severe anxiety and self-image issues.

#### Space

UNESCO<sup>1</sup> recognizes special needs education that requires "additional support and adaptive pedagogical methods" to attain "learning objectives in an educational programme." There are currently two legally binding entities that preserve interests of students with special needs, namely; Free Appropriate Public Education (FAPE)<sup>2</sup> and Individuals with Disabilities Education Act (IDEA)<sup>3</sup>, making it every student's prerogative to the right of education regardless of their disabilities.

Given the scope of research for this paper is region specific and conducted in Pakistan, Islamabad Declaration on Inclusive Education (2005)<sup>4</sup> resonates the same sentiments as FAPE and IDEA to provide access to education by appropriate methods to every child regardless of their background and disabilities etc. Pakistan's government identifies special educational needs under four categories<sup>5</sup>:

- 1. Visual impairment
- 2. Hearing impairment
- 3. Physical disabilities
- 4. Intellectual disabilities

These categories are then realized taking into account individual differences of each student with special needs and an Individualized Educational Plan (IEP) is designed with the help of a consensus reached between the educator, psychologist and the parents of the student with special education

needs. The institution disseminating an inclusive education programme is then advised according to the developed IEP on the type of resources it is required to provide to the teacher and students to facilitate special needs education.

Having Pakistan staying aligned to the UNs Sustainable Development Goals, thus supporting SDG 4; Quality Education, this paper then focuses on the inclusive educational programs that allow students with special needs to study the same curriculum as students without special needs with the help of a paraeducator and other appropriate methods to keep up with their educational goals. Therefore, in order to study and fully examine the situation of special needs education one has to look at special needs teaching before and after the emergence of COVID-19.

#### Before COVID-19 outbreak

As established earlier, special needs education relies on the instructions laid out in an IEP; acknowledging that instructions are ever-changing according to the special needs of a student. Before the COVID-19 outbreak, on-school inclusion education programs had a paraprofessional assisting the lead teacher to assist with cognitive difficulties of a student with special needs. This pertained giving extra hours to the student, developing goals with the students and their parents of what they wish to achieve which mostly comprises improving behavior and academic performance.

In order to accomplish this, the paraprofessional in coordination with the lead teacher and parents, identifies the hours/minutes of a day to be spent on each set goal. Simultaneously, if a paraprofessional is not available and the parent of a special needs student feels that their child's needs are not being met, they can use their right to "compensatory education"<sup>6</sup> which is in place to provide appropriate resources to students with special needs and thus "compensate" for their education, which the regular education programme may not have the means to properly communicate to students with special needs. However, in Pakistan, there are very few schools that have inclusion education programs and/or little awareness to parents of how to cater to their child with special needs, making it further difficult for one to assist students with special needs.

In addition, behavior goals before the COVID-19 outbreak included positive reinforcement in multitude fashion depending on the child. Bernier<sup>7</sup> noted from his study that positively reinforced students were 68% more likely to follow on what they were being reinforced on. However, as most studies show statistics for regular students, the relapse rate with special needs students is expected to be much higher, making it very important for the student and the teacher/reinforcer to have consistent and constant interactions with each for which physical presence becomes vital.

## After COVID-19 outbreak

Whilst the COVID-19 outbreak has proven to be a setback across all fields of interest, the academia and the special needs education, in particular, was really put on a low ebb. During the first lockdown and initial months preceding the second lockdown, students with special needs were not entertained in any capacity by any existing institutions, specifically in Pakistan and due to the continuing uncertainty and an inadequate infrastructure, many students with special needs are still unable to access appropriate resources to receive their rightful education. However, this remains to be the case globally as well, putting students with special needs at a disadvantage of being behind their peers without special needs who are still able to receive an online education. In order to facilitate students with special needs, "recovery services" were introduced which are being met with a mixed criticism that as the name suggests are to provide additional resources to the already decided IEP.

With schools and campuses being shut physically, the access to appropriate resources according to FAPE or IDEA were unavailable; hence introducing recovery services to further "compensate" for the

student's loss to achieve their academic and behavior goals. From the second lockdown to present time, some facilities and schools were specifically opened to cater to special needs students, with paraprofessionals going on campus following all SOPs and taking even extra precautions to ensure a safer environment both for themselves and the students.

Even with all due diligence, not all students with special needs could be catered to on campus with the constant surge in COVID-19 cases and the virus mutating, and thus, alternatives had to be taken into consideration and some students with special needs did have to rely on virtual classrooms to continue on their trajectory of following their IEPs and accomplishing their goals. This paper then looks at specific cases of students who did resort to virtual classrooms during the lockdown and its effects on their IEP.

## **Case Study**

This paper examines two students, Student A and B, both diagnosed with ADHD and enrolled in first standard.

## Student A

#### Before COVID-19 outbreak

The student took the Slosson Intelligence Test and the results collected from the test compiled with a diagnosis by a psychologist were used to develop the IEP, which recognized the student to be "anxious", "shy" and "sensitive to criticism".

n addition, it was taken into account if there was any technological assistance that the student required in specific, which in Student A's case was not needed. It was then that certain goals were laid out for the IEP; academic goals included Student A to read "80%" of the high-frequency words with accuracy and able to construct 5-8 proper sentences, etc. in the due time mutually agreed upon by both parents and the teacher, while the behavioral goals including following rules at school and classroom such as waiting for one's turn, listening carefully when the teacher is speaking etc.

Each goal once specified in the IEP was then measured for its progress in various ways such as using observation charts, curriculum based tests, work samples and other methods depending on the goal. It is important to note that for the student to reach their desired goal, classes at school facilitated student's both instantaneous and extraneous needs such as preferential seating and extension in homework submissions to positively reinforce the student into achieving their desired goal.

Before COVID-19 outbreak Student A had according to their IEP report, achieved 80% of their academic goals and 75% of their behavioral goals, suggesting that had the lockdown not been imposed and the student continually been positively reinforced, they would've accomplished their goals by the end of the academic year. The progress for these goals was mostly assessed by observation charts.

#### After COVID-19 outbreak

With no initial coordination between the teacher and parent of the student with special needs, the student was left unattended for most of the summers during the first wave of COVID-19 and only managed to learn whatever their parents could teach. However, parents and the paraeducator had started some form of communication to discuss the future of the student with special needs virtually and how to best assist them in a time of crisis such as this.

Whilst in most developed countries schools for special needs were still operating with extra precautions to be safe, Pakistan being an underdeveloped country with inadequate infrastructure could not facilitate opening schools at all for students with special needs. Hence, making virtual learning the

only viable option. The paraeducator applied the same method of teaching online as regular classes, which decreased student's academic progress by 30% and behavioral progress by 50%.

Therefore, in order to fully adapt to the virtual methods of learning, Student A's IEP had to be revisited and revised, along with ways of assessing student's progress, to be made (virtually) user-friendly for achieving goals. Therefore, instead of observation charts, tools like Likert Scale were given to parents to observe the virtual method of learning for their child. To cater to the student virtually, Student A was aware of devices such as mobile phone, a smart tablet, and a computer/laptop prior to the lockdown, making the transition from in-person interaction to a virtual one relatively easier.

The student had already used smart devices to play games, draw and watch videos and that prior engagement was used to develop and revise the student's IEP. For example, the parent of Student A identified that they like to play Match 3 games in their spare time; which both needed to be monitored and allowed for paraeducators' critical thinking to be employed and Match 3 games were used to teach the student - as illustrated in Figure 1.



Circle all red colored shapes from the picture. How many pumpkins are there in total?

Figure 1. Match 3 game as an aid to teaching virtually.

The student was allowed to play the game for five minutes prior to the beginning of the class and then asked to do curriculum based activities on the screen grabs of the game they were playing, and were given 15 - 30 mins to finish the exercises to get an extra 5 minutes to play after which a new exercise would be given. It is to be noted that the parent was present throughout the virtual class and thus the class time had to always accommodate both student and their parent's feasibility.

#### Student B

#### Before COVID-19 outbreak

Student B had also been diagnosed with ADHD and was measured for their special needs in the same manners as Student A's. However, their IEP when developed recognized the student to be "efficient", "restless" and "demanded attention". Student B's diagnostic report showed significant concerns for their visual motor skills.

When developing Student B's IEP; academic goals included Student B to read "100%" of the high-frequency words with accuracy, phonetically pronounce the words with at least 70% accuracy, and able to construct proper sentences alongside listening to teacher's direction with one prompt, etc. in the due time mutually agreed upon by both parents and the teacher, while the behavioral goals

included following rules at school and classroom such as staying quiet and greeting everyone cordially, etc.

Similar to student A, each goal in the IEP was then measured for its progress in various ways such as using observation charts, scoring guides, portfolios and other methods depending on the goal. It is important to note that positive reinforcement remains key for the student into achieving their desired goal.

Before COVID-19 outbreak Student B had, according to their IEP report, achieved 95% of their academic goals and 65% of their behavioral goals, suggesting that had the lockdown not been imposed and the student continually been positively reinforced, they would have succeeded academically and only needed to work on behavioral goals. The progress for these goals was assessed by a variety of methods including observation charts.

#### After COVID-19 outbreak

The parents of the student had taken their child out of the school during the lockdown, due to their own working schedule. During which time, Student B's academic and behavioral concerns were left unattended by both the teacher and parent. Hence, when the student had resumed their learning virtually, their academic progress dropped to 70% in comparison to regular classes and their behavioral progress dropped to 15%.

As established in Student A's case, the IEP had to be revised in relation to virtual classes for Student B as well. Student B's prior interaction with smart devices was surveyed by their parents and then relayed to the paraeducator. Through communication between the paraeducator and parents, it was established that Student B uses smart devices to mostly watch cartoons, and also an excessive use of watching cartoons was identified.

In order to cater to Student B's needs, rewards for positive reinforcement played an important role achieving their desired goals, and given that the student had behavioral problems, Student B was asked for what reward they'd like to have, and they could ask for any reward except watching cartoons. Once agreed on the reward, Student B on finishing a task was awarded 5 mins of watching cartoons alongside the reward they asked for, which in Student B's case was telling his favorite stories, as he liked story telling.

Similar to Student A, Likert Scale and work samples etc were used to measure student's progress, in Student B's case specifically, work samples had to be used instead of observation as the parents of Student B had jobs and had a hard time staying with the child throughout the class.

## Results

Both Student A and B had relatively improved from transitioning into a new IEP that was virtualfriendly than the one developed for regular classes. However, as illustrated in Table 1, the revised IEP curriculum benefitted both students to achieve different goals from each other.

	Educational Goal Achieved (%)		
Student	Before Covid	Post-Covid	Post-Covid (with Revised IEP)
A	80	50	55
В	95	70	85
	Behavioral Goal Achieved (%)		
Student	Before Covid	Post-Covid	Post-Covid (with Revised IEP)
A	75	25	35
В	65	15	25

Table 1. - %age of goals achieved

## CONCLUSION

Setting aside the short-comings for the research method, to achieve some amount of validity, and just assessing the results; the main aims behind this paper were achieved successfully. Employing both qualitative and quantitative data, allows one to consider the importance of individual differences in special needs of a student, especially those who are diagnosed yet constantly inhibited or inhabited by the socio-economic-political inadequacies to be facilitated with due diligence..

Therefore, the main argument of this paper, with the results collected, does suggest that when an IEP is revised in regards to online teaching and takes into account a student's prior awareness and relationship with smart devices, a student with special needs, then can achieve their desired goals and be facilitated by a paraeducator regardless of in-person interaction.

## LIMITATIONS

Whilst carrying forward Stake's "flexible approach"<sup>8</sup> towards conducting a case study to obtain qualitative data proved to be most useful for the scope of this research, it still poses a great amount of issues to draw generalizations for the larger population.

One grave limitation had been acknowledging ethical and moral values for this paper, which proved to be a challenge to theorize special needs students' concerns without sharing their IEPs or diagnostic reports etc., as they not only breach student's rights but also raise a question on the values of any paraeducator.

In addition, there have been several limitation in relation to practically applying the findings from the research, such as revising the IEP with taking virtual classes into consideration has been challenging for paraeducators and persuading parents to revive or transform their way of communication to their child with special needs in accordance to the revisions in the IEP, have created significant limitations to further the argument of this research.

## Next steps

In addition to obtaining a bigger sample to develop an extensive archive of cases of students with special needs, it has become apt, especially after Student B's case study to carry out a case study on the parent/guardian of the student with special needs as, their contribution in online teaching becomes cardinal and yet it interferes with their daily routine, making it pertinent for one to understand the affects a parent can have on their child with special in online teaching.

Furthermore, more inclusion programs need to be reached out to in the region to extensively test the proposed revisions in IEPs and methods of measuring a student's progress, to get a better average and standardized results.

#### NOTES

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<sup>6</sup> Arendale, David R. 2008. *Compensatory education definition*. Sage Publications. Retrieved from the University of Minnesota Digital Conservancy, https://hdl.handle.net/11299/200382.

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# AIDI: "ARTE ITALIANA DECORATIVA INDUSTRIALE" GRAMMAR OF THE DECORATIVE ARTS AND DIDACTIC INSTANCE OF DESIGN

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#### PERIODICAL AIDI: "ARTE ITALIANA DECORATIVA INDUSTRIALE"

The periodical, known as AIDI, is the disclosure instrument of an institutional teaching that has as its specific focus: the world of artistic production in the era of the industrial revolution. It was launched in conjunction with the First Comparative Exhibition of the Italian High Schools of Applied Art, which took place in Rome in 1890. In the opening editorial, Camillo Boito, as Director of the periodical, set the report on his reasoning. 'being and its necessity with the peculiarity of the Italian context, the stratification of its cultural values, the richness of its institutions and artistic collections: «i bei modelli e il buon insegnamento, cui vorrebbero provvedere il governo ed un poco qua e là qualche comune, qualche provincia, qualche corpo morale, riescono infecondi senza l'aiuto dei Musei, nei quali si trovino ampie collezioni di pregevoli oggetti vecchi d'ogni genere. Solo vedendo, e vedendo molto, è possibile formarsi un gusto fine ed un criterio esatto dei modi con cui l'arte si applica ad una determinata industria; e la memoria prima, poi la fantasia si arricchiscono; e si rivela a poco a poco, insieme con l'immaginazione, l'originalità individuale... Firenze, Venezia, Milano, Torino, Napoli, Bologna, Brescia, Parma e molte altre città nei loro Musei civici, archeologici e artistici, annessi alle Scuole d'arte applicata all'industria o privati, possiedono cose ammirabili in tal numero, che, riunite, basterebbero a comporre una raccolta degna di figurare accanto alle più celebri delle grandi e ricche nazioni. Aggiungiamo a queste ricchezze l'altra inesauribile delle nostre chiese e dei nostri palazzi, ed avremo un materiale stupendo, che ci ammaestrerebbe davvero a ritrovare il bello nell'utile, con profitto del paese e degli artefici!».<sup>1</sup> From the outset, the project of the new in the industrial era in this periodical is linked to the concept of artistic and cultural heritage. Indirectly, as secondary purpose, AIDI contributes to focus on the Italian cultural heritage by way of "know-how". The large format magazine (44x31 cm) includes three complementary sections: text on two columns with images; tables in chromolithography and heliotype technique; large format plates (88x62 cm) for the full-scale reproduction of details. This last section represents the true essence of the didactic and pedagogical mission, as it aims to provide models in which project and work/product merge. It had a twenty-year publication and with two thousand pages of text (one hundred per year), over one thousand and four hundred tables (seventy-two per year) and almost nine hundred large format tables (forty-eight per year) constitute a unicum in the international panorama (also by having Camillo Boito as chairman of the education commission in MAIC). After the outset edited by the Ongania (publisher of Venice), it was jointly published by the Hoepli (publisher of Milan) and the italian Institute of Graphic Arts of Bergamo, with a constant contribution from the Ministry of Agriculture, Industry and Commerce (known as MAIC). Thanks to the large format tables that could constitute partial but autonomous collections, it managed to cover more than three hundred italian applied art schools and constituted a unique reference for the Industrial Artistic Museums of the peninsula, which didn't have a scientific unit.

The periodical, together with "The Studio" (1893-1964), realized a base for the birth of "Emporium" (1895-1964), an important magazine that follows the developments of the italian art industry from its beginnings to the economic development of the second postwar period. A real contiguity is established due to the same publishing house (Bergamo Italian Institute of Graphic Arts), and the coexistence of themes, interdisciplinary interests, authors, artists, manufactures, productions, works.<sup>2</sup> Nonetheless, AIDI, unlike "Emporium", has remained an unexplored and, ultimately, ignored historical-artistic source.<sup>3</sup>

The complete international ignorance of AIDI and its context is only partially explained by its absence from pevsnerian<sup>4</sup> literature and refers to the complex historiographical problem represented by the "italian delay" in the field of artistic renewal in the industrial age. <sup>5</sup> All this has overshadowed, if not completely obscured, the specific aim of the periodical of handing down, through its own teaching and pedagogy way, a precise design methodology that emphasize tradition and the continuity of "know-how" in the artistic and productive field. It is difficult to explain and understand the little or no international consideration so far of the excellence of the typographic product that has given voice, body and definition to that content. Against the "trend": the online accessibility to the periodical (done in low resolution that does not enhance the high graphic quality in comparison to other magazines) made by BIASA (Library of Archeology and History of Art), the entire first section of the conference led by the Brera Academy and the Milan Polytechnic on the occasion of Camillo Boito's Centenary dedicated to the role played by the architect and the periodical he directed, comprehensive of the mastery indexing performed by student<sup>6</sup>



Figure 1. Detailed tables "43-44" (1903) and "1-2" (1907) extracted from periodical AIDI

## CAMILLO BOITO: INSTANCE OF TEACHING AND CENTRALITY OF BRERA

Camillo Boito had come to his vision of the complementarity of architecture and decorative arts through an early and long path, starting with his discipleship with Pietro Selvatico (1803-1880),

whose progressiveness is contained in this proclamation in favor of a new italian architecture: «In una società democratica, quale è la nostra, il monumento (...) deve essere la casa»,<sup>7</sup> the context must necessarily be the city. The pivotal role of decoration in the art system is formulated by Boito since his entrance to the Brera Academy and in all his more directly didactic and programmatic works, from Proposta di una riforma negli statuti della R. Accademia di Belle Arti di Milano of 1861 to I principi del disegno e gli stili dell'ornamento ad un maestro novello mandandogli le 303 tavole dell'opera "Ornamenti di tutti gli stili" (Lettere) of 1882, in Le industrie artistiche, conference made in 1881, at Relazione intorno alle Scuole Superiori d'arte decorativa e industriale al proposito della prima mostra comparativa dei loro saggi of 1891. Alongside architecture and in conjunction with painting and sculpture, decoration occupies the space of freedom, of the symbolic, but an always organic space and decisive for style. With a decisive shift towards the art industry, which implies drawing for everyone as a project tool and a progressive teaching that leads from reality to compositional autonomy. Decoration as a redemption of the so-called "minor arts", field of the redefinition of artistic values. Hence the importance of teaching and instruments for everyone, (workers and artists) along a learning process that elevates the craftsman and does not bind the genius: the library, the grammar of ornament, the collections of models.

About the three didactic areas just mentioned, it has been the second to have gathered attention so far.<sup>8</sup> The Ph.D. thesis of Annalisa Barbara Pesando, however, represented a turning point within this line of research, shifting the attention from the personality of Camillo Boito, as a prominent figure of architecture teacher at the same time in the Academy of Brera and Polytechnic of Milano, to the government "Commissione centrale per l'insegnamento artistico industriale", which operated in concurrence with AIDI, contributing significantly to the definition of an unprecedented economic, institutional and specifically didactic/training context. Of his wider context, which involves numerous personalities belonging to various disciplinary fields, different places of training and a very high number of scholastic institutions, a composite and capillary team of productive subjects, as well as a selective and orientative re-examination of the country's artistic and cultural heritage, and an accurate and well-informed review of similar foreign initiatives, Camillo Boito is an essential institutional reference. This vast reality moves the attention of the critical and historical reconstruction from individuality, such Boito as a personality of Brera and of the Polytechnic, to national institutionality, that is, Boito enlightened referent of (and recognized guide) a collegiality and a plurality of areas, subjects, institutions, workshops, schools yet to be studied.9 In this reality, the Brera Academy occupies an undisputed centrality with multiple sides, attested by the presence of personalities such as Paolo Gaffuri (1849-1931), the founder of the Italian Institute of Graphic Arts, publisher of AIDI and of "Emporium", Giulio Carotti, professor of art history at the Academy, as well as Giuseppe Mentessi, teacher of the Braidense School of craftsmen, and Ambrogio Annoni, teacher, first at Brera and then at the Polytechnic, a key figure in the boitian language of the School of Milan.



Figure 2. A. B. Pesando, Ph. D XVII cycle, La Commissione centrale per l'insegnamento artistico industriale e il "sistema delle arti" (1884-1908), thesis cover, Turin 2006

#### THE SCHOOL OF MILAN AND THE POLYTECHNIC HERITAGE

A second line of research is represented by the need to analyze the influence of the boitian magisterium and its model of art and industry complementarity on the developments of architecture and decorative arts of the first half of the twentieth century. It is a composite mosaic that includes the school of decoration and the school of the architects of the Academy, but also the school of architecture with its developments at the Polytechnic and which must be extended to the high schools of the Castello Sforzesco directed by Alfredo Melani in order to have an organic vision of the context from which the Higher Institute of Artistic Industries of Monza originates (1922-1943) and thus the launch of the Biennale of Decorative Arts of Monza then Triennale, as well as the story of the Milanese Museum of Decorative Arts always by Guido Marangoni (first editor of the magazine "Casabella"), <sup>11</sup> to whom we owe the first profile of Camillo Boito.

In the context of this magazine, under the direction of Ernesto Nathan Rogers, the different attitude towards history understood as continuity with the environmental architectural heritage will ensure a reading of "boitian retrospectivism" (example: architettura cosmatesca) not as an anti-modern bind to tradition but as a model of a compositional, creative, rigorous and original research.<sup>12</sup>

Another key figure is represented by Ambrogio Annoni (1882-1954), a student of Boito known above all for his theoretical and practical activity in the field of restoration, but one of the first interpreters, together with the remembered Marangoni, of the modernity and the lesson of master about decorative art. <sup>13</sup> His students will be Giuliana Grassi and Carlo Perogalli. We are well aware that Boito's revaluation is due to Giuliana Grassi; less known is the interest of the second, also a leading figure in the culture of italian protection and specifically of restoration, for new architecture and art. In fact, he argues for the need of open art to be reproducible and its involvement in the configuration of

architectural and environmental spaces as Claudio Camponogara and Elena Dulbecco point out in their *Arte e architettura*,<sup>14</sup> «si è giunti a un vero e proprio scambio di forme fra il mondo delle arti e quello della macchine e degli oggetti prodotti dall'industria».

## **PROJECT BAAD: "BOITO ARCHITETTO ARCHIVIO DIGITALE"**

Ilaria Valente, head of the AUIC (Urban Architecture and Construction Engineering Department), advanced in 2020, throughout the occasion arise from the presentation of the acts of the "Boitian Centenary" at the Polytechnic of Milano, the proposal to organize an exhibition on Camillo Boito as an architect and about his heritage.<sup>15</sup> Reached this point it was necessary to collect together the scattered materials of the architect, builder of artistic and industrial relations: the collection of his drawings and the architectural projects for public service facilities; the monumental AIDI periodical, an archive of the beginnings of the national artistic industry, the international updating and the new method of documentation of artistic-architectural heritage through photography; the "operational criticism" and orientation of architectural training between the academy and polytechnic school, at the origin of the so-called "School of Milan".

All this is configured as a collection of projects and artisan practices that were then more widespread than what is imagined today. It is now strictly difficult to define and in a certain way this helps to understand the substantial meaning of the work begun. For two years, an Art History course inside AUIC School of Architecture of the Milan Polytechnic (led by Sandro Scarrocchia and Maria Canella with the collaboration of Luca Barone as a student in internship) has carried out a thematic laboratory on "AIDI and the beginnings of the Italian artistic industry", with the realization of final summary tables aiming to the exhibition scheduled for the winter semester 2021-2022.<sup>16</sup> Likewise, the Architectural Design course (held by Luca Monica, with the collaboration of a register of his discipleship. And all this is becoming a digital archive project of Milan Polytechnic in collaboration and partnership with Brera Academy and Polytechnic of Turin.

The research project, which we have titled "*Boito Architect and Digital Archive*" (BAAD) aims to create an exhibition that enhances the sources and a digital archive that collects materials scattered in different locations, publications, ongoing research, starting with AIDI as an "*Archive of Archives*" and, in perspective, the architectural context that since the nineteenth century has formed the so-called "School of Milan" until today. The exhibition is promoted by the AUIC School of Architecture of the Polytechnic of Milan, and the entire project involves different archival skills, the historical archives of the Brera Academy and the Turin Polytechnic, while the coordination is carried out in the within the ABC Department of the Politecnico di Milano.<sup>17</sup>

The exhibition-archive will include: the architectural corpus of Camillo Boito's work curated by the Politecnico di Milano through the networking and collaboration of the institutions that own the project drawings; an entirely new photographic report of all the architectures; Boito photographic collection of the Historical Archives of the Brera Academy; the new scan of the AIDI periodical (to be enhanced with respect to the biasa scan) created by the Photographic Laboratory of the Polytechnic of Turin and at last a mosaic of about three hundred tables resulting from the two-year thematic study carried out by students of the Politecnico di Milano.

The outbreak of the Covid-19 pandemic made DAD (distance teaching and learning method) necessary and impossible to view the magazine directly in libraries. We worked for this unique occasion by activating a series of webinars that saw a high participation of scholars also from other universities and revealed itself to be a real network of specialists, which dealt with various aspects of

the research process. This situation made it even more urgent and necessary to re-scan the magazine, appropriately completed with its, didactically designated, missing graphics. The entire working process has been started and is currently in progress. This teaching experience gathered and involved over four hundred students and shows that a negative event such as the pandemic can prove to be an important incentive and a great opportunity for the research field.



Figure 3. Examples of exhibition tables realized by students inside the History of Art course, Milan 2019-2021

## DEVELOPMENTS OF BAAD: "ARCHIVES OF ARCHIVES" AND STUDY CENTER BAAD

In the guidelines of the New European Bauhaus project, (Polytechnic of Milano figures as a partner) the specific focus of BAAD is not totally included. On the other side, thinking about a relaunch of creativity, innovation and quality production is simply unthinkable without the enhancement of memory and sources. In particular, as far as we are concerned, it is unimaginable don't take into account the largest company that Italy has addressed to those issues: that is AIDI, the body of the Ministry of Agriculture, Industry and Commerce which for twenty years has been the source and voice of the artistic-industrial training of a network of schools and workshops widespread and extended throughout the territory. Also, it has its origins in the Risorgimento movement, which has among its first and greatest exponents Carlo Cattaneo and Enrico Mylius but is continuously at the center of post-unification government initiatives, starting with Emilio Morpurgo's investigation into technical education.

The two-year study on "AIDI (1891/92-1911)" as a source of the history of italian decorative arts and history of the teaching of the project (birth of design), is therefore an integral part of the broader BAAD research project. The twenty years of the periodical and the educational tools it offers, of unique typographic value in Europe, allow us to "design" the "topography" of the beginnings of the italian artistic industry and its entities (manufactures and laboratories), as well as the specific structure of the discipline / teaching of the project, of its own composition / design grammar.

The in-depth study of AIDI as an archive opens up the possibility of networking with other archives of mastery, that is, the sectors of the art industry thematized and identified by the periodical. The first example in this way is the international conference on historical foundries in preparation at the Accademia di San Luca for June 2022 and promoted by the Luigi Spezzaferro Foundation in

collaboration with the University of Teramo, Roma Tre, Polytechnic of Milan, the Central Institute for Catalog and Documentation, the Italian Foundries Association and the International Museum of Cast Iron – Neri Foundation.<sup>18</sup> This initiative allows us to glimpse the activation of similar initiatives in other sectors as the Milan Furniture Fair and the Faenza ceramic does. The service function of the "Archive of Archives" would leave the autonomy of the subjects intact at the same time as it would enhance their reality as a highly specialized network.

In order for a project of such a directly national and indirectly international to develop in all its real potential, it must acquire operational autonomy as a BAAD Study Center. It is up to the institutions promoting its beginnings to give it "unit" and life.

### NOTES

<sup>1</sup> C. Boito, *Lettera agli editori*, in "Arte Italiana Decorativa e Industriale" n.1, 1982.

<sup>2</sup> S. Scarrocchia, Un Emporium di bellezze, in "Pre-Text", 13-14, dicembre 2020, pp. 106-110.

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<sup>14</sup> L'itinerario fa parte della serie proposta dall'ordine degli architetti per conoscere la realtà della Milano contemporanea. Access at https://www.ordinearchitetti.mi.it/en/mappe/itinerario/14-arte-e-architettura/saggio
<sup>15</sup> Accessed 26 May 2021, https://www.youtube.com/watch?v=G-NvfreqmEl

<sup>16</sup> In the History of Art Course (AUIC department - Architecture School), held by professors Maria Canella, Sandro Scarrocchia and Luca Barone (as an internship student) took place a two-years laboratory experience in which the students were personally involved in the creation of tables on individual thematic insights. The topics presented summarizes the authors, workers, companies, schools, museums and main exhibitions characterizing the study period. The peer-to-peer teaching method combined with the use of dedicated digital platforms and tools has ensured the achievement of great results in terms of organization and work. List of assigned themes inside the laboratory, created publicly via google documents, accessed 20 May 2021, https://docs.google.com/document/d/1K9zO4CvM9fLEOrwzOoY\_R\_FJyooV7voHMXMk9xs9gl0/edit

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## PERIOD OF SILENCE: ALLOWING SPACE FOR MULTI-AXIAL LEARNING

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#### INTRODUCTION

In the discipline of architecture and design, making with one's hands is essential to the learning process. Much of this learning is heuristic and can be performed by the student. Professors provide a framework or set of constraints, but it is up to the student to steer the design direction. Remote, online learning has challenged this type of teaching and knowledge-exchange in many ways. We observed physical modeling shift to digital modeling, in-studio conversations moved to breakout rooms, and crafting one's work turned into constant screen-time. More importantly this shift to being online increases dependency for answers. The virtual classroom acts as a "show" that beams knowledge in a single axis that a student watches and absorbs. Any notion or opportunity for risk-taking is decimated because information is being transferred in place of exploration and experimentation. One major step to restore balance between screen-time and risk-taking is to have students turn off the computer during class sessions. This paper will discuss various formats of multi-axial learning to structure and successfully support a learning environment that champions risk-taking.

#### **MULTI-AXIAL LEARNING**

"Learning is experience. Everything else is just information." -Albert Einstein

Learning in the discipline of architecture has always required a hands-on and heuristic approach. From the first primitive hut to a cathedral floor plan or a drawing by Lina Bo Bardi, the lessons from crafting architecture are multi-axial and engage many of our senses from different directions. The ephemeral qualities of shadows through a chipboard model while it rotates in one's hands or how that same model came to exist from surgical cuts and minimal use of glue is only a sliver of how we learn architecture. The design studio teaches students to appreciate empirical observations and to speculate further. This becomes a practice of question-seeking and ultimately leads to risk-taking by way of iteration. Risk-taking and testing boundaries are where concepts, synthesis, and poetics emerge. These are physical acts that simultaneously engage with the axis of sight, touch, sound, surfaces, and the resistive properties of material(s). Of course, other humanistic factors play a part in what I am describing as multi-axial learning, factors such as informal conversations, miscalculations, and stepping out for a coffee. All these instances resonate with a student's memory, senses, and tacit knowledge, which is to say their preconceptions permanently transform due to multi-axial learning.<sup>1</sup> During the time of remote, online learning the number of learning axes were greatly reduced along with many other resources. Administrative plans to set up infrastructure for remote learning were

noble attempts to recreate some semblance of university life, but for architecture and other design disciplines the invaluable lessons from risk-taking were replaced with unhealthy amounts of screen-time and single-axis learning.

#### SINGLE AXIS LEARNING

Remote learning and online education require both educator and student to be on the computer. For a student, their day, week, month, and semester are inundated with video conferencing. This sets up the model Alison King describes as a "Sage on the stage," where the laptop is acting as a miniature stage and information is streaming in one, singular axis or line-of-site to the students' eyes (see Figure 1). This can be effective for lectures and presentations, but constant learning in this format can be numbing and cause a dependency for the right answer or the next steps. This format does not allow much space for discovery or acts of risk-taking in one's own work. In fact, this digital lecture hall setup is intended to be engaging, but the appearance of a student surfing the internet or watching the lecture is indistinguishable.



Figure 1. Single Axis Learning

To find a solution to the situation of excessive screen time, assignments can be written to turn the student away from the screen (see *Figure 1.2*), addressing a multitude of axes to learn from. But how? In part this can be achieved through resourcefulness and introducing self-driven projects, but balancing screen time will not in itself restore risk-taking. Trust between the student and instructor must also be considered, and central to that dynamic must be the instructor's availability and assignments that champion personal insight and resourcefulness. To initiate situations where students



Figure 1.2. Multi-axial Learning

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can begin working in the multi-axial realm, periods of silence must be written into the structure of the course. Students will not suddenly learn actively, but this silence from the digital screen instantly places a student in a trusted workspace where they can engage with axial forces. Scheduling "nothingness" into a virtual curriculum seemingly feels like dead-air, but this void provides a very active period where the student is allowed space to take risks and gain further empowerment and independence in shaping their own learning experience. Hence, dead air = active learning, along with empowerment, independence, risk-taking, and trust. In addition, space for exploration offers the opportunity for a student to set up their own workspace and utilize time wisely, which strengthens future skills around internships, establishing a practice, and most importantly determining the appropriate processes for a new project.<sup>2</sup>



Figure 1.3. Creating space around video conferences

## **BOOKEND METHOD**

The illustration of the professor as a guiding "lighthouse" and students as "captains of a ship" is a common illustration for contemporary architectural education. This approach positions students as active learners and encourages them to find their own way or process, while the professor serves as guide. Alison King describes this as a "constructivist model" for learning and "places students at the center of the process to create meaning for themselves." <sup>3</sup> She continues to describe the "guide on the

side" as a facilitator that structures and prompts space for active learning. This got my creative gears turning for establishing my online studio structure. Using a common studio format of three class meetings per week for 3.5 hours, I employed this lighthouse analogy into a bookend method of teaching for the first three weeks of studio (see Figure 2). Each session started with a twenty-minute check-in, mini-lecture, and/or workshop, after which zoom is turned off for all students to work and create in their trusted space. This period of silence from the computer offered students the opportunity to go deeper with an idea. They were free to explore and take risks. During this time, I, the lighthouse remained on the video conference in case any of the captains needed to check in with a question. After 2-3 hours of substantial worktime everyone rejoined the remote class for the final fifteen minutes to ask questions and share thoughts. I observed a renewed energy and exuberance regarding their work and overall mood. The project prompt for this 3-week experiment was written to be personal and positive, which also contributed to the bolstered energy of the students.



Figure 2. Bookend Method

## LESS IS MORE

Esther Wojcicki, a journalist, and expert in educational development for children, has a similar outlook regarding the development of younger children. She founded an organization called moonshots and advocates for learning environments that give more "autonomy and agency in the classroom and entrusts them with greater ownership of their learning outcomes." <sup>4</sup> In her previous lectures and TED talks, Mrs. Wojcicki speaks to the urge of parents to inundate their children with a packed schedule of lessons and activities may stifle creativity and risk-taking. She argues to allow periods of unscheduled time for doing nothing. In other words, this free time and space encourages a child to overcome their own boredom with creativity and initiative to question-seek. This activity-overload she describes can easily translate to online-learning and the high expectations of attendance by academic institutions. The correlation to multi-axial learning is to loosen the emulation of "normal" academic activities to provide space for invention and risk-taking. And, with this comes trust and an emergence of renewed agency within the students.

### A PERSONAL PROJECT IN PERSONAL SPACE

To provide some context for the 3-week project I mentioned above I will provide a brief description of the students' previous design studio with me as the studio professor. During the Fall semester, the cohort of junior architectural design students conducted the conventional activities of a typical urban design studio. The difference was it was primarily done in an online learning format. Students executed site analysis, programming studies, massing studies, and ultimately physical and digital models of their architectural proposals for a mixed-use residential project. The constituents for this project are young adults who have aged out of the foster care system in Richmond, VA. This is a major social issue in Virginia and even more so during the periods of quarantine. The project was to develop transitional dwellings and a "bridge program" that provided housing and training for the young residents, while offering goods or services to the community. i.e., A culinary school with a café or art studios with an exhibition gallery (see Figure 3).



Figure 3. Fall semester urban design studio - Downtown Richmond, VA

Evidently the students were exhausted from the work and continuous video conferences. In addition, they would have me as their studio professor again in the following Spring. As I realized their exhaustion and the mental toll of excessive screen time, I structured the spring semester to give them more autonomy, experimental media, and most importantly time away from the computer to seek deeper ambition within their projects. Adding to this formula, the content for the first three weeks considered three aspects: the residents from their Fall project, their own memories of home, and the bedroom they were all currently quarantined within.

Borrowing from the chapter Cultivate Moral Imagination, in Jaqueline Novogratz's book Manifesto for a Moral Revolution, the students would look beyond empathy and ethnography to learn about the stories of aged out youth and their hardships. In this project the students were instructed to imagine
what a situation of loss and displacement would feel like.<sup>5</sup> From this exercise they would respond by constructing a "Valise of Home," (see Figure 3) which is simply a vessel that contains and unpacks artifacts that their younger selves would bring to an unfamiliar space to experience a sense of home. This aspect of the project was inspired by Marcel Duchamp's work of La Boite-en valise, his "box in a suitcase," wherein he would preserve reproductions of his work due to displacement from Nazi occupied France. T.J. Demos writes, "This redefinition of homelessness suggest why it was only in 1941, in the state of his forced displacement, that Duchamp first conceived of placing the Boite in a leather suitcase, thus initiating the "deluxe" version of La Boite-en-valise. Only then was the box of reproductions fully equipped for the exigencies of travel, as a suitcase for a mobile refugee." <sup>6</sup> For the students and their exercise into moral imagination, the participatory and full-scale experience of assembling a personal valise was a mental, physical, and literal approach to multi-axial learning. A student's memory and joy motivated the invention and transformation of a found object (their case or valise) to secure personal memories of their actual past to engage an imaginative condition. <sup>7</sup> To further disrupt the banality of working in one's bedroom daily, the space of quarantine, could now be viewed with a different lens, as an unfamiliar space and their stage to unpack the valise.



Figure 3.1. Spring semester - Valise of Home Assignment

The final axis of learning was a time-based narrative that presented the process of making their valise and how it could be unpacked and engage the room. Students were prompted to tell the real and imaginative stories through film. Because we were on a digital platform presenting narratives and operations of the projects, moving images would further increase their engagement of making presentations and watching their peer's work. This was an opportunity to be inspired by makers such as Ray and Charles Eames who made numerous films of their work in their own studio space. In his article, William Cook states that "this childlike sense of wonder was reflected in the films they made" and "…were wonderfully simple – masterpieces of clarity and economy, and often quite profound." <sup>8</sup> Students were encouraged to channel this ethos and bring their valise to life through various forms of time-based animation and film (see Figure 3.3). We spent presentation day viewing these narratives as a mini film festival, where students were encouraged to bring their own snacks, beverages, and lively discussions. It goes without saying, but they enjoyed this project and made it a point to this in the course evaluations. In over a decade of teaching I have not scripted a better assignment. The project combined imagination, memories, artifacts, and full-scale prototyping to giving students full authorship and accountability of their synthesis.<sup>9</sup> Other than a design brief, some workshops, and presentations, the only support I could provide was time offline.



Figure 3.2. Student Valise Films

# CONCLUSION

The 2020-2021 academic year of online education provided much needed insight and reflection on architectural education. It was a fertile to period to explore online platforms for sharing work and knowledge, but additional curation and awareness is needed to prevent exhaustion and dependencies on the computer screen for answers. The notion that web cameras need to be always on us during a class session is not a necessary replacement for in-person learning. Therefore, silence and space from the digital platform offers an alternative "in-person" learning opportunity for a student to strengthen process, independence, and agency from within. In music, it is from the absence and void that each note emerges. Comparatively, the skills of question-seeking and risk-taking will develop from periods of time away from the computer screen.

### NOTES

<sup>1</sup> Julia Williams Robinson, "The Form and Structure of Architectural Knowledge: From Practice to Discipline," The Discipline of Architecture (University of Minnesota Press, 2001) 66, 71.

<sup>2</sup> Carl Lostritto, Computational Drawing: From Foundational exercises to Theories of Representation (Applied Research and Design Publishing, 2019) 174-175

<sup>3</sup> Alison King, From Sage on the Stage to Guide on the Side (Taylor & Francis, Ltd, 1993), 30.

<sup>4</sup> Esther Wojcicki,. "What is a Moonshot Classroom" Moonshots in Education, 2017, https://www.moonshots.org/.

<sup>5</sup> Jaqueline Novogratz, *Manifesto for a Moral Revolution* (New York: Henry and Holt Company, 2020), 44.

<sup>6</sup> T.J. Demos, *Duchamp's Boite-en-valise: Between Institutional Acculturation and Geopolitical Displacement* (The MIT Press, 2002), 12.

<sup>7</sup> Rudolf Arnheim,. *Art and Visual Perception: A Psychology of the Creative Eye* (Berkeley: University of California Press, 2004), 403.

<sup>8</sup> William Cook. "Charles and Ray Eames: The couple who shaped the way we live" BBC Features Newsletter, 2017, https://www.bbc.com/culture/article/20171218-charles-and-ray-eames-the-couple-who-shaped-the-way-we-live

<sup>9</sup> Kay Bea Jones, "Unpacking the Suitcase," *The Discipline of Architecture* (University of Minnesota Press, 2001) 152-154.

<sup>10</sup> Brian McGrath and Jean Gardner, *Cinemetrics: Architectural Drawing Today* (West Sussex, England: John Wiley & Sons Ltd, 2007), 36

<sup>11</sup> Michael Speaks, *Design Intelligence Part I: Introduction*, (A+U Publishing Co., Ltd, 2002), 211.

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# EMBRACING CHANGE: PRESERVING DYNAMIC INTERACTION AND CONTACT WITH MATERIALITY IN THE ONLINE INTERIOR DESIGN STUDIO

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### INTRODUCTION

The adaption of new design teaching strategies to embrace the change brought about by online teaching during the Covid-19 pandemic profoundly affected students. In addition to the challenges of the pandemic, South African students confronted difficulties with the use of lesser technologies in an attempt to preserve the dynamic interaction and contact with materiality in an online studio environment. This paper will reflect on how adapted teaching strategies affected Interior Design students' perceptions of dynamic interaction and materiality in the online interior design studio. The study uses critical reflection and semi-structured interviews as a method of inquiry to describe how adapted teaching strategies for BA Interior Design were perceived. Interior Design 3 is a major exit level module of the BA Interior Design degree in the Faculty of Art, Design and Architecture (FADA) at the University of Johannesburg (UJ) in South Africa. The findings will contribute to the development of interior design education teaching and learning strategies for online teaching. Furthermore, it will demonstrate that design teaching strategies can be innovatively adapted, using lesser technologies, to transfer knowledge and skills in an online design studio. Thereby also establishing knowledge bases for entering students, researchers and academics in the built environment disciplines.

### Contextualized challenges for interior design educators

The growing demands from industries to equip students with qualifications that prepare them for the rapid changes to social, environmental and economic environments continue to pressure educators. Therefore, a strategized approach to education delivery is required to prepare graduates with the capacity to think creatively and critically and have comprehensive mindsets and cross-cultural understanding. Furthermore, institutions must demonstrate the effectiveness of their programs in producing graduates with competencies that enables them to engage proactively in the global industry.<sup>1</sup> In addition to the challenges that face interior design educators, the converging impact of globalization, Information Communication Technology (ICT), and the knowledge explosion has led to radical changes in the built environment.<sup>2</sup> Amidst these global changes, tertiary institutions faced further challenges with the jump to the online studio during the Covid-19 nationwide lockdown in South Africa 2020.

### THE EDUCATIONAL CONTEXT

In March 2020, the COVID-19 pandemic forced South Africa into one of the strictest lockdowns globally.<sup>3</sup> As a result, institutions had to move their teaching and learning from physical lectures and studio sessions to a fully integrated online platform. At the University of Johannesburg, the BA Interior Design course completely moved onto the online teaching platform. The nationwide lockdown occurred at a time when skills-based and peer-to-peer learning was critical in the Interior Design 3 module for this course.

### The Interior Design 3 module

The Interior Design 3 module develops students' ability to refine complex interior design solutions by analyzing and evaluating a range of specified interior design problems and presenting creative solutions that show advanced conceptual thinking and research skills in an integrated manner. The module is assessed through continuous assessment throughout the year of offering. To analyze a design problem, students need to understand basic principles such as scale, proportion, balance, and design elements, which include space, form, line, texture, pattern, light, and colour. In addition, the students use presentation drawings, graphics, models and technical drawings to communicate information to clients, designers and contractors. Teaching and learning of this module comprise practical studio time facilitated in a computer studio weekly. During these studio sessions, projects are reviewed and discussed to enable students to develop a design solution for a defined project within a specified time. In addition, students engage in a range of activities to support their learning, such as guest lectures from industry members and site visits.

### Meeting the module outcomes in a global pandemic

Studio-based learning enables our third-year students to function in a society with recognized cultural attitudes and values. They are aware that the world exists as a set of related systems by recognizing that problem-solving contexts do not exist in isolation. More importantly, they are encouraged to make ethical decisions, especially about social and environmental matters.

Students are further encouraged to develop and promote a conscious attitude that will allow them to identify and solve problems by using critical and creative thinking skills. They learn to collect, analyze, organize and critically evaluate relevant information to address complex design challenges. They integrate knowledge from different sources, assess and apply the knowledge to reach advanced design solutions. The students are further trained to communicate effectively, using written, verbal and visual language skills to present interior design solutions. They can perform a self-evaluation and take responsibility for the work produced.

These knowledge sets and skills that support the Interior Design 3 module learning outcomes are difficult to translate from the physical to the online studio. To exacerbate the challenges of online learning in this module, the educators found themselves grappling with the difficulty of many students at the institution not having access to computers and a reliable internet connection. Thus, it became necessary to explore lesser technologies not ordinarily associated with design teaching to preserve the dynamic interaction and contact with materiality in an online studio environment. The academics in the department of Interior Design swiftly set about upskilling ourselves for online teaching. We promptly explored and identified suitable platforms and technologies that would allow us to translate some of our education strategies and teaching methods into the online studio.

### **CRITICAL REFLECTION**

Interior Design 3 lecturers identified dynamic interaction and materiality as two themes that emerged as key components in both the physical and online design studio through critical reflection. Dynamic interaction is described in literature as having behavioural, cognitive, and emotional constructs.<sup>4</sup> These studies examine the relationship between lecturer-student interaction and academic outcomes, such as student achievement and learning. Students who shared a good interaction with their lecturer reported higher behavioural, cognitive, and emotional engagement levels than those who shared poor interactions with their lecturers. These findings highlight the significance of the dynamic interaction between lecturers and students in enhancing learning outcomes in students.

Materiality refers to the interaction with environments and the connection with matter. It relates strongly to dynamic interaction in that students connect with learning spaces in a physical or online environment. It is the environmental, biological, social, and psychological influences that define each student's unique reality in time. It also relates to the materiality of learning, where students explore the intended and unintended results of making meaning by using tangible material qualities when developing design solutions.<sup>5</sup>

### Dynamic interaction between students and lecturers

A significant component of the studio is the verbal interaction between the student and the lecturer. Verbal interaction is documented as a critical component in enhancing a phenomenon labelled the *Design Life Space*.<sup>6</sup> Research suggests that each design project exists and develops in response to the construction and the dimensions of the individual and shared Design Life Space. Lecturer and student interaction in a design studio setting has always been the basis of design education.

### Dynamic interaction in the physical design studio

The design studio setting is a relevant model for design education.<sup>7</sup> The studio is a space where several students work on their projects while being taught by a lecturer. This setting is intended to simulate a professional studio in a controlled educational environment. Often referred to as the "learning by doing" paradigm, this educational setting stems from the tradition of the guilds in medieval Europe where the "master-(journeyman)-apprentice" model was used to teach craftsman.<sup>8</sup> This educational environment is typical but not exclusive of design disciplines. In these disciplines, the design studio is the centre of the educational experience. All the other relevant modules, such as entrepreneurship, building services or design history, are typically taught in conventional lectures, whereas learning how to design is reserved for the studio. Thus, the fundamental aspect of the design studio setting is the lecturer and student interaction.

Two critical difficulties emerge from this educational setting. Firstly, the design studio lecturers are often practitioners who do not have specific pedagogical training.<sup>9</sup> Yet, it would be challenging to provide design lecturers with pedagogical frameworks applicable to design education because design occupies an ambiguous status. It is not art and is not science. It is a creative endeavour,<sup>10</sup> but artistic teaching models do not fully apply to design since design is expected to be purposeful, functional, or fulfil a human need. Furthermore, knowledge about design remains mostly tacit knowledge,<sup>11</sup> since designers find it difficult to make explicit what they know.<sup>12</sup> This situation renders the intricate "dialogue" expressed verbally or non-verbally between lecture and student in the design studio relatively obscure.

Schön terms this difficulty as a paradox and a predicament of learning to design: "[i]nitially, the student does not and cannot understand what designing means. He finds the artistry of thinking (and doing) like an interior designer to be elusive, obscure, alien and mysterious".<sup>13</sup> Thus, lecturer and

student interaction remain unclear and difficult to describe. While the general framework of design education appears to be compatible with constructivist learning theory,<sup>14</sup> general learning theory models can only describe the educational setting in its most generic aspects, whereas the intricacies of learning how to design remain implicit.

Schön addresses a few aspects that are paramount for design education in the quote, "[t]he language of designing is a language of doing architecture",<sup>15</sup> Firstly, that there is a particular "language" of design that a student must learn, which is tacitly alluded to by the lecturer. And secondly, that the role of the lecturer is twofold. On the one hand, he acts as an expert practitioner displaying his expertise as an example for the student. On the other hand, the lecturer at times interrupts his performance, as it were, to highlight and directly address the process of designing. Thus far, most studies delved into the design studio setting have focused on the design process.<sup>16</sup> This comes as no surprise since the design process has been a central research field within design research as a whole.

The dynamic interaction in the physical studio is thus mediated in a relatively instinctive manner. The immediate contact that the studio provides allows students to connect with lecturers during the studio session and engage in meaningful dialogues. Casual conversations in the passages of the department further enable students to draw on feedback, guidance and instruction from lecturers.

### Dynamic interaction in the online design studio

The online studio replaced the physical studio with structured times and modes of interaction that was hampered by access to technology and poor internet connectivity. Where students previously connected with lecturers during a five-hour studio session and in casual passageway chats, online teaching limited it to short, focused interaction.

Questions such as whether the relationship of lecturer to students was going to be limited to one-tomany or allow many-to-many communication platforms were raised. How communications and dynamic interactions were going to be facilitated by the technology was another challenge.

Research indicates that the technology raises pedagogical issues when creating a virtual online studio. The success of a virtual design studio does not rely only on effective technological support. The process is as much a contributing factor to success as is technology. Thus a virtual studio must assist the students in learning about processes that support a successful design exchange over communications networks. The techniques employed must also accommodate the capacities or inadequacies of the technology at hand.

In this context, the online studio presented an opportunity for extending openness from an operational design studio behaviour to a holistic attitude towards design. The online studio presented opportunities for expanding studio activities while a network structured communications setting sought to promote student connectivity. Communication expanded to industry stakeholders and other domains to broaden the studio's knowledge base. Online features and additional face-to-face practices were used in a complementary mode because learning was not limited to the adoption of online modalities but also involved the reconsideration of face to face meetings and the redesign of the physical studio. Students were able to direct their learning by choosing the level of their involvement in the various features offered in this layout.

The introduction of virtual design studios appears to raise promising opportunities for reconsidering the way we teach design. It changes the relationship between lecture and student and student and the rest of the world. In this way, it opens up numerous opportunities. We have an opportunity to reconsider the teaching methods we employ and adapt them to these opportunities, rather than forcing the new process into our recently adopted conceptions about appropriate ways to teach in a design studio. The virtual online studio presents a model where learners are not just receivers but actively construct knowledge through dynamic interactions.

### Materiality of environments and matter

The Interior Design 3 module focuses on activities organized around the systematic and deliberate pursuit of creating and developing something new. It can be new concepts that students communicate in text, through visual means or a design artefact. Thereby a notion of practice as an enactment of, and a medium for learning, blends learning together with action. In other words, learning is linked with the activities in a learning-in-practice way. Materiality in the learning environment and interactions with materials are inexpressible in the online studio.

Students draw on visual and linguistic resources to make meaning. They understand that materiality represents ideas, and they recognize that materiality motivates meaning. These students appreciate that ideas and meaning are interconnected. When students engage in complex decisions, they do so by selecting from a range of meaning-making systems, in-text and visual resources, through various accessible resources and the combined use of these resources.

Visual representation allows students to engage with each element's functions and qualities in a more considered, be it theoretical, way and decide how to communicate an idea. Visual modes demand consideration of the relationships between different elements, such as line, shape, form, texture and colour. Spatial dimensions, 2D to 3D representations, allow opportunities to present relationships between different components through layering and the representation of depth and texture.<sup>17</sup>

Materiality is an element that is often discussed in the background of educational theories and practices. It is described as the material part of learning, particularly how learning is linked to engagement with environments and matter. However, traditional definitions of learning can detract from our ability to understand how learning occurs in other modalities. Considering the rapid move to online teaching, it will be reasonable to review our understanding of the significance of embodied cognition in learning and the effect of teaching and learning activities on our human embodiment.<sup>18</sup>

The materiality of the learning environment has been much debated over the past decade. According to the Frankfurt School critical approach, "things" influence learning processes because it gives a surplus of sense-making that lies beyond language. Tilley states that "materiality is an integral dimension of culture" and signifies psychological and social realities where it functions as a way to reproduce realities.<sup>19</sup> Researchers have debated the notion of the digital replacement of education environments and materials. They have provided evidence of the potential differences for learners between reading, writing and touching on paper, the physical, versus on a computer screen, the digital, from the material characteristics of the presentation.<sup>20</sup> Digital technologies lead to specific learning practices using digital resources to participate in the materiality of learning.<sup>21</sup> The debate lies in the difference between learning in the physical versus the digital environment, and the interaction between physical and digital matter. We must therefore consider how do physicality and materiality affect our interactions in a space.

### Learning environment, studio versus home

With the introduction of the internet, physical location has become mostly irrelevant. There is no distinction in a person's digital interaction whether they are in the same room, country, or anywhere in the world. In creating digital spaces, we lose physicality and materiality.

In the South African context, many students relied on the university campus as the only place where they have a desk large enough to work with the larger size pages commonly used for interior design presentation. In some cases, this could also be the only place that they have a desk for their exclusive use, unlike sharing a dining or kitchen table at home. In many cases, it is also the only place where students have access to an uninterrupted internet connection.

### Matter, physical versus digital

Learning is a transformative process where communication, whether through language, gesture and visual communication, expresses meaning. Importing line, shape, form, texture and colour, in descriptive text or visual means become the means of expressing materiality in online communication. Materiality is essential to generating and communicating ideas as it provides an informal and supportive way to develop the ideas further.

Interior Design 3 students must explore materials regarding their physical properties since interior environments rely significantly on the tactile properties of the surfaces with which the inhabitants of space will interact. It is, almost paradoxically, more important at a time when more people spend time indoors during the pandemic.

### METHODOLOGY

The nature of the study suggests a qualitative study in an attempt to explore interesting phenomena.<sup>22</sup> The research is conducted within a defined setting with a distinctive dynamic. Therefore we chose to investigate the phenomena using critical reflection as a method of inquiry within a single case study. The study expands on the learning experiences of students in the Interior Design 3 module in 2020.

The study expands on the feating experiences of students in the interior Design 5 module in 2020. The data describe feelings, attitudes, views, and understandings of the challenges of teaching and learning during the national Covid-19 lockdown. Since the data reflect personal and socially constructed views, the study is considered from an interpretive paradigm. The sample comprises eleven students. The sample size is structured on a purposive basis that ensures that participants engaged with the Interior Design 3 module facilitated at the Interior Design department of the University of Johannesburg in 2020. The sample selection of eleven students contributes to 50 per cent of the students registered for the module.

Interior Design academics engaged in teaching strategies in the physical and online studio and adapted them accordingly, using lesser technologies, to meet the Interior Design 3 module's learning outcomes. Through critical reflection of these experiences, these academics identified two themes that emerged as key components in both the physical and online design studio.

We employ semi-structured interviewing as the data collection method for the study. This involves describing the predetermined themes to the respondents. These are captured in a prepared questioning agenda to use as guidance while allowing the interview to be flexible. In this study, the interviews seek to understand how teaching strategies were employed to meet the Interior Design 3 module learning outcomes. The two identified themes guide the semi-structured interview questions and written reflections.

The first is related to dynamic interaction between the students and the lecturers. Typical questions included how the interaction changed between students and lecturers during the national Covid-19 lockdown. Students were asked to reflect on how the new way of interaction benefitted teaching and learning. They were asked to present disadvantages that were evident in the new way of interaction.

The second theme that guided the interview questions relates to contact with materiality. These questions included how the lack of access to products, materials and finishes changed the way students processed information for the design solution. Students were asked to reflect on how the lack of access to products, materials and finishes affected the presentation of design solutions. They were asked to describe if and how the lack of access to products limited their ability to understand the intangible value of materiality.

### FINDINGS AND DISCUSSION

The findings from the eleven student respondents were analysed, and word clouds were generated for each question. This enabled a deeper understanding of the critical components that influence the students' learning experiences between the physical and online studio.

### Dynamic interaction between students and lecturers

Reflecting on how the dynamic interaction between the lecturers and students changed from the physical studio engagement to that of the online studio, students primarily felt that the change was difficult and hampered their interaction with the lecturers. They felt that the "human" aspect was lost and that student-lecturer interaction became more formal, altering the type of relationship shared with lecturers in the studio. However, students felt that the decreased interaction resulted in more structured, concise lectures and followed a more logical weekly sequence. Furthermore, they felt the content and resources made available to them increased.

Students felt that they lost the benefit of the one-on-one consultation. They could not express their concepts through drawings the way they would have in physical interactions. More introverted students prefer one-on-one consultations as they felt nervous to ask questions in open, online sessions. However, some respondents explained that they felt the online studio beneficial in this regard, as all students were given equal attention whereas in the studio, struggling students received more attention. Furthermore, students describe how the open, online question and answer sessions became more beneficial than one-on-one consultations as all the students could learn from each other and the questions asked.

Some students expressed how the lack of interaction with their peers also placed them at a disadvantage, while others felt that peer-to-peer learning was intensified because of the limited interaction with lecturers. However, most students expressed that they felt isolated from their peers and lecturers, which affected their mental health and, consequently, their work.

Nearly every student reflected on how the limited lecturer-student interaction forced them to engage in more independent work and research, and taught them to be more self-reliant, only asking the necessary questions. Some felt this was a positive and extended their design knowledge and understanding, while others explained that it hampered their progress and quality of work.

Due to specific and reduced lecturer-student engagement periods, students felt that they were allowed more flexibility and could manage their personal and work time more effectively, as shown in Figure 1. Many of them had to take on household chores and childminding and adapt their work schedules accordingly.



Figure 1. Word cloud of respondents' answers explains how the new way of interaction in the online studio benefitted teaching and learning.

Several respondents explained that the difficulties of access to technology, devices, internet connectivity and software placed them at serious disadvantages, versus in the physical computer design studio, where there is access to these requirements. Many students, however, concurred that as lecturers became more proficient at adapting their teaching styles to accommodate the capacities or inadequacies of the technology, the more dynamic the interaction between students and lecturers became.

Students generally felt they could direct their learning by choosing the degree of their involvement in the various features offered in the online teaching layout. Those who engaged in active independent research and work felt that they learnt and benefitted more. Students also felt they became better equipped and acquainted with suitable technologies to present effective design solutions that suited the new teaching-learning style. However, a few students felt that they could "switch off" from online learning due to the lack of accountability and did not feel motivated to involve themselves to any extensive degree. In our South African context, students felt they could simply use "bad connectivity" or "load-shedding" as adequate reasons for non-participation.

### Materiality of environments and matter

Some students felt that working in their own comfort space improved their quality of work. They could create their work schedules and felt comfortable in spaces they were more familiar with. They also felt less distracted by their peers.

However, most students felt isolated and could not work well in their personal spaces. They felt that their sense of creativity was hampered by being in the same environment all the time, surrounded only by family members. Many students explained that working at home created many distractions, and they were often disturbed in their work process. It took time to establish effective work schedules that were strictly dedicated to studio work. Furthermore, they were limited in the availability of the space and equipment usually offered in the physical design studio. Due to the lockdown restrictions, students felt that their inability to go out and experience spaces, objects, and materials hampered their ability to produce creative solutions. The lack of access to materials, finishes, and products compelled students to conduct far more research to better understand materiality, as shown in Figure 2. Due to the lack of physical tactility, students were uncertain whether the correct materials, finishes and products were specified for design solutions. The images on a device screen were not always representative of what it was in reality. This forced many students to use materials, finishes and products that they were more familiar with, and their exploration of new materials was inhibited. This resulted in less creative design solutions. Students also felt they could not communicate their designs as effectively on digital platforms, as the physical supporting materials and samples communicated many of their solutions.



Figure 2. Word cloud of respondents' answers to describe how the lack of access to materials, finishes and products changed how they processed the design solution.

# CONCLUSION

The English mathematician and philosopher Alfred North Whitehead said, "[t]he art of progress is to preserve order amid change and to preserve change amid order".<sup>23</sup> This paper considered how the adaption of new design teaching strategies brought about by online teaching during the Covid-19 pandemic affected students' learning experiences in the Interior Design 3 module.

It reflected how Interior Design students perceive dynamic interaction and materiality in the online studio. Students perceived the student-lecturer interaction as more formal, structured and simplified and considered that to be an advantage. Moreover, the isolation from lecturer and peers required that they engage in more independent work and research that taught them to be more self-reliant. However, most students expressed that their lack of interaction with their peers and lecturers affected their mental health and, consequently, their work.

The students expressed how their isolation inhibited their experiences of physical spaces, objects, and materials and that it had a negative effect on their ability to produce creative solutions. Students believed that physical contact with materials, finishes, and products promoted their understanding of materiality and explained that their creativity was hampered as a result. However, by actively engaging in research, students endeavoured to produce effective design solutions by gaining more knowledge about materials, finishes and products they could not interact with.

The findings of this study will contribute to the development of interior design education teaching and learning strategies for online teaching. Furthermore, the findings demonstrate that design teaching strategies can be innovatively adapted, even with lesser technologies, to transfer knowledge and skills in an online design studio.

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# THE ART OF TRANSFORMATION

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### INTRODUCTION

The COVID-19 pandemic has brought the largest paradigm shift in the educational world, affecting more than 1.6 billion students in almost two hundred countries<sup>1</sup>. Closure of educational institutes and learning spaces has affected more that ninety-four percent of the global student population<sup>2</sup>. The online pedagogical system is the only way to move forward considering the ongoing, unpredictable global pandemic. It brings its own set of challenges for educators and students, but at the same time it is also moving closer to instructive revolution. There is currently no alternative to the digital lifestyle we as teachers and students have adopted, and the only way forward is to embrace the challenges as we adapt to the new academic landscape, as there is no certainty about when we may be allowed to safely return to in-person classrooms. Even as we embrace the challenges, there are many who cannot easily adapt due to factors such as their household systems and economic backgrounds<sup>3</sup>.

The research pool was examined for qualitative and not quantitative factors effecting education system during the pandemic. The information in this paper is majorly personal experiences as an educator combined with online journals and others proficiencies. The rapid implementation of the practice of social distancing and following Standard Operating Procedures in public has disrupted the psychology of our education systems<sup>4</sup>. Reopening institutions with distant or hybrid learning has presented its own set of challenges for teachers and students alike. We as educators in the architectural field have had to innovate new techniques of keeping the stimulus alive in our students. Architecture as a field requires immense human interaction, constant discussions, drawings, and model-making, which becomes very difficult to create or assess in a virtual educational world. However, day-to-day practice and struggle also means progress towards making things workable. This is a new landscape with an immense learning curve. Nonetheless, the full responsibility of navigating this new landscape rests on the shoulders of teachers, who are also under pressure to maintain high spirits constantly in order to motivate their attendant students to adhere to the virtual didactic system<sup>5</sup>.

### **PROGRESSION OR REGRESSION?**

Everyone who has had to adapt to this paradigm shift is finding their own approach to creating a comfortable workspace for themselves and those who live with them. For some, their strategies are working well while others are still struggling to find workable solutions. The need of the hour is to revolutionize the education system and substitute device-based learning and examination approaches. The COVID-19 pandemic has transformed the world in a way that gives us opportunities to explore multiple approaches to digital learning<sup>6</sup>.

This research also focuses on the strengths and the weaknesses of online education, coupled with an exploration of other factors affecting the reception of online learning, such as non-conducive domestic environment, internet or computer accessibility, and individual learning abilities. Students with mindsets that resist change find adapting to a new academic environment very difficult, and so the current students in the architecture studio I am conducting, and on whose responses this research draws, have had a varied response to their new learning environment. Other students, such as those who were observably introverted or those who were drawn to experimental ideas, found these instructive adaptations much easier. The online education system may be the only way of teaching in this pandemic, but its adoption as the primary academic model is ultimately dependent on students' reception. Where the teacher's approach to keeping the class stimulus alive is crucial, the success of the system also depends on the students' choice to attend class<sup>7</sup>.

The challenges my peers and I are facing in design-based academia are contrasted with the opportunities and avenues for expansion opened by the development of the global classroom and distance-peer-learning. The standard of education has risen to become increasingly informational and focused on expanding exposure, ideation, and conceptualization as a result of not being confined within the physical limits of one's university or even one's own national borders. We have had the added advantage of inadvertently improving the urban environment through a significant reduction in carbon emissions from commuters' cars on the roads, even as students and teachers have also found being within closed spaces for even more extended amounts of time physically and psychologically impairing.

### CHALLENGES OF DIGITAL PEDAGOGY

Where online education is opening numerous avenues of innovation in learning and teaching, it also brings with it a number of challenges. Most art-related fields, particularly architecture, require peer learning with students needing constant feedback and motivation from not just the teacher but also other students, as well as the entire studio environment.

The study of architecture requires endless discussions between a varied group for gratifying design outcomes. Every student's individual approach to learning and adapting to the studio environment leads to differences in performance under pressure; this also leads to varying levels of competitiveness and collaboration among students through continued observation of each other's work<sup>8</sup>. Unfortunately, this level of involvement is not possible in a virtual classroom, where physical drawing, constant peer review, and a stimulating studio environment are all absent.

Further, what used to be an eight hour in-person studio day has been reduced to three hours on an online platform, with the nature of the session shifting from the development of designs to individual presentations. Many fifth year architecture students do not turn on their cameras in studio, choose to leave the virtual classroom as soon as their discussion is over, and, above all, do not attend the class for arbitrary reasons without fear of consequences. Given that these are architects on the cusp of graduation and attaining their licenses, one can imagine the immensity of the challenge of motivating students in lower years. It therefore becomes paramount for teachers to make the virtual studio environment at least as creatively stimulating as the in-person setup has been in the past, if not better. Beyond the challenges of motivation across physical distance, numerous student's

performance is also suffering due to the home-based learning environment, which is affected

by their socio-economic backgrounds and ease of access to laptops/computers and internet<sup>9</sup>. Being an educator in the global south, one faces uncertainties such as power outages, interrupted internet connections, and unsuitable bandwidth. "Only thirty- four percent of households in Pakistan have internet access, and fourteen percent have laptops or computers"<sup>10</sup>. The average Pakistani household

has to address the educational needs of four dependents who all require individual laptops and workspaces, but the sad reality is that the average Pakistani family cannot afford these resources, often excluding students from academic opportunities. Many students' homes simply do not have the space to accommodate a designated working area for them. The absence of such basic facilities required in architectural education make the learning environment almost impossible to navigate, with the potential to compromise the quality of education we strive to impart.

The pandemic is also associated with increasing mental and psychological health issues among students as a result of being confined to the same space day in and day out<sup>11</sup>. Because students are now working on all projects individually from within their home environment, there is little to no distinction between living spaces and workspaces. An educational institute is designed not only as a space where one goes to study but to increase one's social skills and exposure to other academics. Deprived of such common spaces, students are finding it difficult to maintain their motivation to work even more because they do not have the social supports offered by university environments breeding perseverance and foresight among designers.

As designers of space, architecture students are also particularly sensitive to mental restraints imposed by being in enclosed rooms for stretches of time. All these factors combine to produce a distinct disconnect between the objectives of architectural studio practice and the outcomes achieved: motivation to work and creative investment in students' own and others' projects are both low. This is a significant reason for students keeping their cameras off during virtual studio sessions and not participating actively in discussions. In addition, facilities such as laser-cutting machines and printing plotters are unavailable. Ideation and conceptualization furthered by drawing, model-making, and revision is compromised.

With limited peer-to-peer interaction, students find self-motivation all the more difficult. Organizing, scheduling, and faithfully following timelines on their own requires much greater strength of willpower on the part of individual students than required in a studio setting. Not every student is adequately disciplined. Some perform exceedingly well with the stimulus of the studio environment but are reluctant to raise questions and comments in a virtual classroom and so find this pedagogical method difficult to adjust to. This puts students who are disciplined about daily routines while also being academically self-motivated at an advantage, as they adapt to changes more easily and suffer fewer losses to their educational development.

In turn, even as technological literacy and reliability grows by the hour, all students do not have the same access to facilities and therefore cannot be expected to master new technologies very quickly. Traditionally architectural teachers and students have relied on hand-drawings despite the availability of software for ease of creative ideation. For many students, the transition to digital presentations has meant that they have to scan, edit and format their drawings before presenting them in the virtual studio, making the entire process far more time-consuming.

Finally, architecture students are facing immense educational losses in the absence of site visits and study tours. Travel is a major contributor to any architect's education as they analyze urbanization and study a variety of projects at close range; however, with pandemic restrictions in place, all experiences must be virtual, making it extremely difficult to do thorough analyses and understand contextual development. Many paradigms of architectural study are challenged in the face of the current situation. Identifying issues as they arise, our task as teachers is to identify currently available utilities that can best compensate for shortcomings, so that we may adapt more readily to a situation we have no power to change. Having discussed some of the difficulties, I now address the positive outcomes of virtual learning.

### LEARNING OPPORTUNITIES COVID-19 HAS GENERATED

Despite the difficulties educators and learners alike are facing, the pandemic has also given rise to several new opportunities in the domain of teaching methodology through a shift in perspective. Rapid development in the field of communication technology has facilitated this shift<sup>12</sup>. The term "learner" applies equally to teachers and students as they step out of their comfort zones and welcome change, creating the conditions for a revolutionized education system, as well as reducing the impact of distance on relationships that support and sustain academic pursuit<sup>13</sup>. Communication between teachers and parents has been strengthened as parents become more involved in their children's schooling, influencing both academic and psychological development. Learning new software has become a regular feature of this new routine, especially in the case of architecture students who have learned to analyze sites virtually and orchestrate simulated tours of proposed designs.

Communication techniques and technologies have been transformed through the shift to virtual classrooms<sup>14</sup>. In this new era of architectural education, the instructor is compelled to be thorough, organized, and calculated while delivering a lecture, as every lecture is recorded and archived for students' use. The benefit of this is that students who are unable to participate in the live lecture have easy access to the materials, and in the long-term students can also reference these recordings if they need clarity on topics covered in class. The presentation format required for online studio has led students to become more organized in their approach towards their projects as they critically examine their own work and develop broader perspectives in their design philosophies, making them observably better presenters, more confident and taking more ownership of their work.

One of the most exciting opportunities created by the shift to online learning is enhanced exposure and capability for collaboration between universities across geographical distances<sup>15</sup>. Not only can students access the libraries and databases of institutions the world over, educators can also now conduct joint lectures, conferences, workshops, and competitions with global participation without being restricted to their own universities' rosters<sup>16</sup>. This development has the potential to eliminate some of the limiting effects on academic participation of physical distance and economic background. Some of the hierarchical structures that play into students' academic experiences in studio have also faded in virtual settings. Education not restricted by brick and mortar has increased access and understanding among the global academic community, leading to unprecedented leaps in collaboration. The pandemic can be credited with bringing this community together.

The online educational model promotes an educator's ability to direct focused, individualized attention on every student's project using breakout rooms in a more effective manner than was possible in in-person classes. Virtual classrooms also improve teamwork and time management, since commutes and other necessary but time-consuming features of traditional educational models are no longer factors affecting students' performance or availability. Extracurricular activities are restricted, allowing students more time to complete or improve their projects. Many students have taken this opportunity to probe unfamiliar/experimental learning and investigative methodologies, with gratifying results. Not being restricted to university timings has allowed students to conduct discussion sessions at any hour of the day as questions arise, ultimately helping them meet deadlines more rigorously.

Students who do not thrive in university-based studio dynamics now have the opportunity to design and control their own learning environment. Additionally, students prone to stage fright during presentations find it much easier to present their work virtually from within their own comfort zone as the pressure of being the center of attention is diminished. Educators in turn can draw on more peers and reviewers to participate in juries and discussion sessions with greater ease, allowing students to develop new outlooks and perspectives.

### THE DIDACTIC PSYCHOLOGY

Not everyone adapts quickly or easily to online educational models. Many educators and learners are struggling with the adjustment. Teachers as well as students come from a variety of socio-economic backgrounds, and many require training sessions to understand the new dynamics. Unfortunately, Pakistan lags behind other countries in providing such necessary facilities to its educational institutions<sup>17</sup>. Currently everyone is adapting to the changes on their own impetus and pace, undermining the government's goal of standardizing the education system. Higher educational authorities need to step in and help smooth this transitional period for teachers and students alike through grants for acquiring laptops, reducing the teacher-student ratio, and training in new educational platforms and software. The existing shortcomings of the educational system can only be remedied through increasing access to technology for all teachers in Pakistan, thereby improving the quality of education students receive overall<sup>18</sup>.

Other areas for critical reflection and learning include the domains of online assessments, examinations, critiques, and jury sessions. Teachers find it more difficult to qualitatively assess work produced during home-based examinations for the student's understanding. In addition, the authenticity of the work produced under examination conditions is also suspect, especially if the supporting technology fails<sup>19</sup>. Moreover, many parents are helping tutor students under the current circumstances, to incredibly varying degrees. As a result, the entire pedagogical process becomes opaque in terms of learning and retention, making grading in the current environment all the more confusing and problematic for both teachers and students.

As students globally adapt to online examinations, students in Pakistan are finding the transition even more perplexing as the large classroom sizes has meant that teachers find it more difficult to conduct examinations and presentations. The added pressure on students has led to higher dropout rates during the pandemic<sup>20</sup>. It is necessary that authorities provide these students and teachers with appropriate online examination software, virtual presentation forums, and platforms for hosting digital portfolios.

While every student learns differently, some students in our classrooms are differently abled, such as those who have learning disabilities, visual, hearing or other physical impairment, or other needs. These students require extra, specialized support from instructors that guardians/caregivers at home cannot provide, hindering their learning process. There is a dire need to invest time and resources to bridge the gaps for these learners. Caregivers and teachers both need training to adapt to the needs of differently abled students in the virtual classroom<sup>21</sup>.

### CONCLUSION

According to early World Bank estimates, At least of one million children in Pakistan are expected to drop out of school owning the Covid-19's socioeconomic impact<sup>22</sup>. The pandemic has effected Pakistan's education system majorly and there is no certainty as to when in-person teaching and learning would resume, and whenever it does, it would certainly remain forever transformed by the impact of an expected two or three years of teaching under pandemic conditions. Indeed, we can expect greater development of hybridized in-person and digital learning methodologies, with ever-increasing emphasis on learning communication technologies as they develop and are launched. Design-based professions such as architecture are themselves at the helm of innovation as they must begin to respond to the need for developing a "pandemic architecture", one that accounts for constant sanitization, social distancing guidelines, and contactless transactions.

My findings from observing my students' studio and theory output over the course of this last year and their responses to periodic assessments yielded valuable insights into the effects of the transition from in-person to online architectural education on a variety of students. But the conditions unfortunately vary from a university setup to small scale school dynamics. My conclusion is that the shift has been easier to navigate for some students than others, with causes ranging from learning abilities to socio-economic circumstances to receptiveness to change, creating novel challenges for instructors themselves grappling with the transition to varying degrees of success. Ultimately, this state of affairs results in a vastly unequal educational landscape, which the state has a duty to address without need of corporate assistance.

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# FIELDWORK IN MY BACKYARD: EXPERIENCES WITH THRESHOLD LEARNING BASED ON DISTRIBUTED FIELDWORKS IN PROJECT-BASED COURSES

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### INTRODUCTION

Fieldwork and field-based learning are essential elements of education within the field of planning and architecture<sup>1,2</sup>. Recently, the restrictions caused by COVID-19 pandemic forced the combination of field-based learning with digital collaboration among higher-education to replace or combine field-based learning with digital collaboration. However, the influence of field-based learning with digital collaboration. However, the influence of field-based learning with digital collaboration and its effects on students' learning is an under-explored area in previous research on planning education. This paper aims to understand students' learning trajectories in field-based urban planning courses and the roles of external facilitation in this learning. This is achieved by reviewing students' written reflections from a physical and digital fieldwork semesters in the Master of Science program in Urban Ecological Planning (UEP) at the Norwegian University of Science of Technology (NTNU) and analysing the learning processes of the participants through the lens of threshold learning. The findings from this paper have helped in redesigning teaching of UEP field-based courses at NTNU towards a more hybrid approach to pedagogy.

### Fieldwork design 2019 vs 2020

Before 2020, semester long fieldworks in the M.Sc. program in Urban Ecological Planning have been taking place primarily in Uganda, Nepal and India. After a common introduction for all international and domestic students in Trondheim, Norway, in the first semester of the program, the entire group traveled together with one or two faculty members to urban areas in these countries to perform an extensive fieldwork, which lasted between 6 and 12 weeks.

In 2019, students were divided in two groups: one travelled to Goa, India and the other chose to stay in Trondheim to undertake fieldwork. To understand student learning, analysis for 2019 is based on student experiences in India where they worked on planning projects in groups.



Figure 1. Fieldwork pictures from India, 2019.

Due to restricted international mobility, such fieldwork was impossible in 2020. Since most of the students were unable to travel to Norway, or anywhere else, they were asked to choose a case study in their home cities, or wherever they stayed during the pandemic. Although they could not meet physically, the students were still divided in groups pf 4 or 5 and were provided with one faculty member as a group supervisor for each group.



Figure 2. Fieldwork pictures from respective home cities and online collaboration through digital mediums, 2020

An important difference between these two fieldworks was that in 2019, most of the students were unfamiliar with the context of the fieldwork, while in 2020, most performed their study in a chosen place in cities where they lived, therefore had a higher degree of familiarity with the case study.

# Comparison in learning 2019 vs 2020

The comparisons in learning in physical and digital fieldwork semesters are based on students written reflections from field (Figure 3), a feedback workshop with the faculty and current UEP students and a UEP alumni survey, all of which form the sources of data for analysis.



Figure 3. NVIVO Word Cloud showing most talked about words in students reflections from both 2019 and 2020

The student progression throughout the semesters was assessed based on the learning outcomes (LOs) of the field-based courses, which was the same for 2019 and 2020 (Figure 4) and analyzed using the theoretical framework of threshold learning.



Figure 4. Learning Outcomes (LOs) for field-based courses for Urban Ecological Planning

As defined by Cousin<sup>3</sup> "the threshold concept has been seen as a valuable tool, not only in facilitating students' understanding of their subject, but in aiding the rational development of curricula in rapidly expanding arenas where there is a strong tendency to overload the curriculum". The analytical framework used for reviewing students' reflections involves identification, processing and overcoming of thresholds. Different aspects of threshold concepts like troublesome (counter intuitive) knowledge<sup>4</sup>, transformative<sup>5</sup> and integrative<sup>6</sup> were identified using definitions from existing literature, while processing and overcoming of thresholds were based on students' written reflections. This makes our findings specific for our program but also applicable to other similar field-based courses.

### ANALYSIS

### LO1: working in complex urban environments

In both 2019 and 2020, students reflect on the difficulty in approaching community members that they encounter on field (Box 1). While in 2019 they reflected mainly on the personal skill of overcoming the fear of striking up face to face conversations with people, in 2020 it was attributed more on the limitation of digital tools that students had to take up during the pandemic in order to approach people. Additionally, the 2019 students reflect very frequently on being unable to build trust with the community while 2020 students do not.

2019 *	2020 **	
"it will be hard for me to actually make	"tried to switch to use digital methods and asked for	
the first step and go up to people on the	people's contact information. Most of them rejected	
street and start conversation "	me directly"	
*reflection made at the beginning of fieldwork	** reflection made towards the end of fieldwork	
Box 1. Students' reflections on difficulties in approaching people on field		

### Identifying threshold

For both years, students appear to be forced to go against their intuition, as defined by Cousin<sup>7</sup>. which in this case is of not talking to strangers on street which we think is a necessary threshold to overcome for them to learn how to work with a variety of stakeholders. Even though students in 2020 point to reservations on part of the community to participate in digital interviews and surveys, evidence from 2019 shows that they would might have anyway discovered the 'troublesome knowledge'<sup>8</sup> about difficulties in working on field even if they were given a chance to apply more traditional physical interactions based participatory methods. Which further leads them to an additional threshold of having to build trust with the community. We also observed that a more in-depth orientation on how to use digital tools rather which tools to use would have greatly benefitted the students to overcome the 'compounded'<sup>9</sup> threshold that digital tools presented in pandemic year. We refer to compounded threshold because for 2020 cohort first there is a threshold of engaging people in participatory methods and second that they had to do it through digital tools which presented additional challenges, hence adding an additional layer of threshold to cross for learning to happen.

### Overcoming threshold

There is evidence from 2019 that it was easier for students to overcome this barrier or at least to make peace with the discomfort of approaching people and building trust when they had their peers to support them on field. This points to the importance of solidarity and knowledge sharing, and how these help in overcoming the 'troublesome'<sup>10</sup> aspect of fieldwork (Figure 5). This learning is closely related to the LO 2.



Figure 5. Student reflection from field, 2019

# LO 2: working effectively in interdisciplinary and cross-cultural teams

2019	2020
When it became very hard for everyone to	most of us met into similar problems when
structure all the input and knowledgewe tried	conducting fieldwork in our individual case
methods like brain-writing and back-casting.	study areas. There were delicate or huge
That helped us to clear our mind and define the	differences because of quite different contexts
actual issue	

Box 2. Students reflections on	difficulty in	working in groups
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As can be seen in Box 2, in 2019, students referred to overcoming differences within their group and moving towards a common goal, which can be attributed to them working on the same theme within one group. On the other hand, 2020 students only highlighted the differences but did not suggest ways overcoming them, which can be attributed to them working on different topics in their home countries and still being required to collaborate within a group and produce a group report.

# Identifying threshold

In 2019, students gain the eventually gain competency of moving towards a common goal together which suggests successful achievement of this LO. The threshold of group differences once overcome is transformative<sup>11</sup> in nature. Feedback from our alumni shows that learning groupwork on field is something that has stayed with them through the years. This learning is somewhat missing in 2020, where students seemed more 'stuck'<sup>12</sup> when they encountered group differences and it was also evident in the quality of group reports, the delays in making a common executive summary and that

they did not build the same level of integration as 2019 cohort i.e. groups with better coping mechanisms produced timely reports and better intra-reflections within their groups.

### Overcoming threshold

We observed that trust building within a group is much more seamless in a physical environment, an opportunity lost during collaboration in digital environment. This is also evident from students' reflections from 2019 where they reflect on the importance of working in groups by learning from each other (closely related LO 3) and comparing group challenges.

2019

"I can feel some clashes between us. But things are getting better after we realize that the other groups have worse problems. I cannot fully say that I am a good group mate too, but at least they all said that they are happy with our report and presentations and so do I."

Box 3. A student's reflection on groupwork in 2019

What we as teachers can learn for future scenarios where a digital collaboration or hybrid teaching needs to be replicated, is to create more opportunities for inter-group peer interaction where they can learn from each other's successes and failures. The component of self-reflection in Box 3 on being a good or bad teammate is also an example of overcoming integrative threshold<sup>13</sup>, wherein a student discovers underlying or integrated layers of learning groupwork as they go deeper into groupwork in the field. Crossing the threshold on how a group challenge is overcome was necessary for the student to go a step further and be able to comment on their own skills as group mate. This self-reflection as a group member was missing among students in 2020 because of challenges with remote collaboration and lack of physical collaboration.

### LO 3: learning participatory methods

2019	2020	
"Interviewing people is probably one of the	"The pandemic made it difficult to go further	
most important methods in participatory	in depth of the community issues with	
planning but at the same time one of the hardest.	interviews and participatory methods. The	
There is not just a potential language barrier but	lockdowns and social distancing regulations	
also a cultural barrier There are many things	were so limiting and even in some cases	
that need to be considered when evaluating the	disabling"	
data"		

Box 4. Students' reflections on methods of participation

While students are introduced to a wide variety of participatory methods, interviews have always been among the most used way to approach and interact with the communities in UEP fieldworks. This was the case in both the physical fieldwork in 2019 and the digital semester in 2020. Students in both these groups made the similar observations about interviews being challenging (Box 4). However, unlike the 2019 cohort., students in 2020 do not question the validity of information they get from interviews. This is likely because getting to interviews was much more difficult for the 2020 cohort, as they could not cross a threshold of trust building (LO 1) with the community hence they did not get the chance to learn and reflect on the possible biases that only one source of data entails. This further points to a need of using other forms of participation as a supplement during remote fieldwork, for the purpose of triangulations instead of relying only on interviews. The few students who diversified their methods in

the digital semester managed to get a deeper understanding of their case study areas, which was clearly visible in their reports and presentations.

It should be noted that when it comes to using other participatory methods, digital methods were a common alternative in 2020. Nevertheless, the success of the same digital methods varied among different contexts. For example, a student working in Trondheim in 2020 found the application of such methods easier than her groupmates working in the Global South. Reflections of other students showed a lack of sharing of these experiences amongst their peers. While there was an awareness of group challenges due to working in different contexts, most students did not take the opportunity to learn how much the same methods varied in different contexts which can be attributed to a weak LO 2.

### Identifying threshold

The threshold in LO3 is closely related to overcoming thresholds related to LO2, which deals with challenges in groupwork. Being able to use triangulation methods is also shown to be closely related to successful peer learning. This notion is further supported by case of a student in 2020 who, while having group members in different countries, felt the need to approach a friend living in her hometown to accompany her physically on field and get help in overcoming bias and trust issues with community.

Because students were able to build intra- and inter- group dynamics in 2019, there was an increased understanding of innovative methods of participation as exemplified in the next section.

### Overcoming threshold

The awareness that direct interviews were not applicable in all contexts was clearer in 2019 when students created an innovative emoji method to overcome language barriers and get access to unfiltered 'emotions' from the community. This participatory method was proposed by one of the student groups and then shared and eventually adopted by all groups. Hence, they overcame the learning threshold through peer learning (Figure 5)



Figure 5. Glimpses of emoji workshop in Panaji anda student's reflection on the emoji method, 2019

Although data from a workshop with 2019 cohort reveals that students felt that they were "forced to learn from each other" because of not insufficient guidance in the field and yet this was not perceived as learning by them. It can be considered as a successful learning outcome achieved in absence of extra. Furthermore, this suggests the need to create an environment that facilitates more peer-to-peer interactions and 'optimal' distance between students and faculty. This balance is especially difficult to achieve when it comes to collaboration in digital space and designing a curriculum that facilitates learning for different contexts. In our experience, extra facilitation is required in a digital scenario.

### DISCUSSION

### Identifying thresholds

The learning outcomes of UEP's field based courses are designed to promote interdependent learning on participatory methods, theories and fieldwork . Identifying thresholds through our analysis of student reflections allowed us to identify learning patterns and which in turn confirm the 1 interrelationships between the course learning outcomes as presented in Figure 6.



Figure 6. Relationships between learning outcomes as identified through students' reflections and learning patterns

Figure 6 shows learning to work effectively in groups and learning context-suited participatory methods in turn contribute to working in complex urban environments (indicated by green arrows). In addition, there are also other ways that learning happens which might not be directly captured by students i.e. peer to peer learning in 2019 and through teaching facilitation in 2020.

### Overcoming thresholds

**Peer to peer learning** has been identified as one of the two major tools that helps overcomes learning thresholds in both physical semester and digital semester. This type of learning was most pronounced in 2019 when there was knowledge sharing within and across group and better groupwork as in shown in all the three LOs (refer to figure 4 and 5). In 2020, The only time students got a feeling of learning to deal with stakeholders is when we had simulated an stakeholder's role play exercise in groups on an online tool called mural where they give credit to this exercise in their reflections and also suggest it as a possible future methods of learning (Figure 7). In this exercise, students practiced needs assessment, negotiations, and conflict management in a hypothetical urban development scenario.



Figure 7. Students' reflections on the use of mural and zoom to create role play exercise, 2020

It is interesting that students feel that they learnt more the most from a hypothetical scenario than a real-life fieldwork, which they conducted in their own neighborhoods. This suggests that not all is lost

when there is absence of physical fieldwork and digital tools can be effectively used to achieve LOs in fieldwork intensive planning pedagogy. This might be attribute to students having firsthand experience in remote fieldwork. In a physical fieldwork we would not have had to recreate the hypothetical urban development scenario.

**Teaching facilitation** to support student learning was a deliberate, and additional attempt in 2020, as opposed to 2019, to help students cope with challenges in remote fieldwork. Even though 'optimal distance' from field as suggested in LO3 was an important step in 2019's student learning, in 2020 students had been physically alone on field since the beginning of the fieldwork. Further distance from the faculty could have strayed them away from learning outcomes. To avoid that we decided that in 2020 each student group will have individual supervisors wherein we held supervision hours with students once every week and guided them through each milestone of fieldwork. These milestones were 'introduction to areas', 'situational analysis', 'problem statement' and 'strategic interventions'. In the end, they had to compile group reports with their individual case studies and for the first time we had also asked them to reflect on each other's' work, on difference and similarities, in order to encourage peer-to-peer learning.

To facilitate timely and systematic group supervisions, the supervisors were working as a group too. We compared notes with each other, which often meant holding special meetings every week to discuss our groups' progress (Figure 8)



Figure 8. a screenshot from supervisors' online discussion on how to guide students to make group reports, 2020

This was done to systematize the information that we gave students every week to achieve consistency in learning. This was unlike the 2019 fieldwork where it was mostly one field coordinator and 1 or two members of the faculty accompanying students in field to support them in their fieldwork but not necessarily with weekly and separate group supervisions. The added guidance in 2020 maintained the learning trajectory of all groups to be at par almost always. Even then the group dynamics were tough because not all groups had built the group dynamics as well as the 2019 cohort owing to difficulties in remote collaboration.

### CONCLUSION AND PEDAGOGICAL IMPLICATIONS

The paper shows strong link between extent of learning facilitation, both through peer to peer interactions and through teaching, with the ability of the students to overcome thresholds when they

are on field. We have observed that experiential learning is best achieved in a non-digital format but can to some extent be recreated in a hybrid mode through methods such as role play as is evident from students' experiences in 2020. Additionally, role play workshops and mural itself are valid planning tools in participation applied across the world. Hence, will be to including a mandatory module on role-play exercise for our methods course on fieldwork in 2021 and possibly for all the coming years. This is not to replace the real-world immersive experience but to supplement it and perhaps nudge the students towards expectations vs reality of fieldwork when they role play amongst themselves vs when the interact with stakeholders on field.

Balanced facilitation in the form of providing a supervisor from faculty to every group is also an important takeaway for us that will be implemented again in the coming year even though all the students will be physically present in Trondheim for fieldwork in 2021. We say balanced in order to ensure that we give space to the students to reflect on challenges and discover threshold on their own but we still keep track of their discoveries through their reflections and nudge them towards identifying these thresholds and overcoming them when they feel stuck. For this reason, we will continue to keep written reflections as necessary part of the students' fieldwork exercise.

We will also be modifying our guidance to suit the local context of a 'Global North fieldwork' in Trondheim. This is imperative as our findings suggest that students find certain methods, especially digital participatory methods, easier to implement in the Global North.

Even after a year into the pandemic, there is still a strong possibility that some of the students will not be able to join immediately owing to unexpected visa delays due travel restrictions. In that case we will be replicating remote supervision model like last year but this time with our own enhanced learning and while implementing the above pedagogical changes.



Figure 9. a screenshot from supervisors' online discussion on how to guide students to make group reports, 2020

Now that we have found out that in the absence of physical supervision, students' learn a lot more through their peers (Figure 9), we would be consciously creating more digital meeting spaces and exercises to help the students who would be doing their fieldwork remotely again. Threshold concepts have not only helped us in adopting new pedagogical approaches, but these findings can also help other similar field-based courses that are seeking to move towards hybrid pedagogical models.

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# THE NARRATIVE AS A FIELD EXPLORATION METHOD IN THE ANALYSIS OF CONTEMPORARY HOUSING

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### INTRODUCTION

Housing is the most addressed issue-problem in architectural subjects, paradoxically it has not been adequately responded to because of the constantly changing ways of inhabiting the contemporary domestic space. This is largely due to the adoption of solutions based on domestic relations that are both (contradictorily) static and unconnected to the final beneficiary. This raises, in first instance, the question of how effective these methodologies are in the housing design activity within the architecture program.

The subject of housing is complex and interdisciplinary; as a basic unit of human habitat, it impacts their lifestyles in different ways. It is no coincidence that a great amount of the approaches to housing have come from the hand of non-architects or deeply intimate writings; so it requires further and always plural ways of understanding it. This article develops a way of approaching the complexity and diversity of the domestic space from the narrative as a means to expand its meanings and, consequently, access scenarios of possibilities in the housing project design among the various architectural design workshops.

### Contemporary housing in design practice

The domestic space is the dynamic setting for our relationships inward, through and outside the home. Therefore, it is not surprising that it is the most addressed topic-problem in architecture workshops. However, at a time when work, the library, the gym, school, the university and even the street have all been found in the same space - home - after the period of confinement imposed by the health crisis of COVID-19, the validity and coherence of the established habitability conditions are being questioned, and the deficient capacity to respond adequately to the ways of inhabiting contemporary domestic space in constant transformation.

As a product of the modernist heritage under which it is still thought that we inhabit according to a univocal, sequential and nictemeral procedure;<sup>1</sup> and in the belief of solutions and static domestic relations as a systematic repetition of cultural models alien to the diversity of ways of living where individuals and particular problems interrelate,<sup>2</sup>, the housing design is based on inaccurate assumptions and, consequently, hyper-realities are developed with spatially, temporally and phenomenologically decontextualized proposals on a reality with its own and diverse particularities.

The issue of concern arises when corroborating this practice from the academic training of an architect. When in the first cycles the task of building a home is entrusted, in some cases without a

client, without a specific land, one way of salvation is to resort to architecture texts, however, there is an "insurmountable distance" between what is found in the books and the problem in question. Modern architectural theory and practice when trying to solve design problems from abstraction has distanced it from its concrete reality and, consequently, from its most basic problems.<sup>3</sup>

To this way of understanding commissions, contradictions and questions are added. How to understand a spatiality when the design object is alien to the observer? How to design spaces for ways of living that we do not recognize? How much does the architecture of the domestic space know? How to identify and interpret the pre-existence and new ways of living? ...

In this sense, the objective of the chair was focused on developing capacities for reflection, analysis and interpretation of the house from its interior that opens possibilities in the project endeavor among architectural design subjects.

### Place of possibility(ies)

The onset of the pandemic triggered a state of emergency and deepened one of uncertainty. "The emergency requires an extreme situation" and also an immediate solution.<sup>4</sup> Both qualities converge in a scenario in which confinement has modified domestic habits and has increased the demands on housing and the city, which in turn are becoming more complex and with a variety of nuances. The interesting thing is that the need not only demands, it also opens doors to pondered paradigm shifts, dissents and creative processes.

Creativity, as a prime mandate after the crisis, has the ability to show reality from other perspectives that were not imaginable: the city, the house, the making of projects. The health emergency provides the opportunity for thinking of new ways of making, [re]inhabiting and regulating housing, but in addition to exploring it as a project method, in a context that has highlighted the impact of architecture and urban planning on health.

Facing reality critically transforms the architectural endeavour as a problem-solving act and to the ability to reinvent everything: questioning, rethink the facts, expand existing possibilities.<sup>5</sup> For this reason, it is necessary that future architects conceive the domestic space for real, contemporary and localized people and needs, and not only as an aesthetic object.

Reducing the insurmountable distance between designing and its built forms with the ways of inhabiting from the daily exploration of our own domesticity, contributes to thinking in a less abstract way. Before solving the task of building a house, it would be necessary to speak, write, tell the stories about it. Learning to design a home is learning from everyday life.

### **METHODOLOGICAL MODEL**

The questions raised so far, added to the competences of the subject, place the objective of giving the student means that allow a greater understanding of the complex and diverse reality of the domestic space in the meaningful learning of their training in the architecture program.

General Subject Competence: "Its achievements contribute to the specific competency of Planning, where it develops the ability to interpret and analyze the principles and criteria of housing planning."

### Integration of experience in learning

Researches from psychology in the 20th century opened more perspectives and knowledge about the traditional learning process. The introduction of learning style inventories, the associations of these with the human cycle growth and development, the inclusion of the socio-emotional dimension from psychoanalysis represented a different way of understanding the means of teaching-learning. From this new knowledge Lewin proposes an Experiential Learning Model (ELM) with its practical

counterpart in the action research method. This method formulates a potential strategy in meaningful learning for change interventions in people.

As a legacy of the Enlightenment, learning continues to be understood in some contexts as solely based on cognitive processes. However, the experiential learning model provides a framework for the integration of cognitive and social-emotional perspectives in the learning process. It recognizes both the emotional and intellectual component in the act of learning.<sup>6</sup> This is valuable in that human beings learn and adapt to the world in different ways and, in their development and adapting to specific situations, they need to move in varying degrees of generally dialectical dimensions. Therefore, in the process of meaningful learning, both the educator and the student must interact in these dimensions [concrete experimentation - abstract conceptualization and active experimentation - reflective observation] in an integral and non-exclusive manner.



Figure 1. Methodological model based in the Experience learning model - ELM

So, based on an experiential learning as an active teaching-learning strategy this dissertation starts from the four-stage cycle proposed by Kolb and Fry and proposes a methodological model, figure 1, to explore housing, which turns the student into an active actor in the recognition and interpretation of the factors involved in living from their own domestic experience.

Consequently, (1) the immediate concrete experience is the basis of the methodological model, specifically, the observation and reflection of the events, actors and dynamics that take place within the home during a limited period of time. These observations (2) are collected through maps, as a kind of visual work log; and then, it is followed by the observation and documentation of such experience. The data got is then analyzed collectively, based on a "theory" reviewed during classes, so that interpretations can be constructed. (3) The third stage constitutes the formation of new implications and conclusions that provide feedback to the actors of the experience in two ways: attitudinal - regarding to the student's own habitability in the house -, and of design insofar as the experience proposes new forms of understanding and new questions about the architectural fact. Finally, (4) the fourth stage aims for students to apply the acquired knowledge - attitudinal and of design - in the conception, development and discussion of housing and to stimulate their commitment to the subject and to architecture. The design and duration of the course does not contemplate the verification of
these results, however, the work done by the students exposes approaches that evidence a re-labeling of conceptions and ideas about the theme developed.

#### Narrative Inquiry and the emotionality of architecture

The methodological model to explore the housing proposed in this article, emphasizes the experience and the socio-emotional dimension as instruments of analysis. In this sense, Qualitative research by offering an approach that attempts to make sense of phenomena or interpret them from the meanings that people bring to them,<sup>7</sup> select narrative inquiry as method to allow students to recognize and interpret the intervening factors involved in living from their own domestic experience.

The advantage of narrative research as a way of accessing knowledge is that it can be read from different perspectives - like some sort of kaleidoscope - and leads to the idea of "truths" (in plural) that are interwoven and allow to redefine experiences and human interactions in their daily lives, and on this occasion, address the complexity of the home. Hence, students need to be drawn into inquiry through familiar tools that provide a means of channeling creativity.

In a context where the image plays an increasingly important role in everyday life and visuals are recognized as central to the human condition, visual narrative inquiry brings participants closer to exploring their domestic habitability and interrelations in a reflective and active way, allowing us to see the everyday life with "new eyes". This form of analysis examines the interaction between human beings and their environments in a deeper way, not only from thought, but also from feeling, making, suffering, handling and perceiving.<sup>8</sup> Furthermore, by deferring the experience from one student to another, each develops a different "angle of view" that creates a common reality.

Visualization enriches the three-dimensional space of analysis.<sup>9</sup> People learn in different ways, and the combination of words, graphics, and images that maps use to represent meanings helps the brain integrate and relate complex concepts in different ways. This brings precision and tactics... and turns tacit and explicit knowledge into something graphic and visible,<sup>10</sup> through the direct experience of reality.<sup>11</sup>

Finally, this way of exploring narratively and visually a spatio-temporal phenomenon brings out the appearance of more spontaneous responses that are hardly verbalized by other methods.

#### CONSTRUCTION AND RECONSTRUCTION OF NARRATIVES

Starting with the question: "How do we inhabit our living spaces?" the methodology model guided the development of individual and collaborative tasks of information gathering, data analysis and presentation of results, which are presented below. In addition, when using interpretive methods, it is important to have a theoretical and referential framework that takes into account the relations between housing and the broader context of the city and the territory in which it is located.<sup>12</sup>



Figure 2. Application of the methodology in the Housing Planning course, semester 2020-A

The concrete experience located in the domestic space of each student was recorded through maps, used as a data collection tool that identifies space use patterns and configurations based on the organization of certain elements. These data support the objective of the next stage.



Figure 3. Collaborative observations from the maps made in stage 1

The second stage aims to interpret meanings from the analysis and discussion of the maps created by the students themselves. The narrative is broken down and this is where the facts become important. What? How? Why? The temporalities, when? And spatialities, where? So that the narrative reconstruction of the recorded events reflects the creation, first individually and then collectively, of multiple realities. Based on experience, the analysis of the collected data showed convergence of both common situations and contradictions, reaffirmations and new questions. Consequently, the inventory of findings is presented as material for an inductive and contextualized discussion of the housing situation today.



Figure 4. Observations regarding productive spaces and its need in the functional program of housing by Aron Merma/ Diego Pacheco/ Melani Palomino/ José Pari/ Alejandro Villa



Figure 5. Findings and new questions about housing habitation in stage 3

The complexity of the housing study together with the results of the reflective observation leads the exploration to a breaking point. In this instance, several aspects are put on the table in a sort of topics storming. As a result, the work strategy demands the choice of a specific topic, which is conceptualized from a specific theoretical framework. The addition of cognitive processes to the exploration allows for a logical explanation of the findings and for the student to build his own conceptualization.

Finally, in the collective interpretation and reinterpretation of the ways of inhabiting the house and the house itself, a reconfiguration of the plot and narrative theme is carried out, building a particular and polyphonic story of its exploration. Although the course is oriented to broaden the knowledge related to housing for its application in design subjects, students, in their final project, have come up with interesting dilemmas, questions and design premises related to conception, regulation, construction, among other aspects, which must be solved in the architectural project. On the other hand, the results obtained show an increase in the students' commitment to the meaning of housing through the conscious experience of its spatialities.



Figure 6. Design approaches proposed by students



Figure 7. Script and clippings video – Audiovisual proposal by Rodrigo Noriega

It is worth mentioning that the freedom to choose the format of presentation of their exploration project, whether through stories, videos, posters or presentations, added other variables that reinforced the significance of their conclusions, giving greater meaning to the experience.

#### CONCLUSION

The different responses to the same problem talk about the need of exploring the domestic space in architecture. A form of exploration that opens doors to a plural understanding of the diversity and complexity of contemporary housing in an authentic and resonant way. Even though, due to the nature of the methods employed, the methodology warns in the different phases adjustments that re-direct or reinforce the exploration process, the experiential learning model through visual methods incorporates other forms of effective approach to the architectural fact and, by extension, to the conceptualization and design of the project.

The study of inhabiting the domestic space as a narrative is, above all, a way of reflecting on the experience itself, making it possible to encourage students to observe, discover and understand meaningful, useful for questioning their own preconceived ideas, beliefs and assumptions. As students begin to wonder about the stories, the words, the environment, and specifically, the nuances of meaning, there are increased opportunities for creation, a greater understanding of meanings and within architecture the possibilities of exploration, more questions and another possible answers.

Finally, the active role of the students enabled the appropriation of the daily life of their homes and a commitment to the subject in an attitudinal and of design sense. Although the objective is not to decipher the complexities of housing, the methodology extends the capacities of observation, analysis and interpretation on the use of space and the impact of design decisions. This develops reflective and critical skills applicable in new project experiences, decision making, problem solving in academic life but also in human growth and development.

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## THE ARCHITECTURAL DESIGN PROCESS FROM CRITICAL REFLECTIVE THINKING. A METHODOLOGICAL MODEL FOR THE UNDERGRADUATE RESEARCH PROJECT

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#### INTRODUCTION

From the middle XX century, design theory has studied and recognized the interdependence between theoretical research and practical research in projectual design.<sup>1</sup> Actually professional world needs appropriate, efficient, creative, and innovative outcomes as a response to the diversity of societal issues. This means education needs to be based in encouraging reflexive and critical skills in future professionals. These skills are acquired through inquiry-based learning, where research becomes the core element for that purpose. However, Architectural design workshops of diverse faculties of architecture have based their teaching strategies in an intuitional creative process, without promoting a reflexive - critical thinking. This situation has raised the production of decontextualized repetitive and erroneous responses to specific social phenomena.

In this context, it is evident that research implies leading to reflection and sustaining the foundation of all Design praxis.<sup>2</sup> This dissertation is based on considerations where it is sustained that all understanding always corresponds to an action. Thus, the nature of action corresponds to the nature of understanding; if the latter is critical, the action will also be critical.<sup>3</sup> It is also argued that, with respect to the design learning process in the school of architecture, both convergent skills are needed, for example, deductive problem solving within constraints, solutions expressed in practical terms; and divergent, such as creative or inductive thinking, ability to imagine a larger entity or a total "gestalt" from a part.<sup>4</sup> At this starting point regarding the development of reflective-critical thinking, the students evidence an acute problem in the construction of the research problem and the state of the art from their convergent skills.

From the identified problematic, it is evident the complexity of articulating and understanding the differences between the research problem and the construction of the state of the art, especially in the creative minds of architecture students. Therefore, from the theoretical bases <sup>5</sup> currently founded on "*Learning together*", a comprehensive theory is refined that provides the basis for an approach to education and learning as a life process. <sup>6</sup> Also draws on the strong intellectual traditions of

philosophy and cognitive and social psychology, in order to solve the problem of how to develop a student's critical thinking skills.

In addition, several studies<sup>7</sup> base their reflective foundations on Kolb's learning cycle, supported by the learning process from four components: "planning, acting, observing and reflecting". This is seen as a typology of learning that provides feedback and is the basis for a new action and evaluation of the consequences of the action.<sup>8</sup> Although Kolb's learning cycle seen from a spiral approach has been questioned, the literature evidences that the four components of learning identified by this author are substantial for any learning process.

Therefore, working on the reflective-critical learning of architecture students from the theoretical reflection of Kolb's four components, allows supporting the methodological model to be proposed in this article. In which the components are contextualized from these four reflections: (i) concrete experience, which provides the student with a basis for the learning process , seen from lessons learned by individuals through adaptability and open-mindedness to a concrete problem; (ii) reflective observation, with this component the student learns from his experiences and reflects on why and how they occurred, therefore he reflects, observes and critically examines his experiences from all perspectives; (iii) abstract conceptualization, in this component the student relates observations and reflects during the theory or subjective concept stage, i.e. students use logic and ideas rather than feelings to understand situations and problems; (iv) active experimentation, which allows the student to test their theories to make contextualized and concrete predictions.

In this conceptual framework, the last component called *active experimentation* stands out. Since, this component allows the student to test theories to make predictions about reality and then act on their predictions.<sup>9</sup> Therefore, the main objective of this article is to reflect on the architectural design process based on reflective-critical learning, using an experiential methodology based on three components, which are supported by working methods and tools, in order to promote a methodological model that allows to make effective the development process of the undergraduate research project in the school of architecture.

#### METHODOLOGICAL MODEL

The proposed methodology, outlined in Figure 1, aims to introduce undergraduate students to reflective-critical thinking, allowing them to approach the urban architectural design project from and through research. The results of this methodological model highlight the importance of starting the design process from the critical observation of reality and reflection of its transcendence, causality and meaning informed by theory, and not from a commission. This implies reaffirming the social role of architecture and design as a medium that provides contextualized and coherent solutions to the environment with which individuals interact.

The first component of the proposed methodological model is based on "creative chaos", with the aim of analyzing a social problem identified in the student's environment and directing it to a research problem. For this component, collaborative tools are used, such as the conceptboard online whiteboard. The second component has the specific objective of efficiently managing scientific information to approach the theoretical basis of the research problem. Two tools were used for this component, literature selection tables in Excel and the collection of articles using the Mendeley reference manager. In the next component, the state of the art is constructed using the PEEL method as a writing tool. Finally, to work with the fourth component; whose specific objective is to correlate and synthesize the research problem, the general objective, the specific objectives, the units of analysis with the method used for each specific objective.



Figure 1. Methodological model.

#### **Creative Chaos**

The creative process is often complex and mysterious. The creativity from a neuroscientific perspective is a mystery.<sup>10</sup> This mystery is as a creative genius that can be destructive and constructive.<sup>11</sup> The architecture student is confronted with creativity continuously in the design process. In the formation of the architecture student, creativity is manifested or becomes present in the subjects related to design. Also, creativity is the conceptualization of any idea that will be new or novel.<sup>12</sup> Therefore, the creative process should be linked in the teaching-learning process, taking advantage of the potential of creative thinking of the architecture student. Recognizing the potential of creativity to approach research in undergraduate students, means to generate a commitment, which allows concluding with the research work.



Figure 2. Creative chaos method

One of the most important decisions in research is the selection of the topic. For the student to face the research topic should not be something strange or distant, that is why the teaching methodology is

designed from creativity. A process that is familiar to the student and also allows him to start with the research from a known and at the same time chaotic way that allows him to face the approach and the selection of the problem in a disruptive way. Then, in the choice of the topic, the personal concern that translates into the identification of a social problem is manifested. The research topic must be linked to exploration and experience. Thus, in the exploration, the student recognizes personal concerns that are linked to the experience; previous knowledge and personal interests are manifested. These two components are evidenced in different proportions in the creative chaos; chaos to explore and creativity to respond to the experience.

Thus, this phase of the methodology was developed in a virtual whiteboard, in a synchronous way, where students face the writing of 5 questions, for a period of time of 15 minutes.

#### **Theoretical and Scientific Database**

In the research process, the literature review is essential to transform the social problem detected into a research problem. Theory intervenes at different moments and in a transversal manner. Its role is based on the definition and formulation of the research question. Likewise, it supports the objective of the study, the basis of the methodology in the selection, collection and interpretation of data, and finally offers a conceptual framework in the discussion of the results. Consequently, the student must have the ability to select and manage a large amount of information in a relatively short period of time - semester period -, and additionally in an efficient manner. The convergence of theoretical research and design research in architecture does not have a long period of development and in some cases it is nonexistent. This does not mean that they cannot be acquired, then, once the student has approached to delimit the question about the phenomenon observed in his immediate environment for which he still has no answers, a stage of exploration of theoretical and academic sources that deepen the intellectual landscape and allow to configure a theoretical and scientific basis customized to the selected research topic begins. The theoretical framework developed at the undergraduate level is usually micro-level.

It is foreseeable that students who are new to research and accustomed to approaching design practice from a diagnostic point of view [study of areas, plans and urban regulations] will find the literature review confusing and overwhelming. The way he/she approaches it will condition its revision and construction. In this sense, the intervention and guidance of the consultant is necessary in the definition of topics to be consulted and the adequate management of information in scientific databases. Scientific databases, as a reliable source of publications, are the best instrument for initiating serious research. Adequate management, in addition to facilitating relatively easy access to what has been said and advanced in a given field of study, promotes inquiry, curiosity and rigor in the student.



The methodological sequence is composed of three steps, shown in Figure 3. In addition to the existing information managers, such as Mendeley or Zotero to name a few, which allow ordering and systematizing the information collected, it is proposed to add a tabulated template that allows selecting the most relevant articles and publications for the research, with five characteristics: DOI, year of publication not exceeding 10 years in databases of high impact journals, identification of the quartile of the journal, the authors of the publication, key words and the general objective identified in the abstract of the article. The systematization of the information filters, in the first instance, according to the thematic relevance and then facilitates the structuring of the theoretical framework.



Figure 4. Custom theoretical and scientific database template

#### **Literature Review**

In the third phase, the initial literature review, also called the state of the art or state of the question, is structured. The state of the art makes it possible to adjust the research problem and in turn supports the methodological design. This phase has several interpretations, so first of all it should be specified that the literature is the body of academic research that has been published and disseminated through publications such as books, academic journals, journals for professionals, websites and other sources. <sup>13</sup> So, literature review is critical synthesis of the ideas, problems, approaches, and research findings that have been published on a particular topic. In addition, the state of the art comprises: (i) what can be reasonably asserted based on the scope of the literature findings (ii) what worked and what did not work in terms of research methods and approaches, (iii) what can be drawn from the range of theoretical perspectives that have been applied.<sup>14</sup> In this context, the main purposes of the literature review are: (i) to establish what has already been researched, (ii) to establish what worked in terms of the research process.



Figure 5. Literature Review structure

In this context, the chair designs a structure that addresses the construction of the state of the art in 3 components, the what, the how and the why. (Figure 5) The *What* contemplates the description and exploration of the topic of interest, identifying what is known or has been investigated. Then, the *How* addresses the explanation of methods and methodologies used in the thematic area; this component is fundamental for the methodological design of the research. Finally, the *Why* refers to the foundation of the urban architectural project. This is how architectural thinking is constructed. Each component is composed of a 400 words essay, structured in 3 paragraphs with the PEEL Method – point, expand/explain, evidence, and link to connect the other paragraph –. In addition, based on the visual learning capacity of the architecture student, a synthesis graph is requested. The graphic is incorporated understanding it as a method to express in a clear and orderly way their ideas. The combination of both elements allows articulating the State of the Art.

#### CONSISTENCY MATRIX

	INVESTIGATION OBJECTIVE		DESIGN INVESTIGATION INVESTIGATION INVESTIGATION METHODOI			
FROM OBSERVATION OF REALITY	GENERAL	OBJECHTE	SPECIFIC	ANALYSIS UNIDS	METHODS	
	1	1				

Figure 6. Consistency Matrix template

Finally, the development of the three phases of the proposed methodological model is systematized in a consistency table, shown in Figure 6, which summarizes the research and is configured as the previous and guiding instrument for the approach to the architectural urban project. The consistency matrix is composed of three groups of columns, the first of which states the formulated question-problem, the next one presents the general and specific objectives of the research. It is necessary to specify that the competences of the subject are oriented to the formulation of the graduation project. Consequently, this group includes the project objective, that is, the urban-architectural unit that the student proposes in response to the identified social problem and the bibliographical review. The integration of these two components - research objective and design objective - is very important,

insofar as one is supported by the other and in some way guarantees that the architectural response will be close to the expected results. On the contrary, if they were only intuitive answers. Finally, in the third group, the student determines the research methodology along with the selection of methods, instruments and units of analysis. In summary, this is the framework for the work done in the semester period and the basis for the development of the research to be carried out in the following subjects according to the curriculum of the school of architecture.

#### RESULTS

The development of the creative chaos during the class session allows the student to be confronted at first with their concerns and worries that they must express in 5 questions in 15 minutes. This exercise was developed in the 6 groups of the course in the third week of the semester. In group D, illustrated in figure caption 1, it was possible to visualize 85 questions elaborated by 22 students. Eighteen percent managed to formulate 5 questions, 55% wrote 4 questions, 23% wrote 3 questions and 5% only showed 2 questions. These questions are then reviewed by the professor to determine which of them can become a research question.



Figure caption 1. Creative chaos board by Investigation Workshop classroom

The proposed template facilitates the elaboration of a personalized database obtained from the efficient management of the scientific information obtained by each student. This way of systematizing the information made it possible to guide and refine the search for theoretical references. Once the relevant sources for the study had been selected, it made it easier for the students to structure the theoretical framework to be written, as well as the management of citations and bibliographic references. The sources not selected for the study form part of the students' own library for future studies.

Another positive aspect of the use of information managers is the construction of a collective database for each line of research proposed in the state of the art.

YEAR	AUTOR	CLASS			JOURNAL		TITLE	KEYWORDS
2007	Chris Webster	Atticulo	Town Planning Review	Q2	9 hell "http://www.simagai.com/foundwardh.al/efjard 19655/amg (Sevidemenesschord "tite="Comaga Journal Kame, County Rank"-wing bosten 17 arc: http://www.simagai.com/found_img/briefd-055 87 all="Comaga Journal Kamp, County Rank" /=/a=	Team Prenering Notes 0.2 Descently 0.30 Descently Descently United Ref	Property rights, public space and urban design	
2018	I. Equipaje, Ruth Marie	Attículo	Lecture Notes in Civil Engineering	Q4	43 httl:https://www.scimagpi.com/journalwach.pp.hqt? 100084464.arvp.ftv=idslampi.exact+rei*fte=1/20maga Journal Kamp, County Rain:/wing toolar/70 er/1tps://www.scimaga.com/journal_pp.hqt? 0008440F att=20maga.bumck.kamp; County Rain' Joulga	Landrare Holdes to Chill Explorating Collar Strategies of Second Strategies of Second Strategies of	The Role of Public Space in Sustainable Urban Development	Public spaces; Sustainable urban development; Urban design
2004	Óscar Marino Garcia Cruz y Luis Alberto Coral Cárdenas	Artículo	Bitacora Urbano Territorial	Q2	9 het/http://www.siteorgicom/journalwach.utplija/ 9700/9681.kamp.tipinal.kamp.texactino/ their1/cimage Journal Samp. County Rench-Iming backer/ Worlths: Jewesarage conflyand, page Pad-Bill 00/9681° attr5Cimage. Journal Lamp; County Renc' Joilge	Races Union Territorial Q.2. Anard Manardin Manarese	Espacio Público: el reto de la gostión	Espacio público, gestión urbana, ciudadanía, descentralización.
2018	Páramo, Pablo Burbano, Andrea	Artículo	Avances en Psicología Latinoamericana	ଭ୍ୟ	9 hel/http://www.schargi.com/journalwarch.pt=Tac5 2001937654ampt.phaid.kampt.mact.tec? Ifte="SChargo Journal Jamp: County Narch-Imag Dackgr" port: http://www.schargo.com/journal.pha?hdi 0152765" dt="SChargo Journal Jamp: County Nark" Jini/go	Antonia hanga Linterantuse QA Construction Interaction	La habitabilidad del espacio público en las ciudades de América Latina	calidad de vida urbana, habitabilidad, espacio público, planificación urbana.
2017	Caquimbo, Sandra Ceballos, Olga López, Cecilia	Artículo	Revista INVI	ଢା	9 hethints: //www.schoop.com/cumdarach.shoftpri 1900/54080.damp.the-iditiong.shoftpri Journal Samp, County Renzi-Heng backer: 17 exhifts: Jowes anges com/county gang haf in 11 60/54687 ahr Schoop.com/s damp, County Renz Jow/ax	Revise Mil Q1 Million Milli	Public space, peri-urban areas and the right to the city, Intervention in Caracoli Park, ciudad Bolivar	BolivarBogotá dc; Participatory methodologies; Peri-urban areas; Public space
2005	Ceballos, Olga	Artículo	Bitácora Urbano Territorial	Q2	9 httl:https://www.sciange.com/journalwarch.stp1q11 92007448 Janns (samplesactine' Titler-Tomaga Journal Janns, Country Rain: Hima toxiser-Titler Jannarge com/journal gan (Fall Statis) 0010481 attr5Cimaga Journal Janns; Country Rain' Joulan (Jannar)	Recent Union Territoria Q2 Attané Attané Attané Attané Instané Dista	La evolución del planeamiento urbano en la configuración del espacio público del área periférica de BOGOTÁ	Espacio público; Public space; periferia; periphery; urban life; vida ciudadana

Figure caption 2. Custom theoretical and scientific database by Umiyauri D. and Collatupa J.

Each of the components of the methodological model has generated a specific result as illustrated in figures caption 1 and 2. Finally, the culmination of the process is shown with the consistency matrix. Figure caption 3 shows the example of the synthesis of a thesis project in progress, where six columns are merged, evidencing the research problem, the general and specific objectives, the design objective. Each of the objectives is related to its corresponding unit of analysis, subject of study or variable and the method to be used. In addition, the sequence corresponds to the chapter structure of the theoretical framework developed.

PROBLEMAS De Investigación	OBJETIVOS/PREGUNTAS DE INVESTIGACIÓN			METODOLOGIA DEINVESTIGACION CUALITATIVA Estrategia de investigacion		
	OBJETIVO GENERAL DE La investigacion general	OBJETIVO GENERAL - FAU	OBJETIVOS ESPECÍFICAS	UNIDADES DE ANALISIS	METODOS A UTILIZAR	
El areacia	Analizar el espacio público en la	Desarrollar la propuesta urbano arquitectónica de un	DE:1 Recopilar el conocimiento científico que se ha publicado sobre el estudio de espacia público periférico y la sintaxis espacial hajo las relaciones sociales y espaciales.	La sintaxis espacial en el espacio público periférico y las relaciones sociales y espaciales	1. Análisis de literatura	
público en la periferia urbana y la repercusión de las relaciones sociales y espaciales en	periferia urbana de la ciudad de Arequipa (distrito de Cerro colorado), mediante el estudio de la sintaxis espacial para ver el comportamiento físico espacial y	EQUIPAMIENTO Y ESPACIO PÚBLICO DE CARACTER SOCIAL en EL DISTRITO DE CEROO COLORADO, para o con la finalidad de patenciar las relaciones sociales, la identidad social tanto en el a través del estudio de la sintaris espacial	DE2 Analizar el espacio público bajo la sintaxis espacial como movimiento natural, como ciudades económicas de movimiento y como centralidad como proceso.	El área de estudio y el radio de influencia del equipamiento (Cerro Colorado)	Cuantificación de personas en diferentes horas al día. Mapeos de Movimiento y Flujos en diferentes ubicaciones Mapas Axiales Análisis urbano del lugar de patrones de uso de suelo S. Observación no participativas	
su concepción.	social del espacio urbano y su entorno.	entendiéndola como un organismo vivo.	DE3 Identificar un programa de actividades para precisar características y condiciones idóneas en la organización física y espacial del proyecto urbano arquitectónico	El área de intervención y el usuario	1. Análisis de sitio 2. Análisis de Usuario 3. Observación no participativa 4. Entrevistas	

Figure caption 3. Consistency matrix by Umiyauri D. and Collatupa J.

#### CONCLUSION

It is important to notice the relevance of the balance between reflexive and intuitive thinking in the design of creative solutions to respect the creative of students thinking in the Literature Review.

The introduction to a new paradigm in the way the design process is understood from a reflexive and critical thinking gives the students additional skills to face the architectural project. The design of the structure of The Literature Review incorporates the Why component, which is closely linked to the reason for the architectural project. Thus, the student relates scientific theory with the work of the architect.

The design of a teaching methodology for research in architecture is necessary in order to keep and develop the creative thinking of the student. The proposed methodological model recognizes the abilities, interests and concerns of the students, starting the research from the creative Chaos, and then through the literature review and through a database you formulate your research question. This process is guided by the chair and reaffirms the student's commitment to their research project.

The use of three information and communication technologies (ICT), a collaborative digital board for the creative chaos, a database software for the literature review and a live session in social media for the colloquium, which allowed the development of the methodology in an online environment.

#### NOTES

<sup>1</sup> Verónica Ariza, El Diseño como objeto de estudio y como ejercicio de intervención, *Cuadernos del Centro de Estudios en Diseño y Comunicación*, n.º 82 (2020): 47-68.

<sup>2</sup> Luz de Carmen Vilchis Esquivel, Diseño, Investigación y Educación, *Cuadernos del Centro de Estudios en Diseño y Comunicación*, n.º 82 (2020): 101-14.

<sup>3</sup> Diego Muñoz Gaviria, La educación como práctica de la libertad: una lectura antropológico pedagógica al pensamiento de Paulo Freire, *Revista Kavilando* 9, n.º 1 (2017): 26-41.

<sup>4</sup> David A Kolb and Ronald E. Fry, Toward an Applied Theory of Experiential Learning, en *Theories of Group Process*, 1974, 33-67.

<sup>5</sup> Muñoz Gaviria, La educación como práctica de la libertad: una lectura antropológico pedagógica al pensamiento de Paulo Freire; Kolb y Fry, Toward an Applied Theory of Experiential Learning.

<sup>6</sup> Devi Akella, Learning together: Kolb's experiential theory and its application, *Journal of Management and Organization* 16, n.º 1 (2010): 100-112, https://doi.org/10.5172/jmo.16.1.100.

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9 Ibid.

<sup>10</sup> Margaret A. Boden, Creativity as a neuroscientific mystery, *Neuroscience of Creativity*, 2013, 3-18, https://doi.org/10.7551/mitpress/9780262019583.003.0001.

<sup>11</sup> Frank Barron, *Creativity and psychological health.*, *Creativity and psychological health.* (Oxford, England: D. Van Nostrand, 1963).

<sup>12</sup> Philip A. Lambert, The Order - Chaos Dynamic of Creativity, *Creativity Research Journal* 32, n.º 4 (2020): 431-46, https://doi.org/10.1080/10400419.2020.1821562.

<sup>13</sup> Robin Kiteley and Christine Stogdon, Literature Reviews in Social Work, en *What is a literature review*?, 2014, 5-22, https://doi.org/10.1016/j.cellsig.2016.02.003.

<sup>14</sup> Ibid.

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### **7ETOPIA & DESIGN THINKING**

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#### INTRODUCTION

This paper aims to speculate on a 'software' that fits into the new 'hardware', namely *e*topia of and *e*topic education in a post-Covid Co-Video world. Regarding the relationship between topos and topic it is also an attempt to shed light on the potential lessons to be learned from the heterotopia of the computer windows. Learning from the mistakes of the first automobile designers' skeuomorphic design approach, which is like digitization approaches, digitalization and digital transformation of design education can also shed light on the existing problems of conventional design education methods based on class'room system. Common aspects of empathetic Design Thinking methodology and learning cycle models which are more cooperative and participatory, such as 5E/7E Learning Models may show the way.

#### **ETOPIA**

Baroque Las Meninas, which Michel Foucault talks about in the beginning chapter of "The Order of Things"<sup>1</sup> is a painting about painting. Baroque space is vectoral like Rene Descartes' Cartesian Coordinate System, where Platonic solids (body) and their numeric counterparts (soul/mind) take stage in a new universe model. With its dangerous connotations of nothingness and infinity, number zero (holy spirit) lurks at the very center of that universe<sup>2</sup>. And, at the very center of which the Sun King Louis the XIV.'s bedchamber takes place, the topos of Versailles is radial just like the depiction of Descartes' theory of vision and its interaction with the pineal gland diagram from *L'Homme* (Figure 1).



Figure 1. Versailles, Descartes Mind & Body Diagram (L'Homme, 1664), and the first figure in Descartes' Géometrié.

Another Baroque period invention is the corridor. Just as the enfilade, embodiment of the hierarchical etiquette of the Sun King's gave way to corridor, the Renaissance similitude too was to be replaced by

the Classical episteme where just like in Las Meninas, "Michel Foucault's spatial mapping within which knowledge becomes knowledge rather than accidental array of facts and objects. We only perceive that which the conventions of significance lead us to see. A science, a philosophical doctrine, a linguistic and grammatical code can be regarded as 'spaces of ordered and exploratory experience.' The conventions of perspective and the stylizations of three-dimensionality in the graphic or plastic arts offer a rough analogy to what Foucault is after."<sup>3</sup> And, Robin Evans cites architect Richard Pratt's view on passages being only for servants while detailing the history of passages' history starting with John Thorpe, at Beaufort House, England, designed around 1597<sup>4</sup>. In other words, being backstage to the topos/sceno-graphy of rooms to be 'served', corridors can be likened to Las Meninas -who served-, being a painting about painting, almost being contentless and a'topic regarding the Academic Hierarchy of the Genres. Because, as in the architect of Ford, Louis Kahn's terms, they are 'servant' spaces to rooms. Brian Hwui Zhi Cheng cites Kahn while linking the notion of the corridor as circulation to the Fordist model of economy<sup>5</sup>. Analytic division brought by corridor for efficiency and surplus value is also linked with the division of labor, wherein the omnipotent master and his apprentice both turned into an unskilled labor/expert in a fact'ory in a divide-and-rule fashion in a Ruskinian sense.

According to Richard Buchanan, in his seminal work "Wicked Problems in Design Thinking", Liberal Arts too underwent a similar operation via another Baroque period invention, namely, encyclopedia: "...underwent prolonged development that culminated in the nineteenth century as a vision of an encyclopedic education of *beaux-arts, belles-lettres,* history, various natural sciences and mathematics, philosophy, and the fledgling social sciences. This circle of learning was divided into particular subject matters, each with a proper method or set of methods suitable to its exploration. At their peak as liberal arts, these subject matters provided an integrated understanding of the human experience and the array of available knowledge. By the end of the nineteenth century, however, existing subjects were explored with progressively more refined methods, and new subjects were added to accord with advances in knowledge. As a result, the circle of learning was further divided and subdivided, until all that remained was a patchwork quilt of specializations."<sup>6</sup>

And, while the mirroring reciprocities of language and fact were breaking off, representation replaced similitude of the episteme of the 16<sup>th</sup> century during the episteme of the 17<sup>th</sup> and 18<sup>th</sup> century Classical period.<sup>7</sup>

On the other hand, "...for the most part of the 18<sup>th</sup> Century, large households still provided both independent access via the corridor as well as the interconnection between rooms...", "By the Mid-19th century the corridors replaced enfilades to become the key feature in houses.", "Also, the transformation of the corridor from one that divides social classes to one that segregates space was not a gradual, organic process that occurred over the course of two centuries..."<sup>8</sup>

To Foucault, the disciplinary society emerged in the 18th Century, and he argues that just like discipline should not be mistaken for the kings, the panopticon should not be taken for a building but as a mechanism of power. Again, in the late 18th Century, while public executions were disappearing, the right to observe and accumulate knowledge had been extended from the prison to hospitals, schools, and later factories, as the power relations ruled by reason.<sup>9</sup>

Yet, by the time Ferdinand de Saussure publishes his "The Course in General Linguistics" in 1916, the transformation of corridors was completed, and to Michel Foucault, "It appears that certain aphasiacs when shown various differently colored skeins of wool on a tabletop, are consistently unable to arrange them into any coherent pattern.". <sup>10</sup> Foucault's other book "Discipline & Punish" cover design consists solely of a wooden ruler. Discipline is a double-edged sword word as its

meanings are met by two different words in Turkish, namely, *sıkıdüzen* (strict+order) and *düzenbağ* (order+bond), just like a ruler which can either be wooden like Pinocchio or can be solar like the Sun King Louis the 14<sup>th</sup> (Figure 2).



Figure 2. Rulers

Thomas Moore's 1516 ou'topia was an imaginary island 'gated community' and Sun King's was a ratio'nalist state expansionism. After that, rulers ruled with corridors radiating like wooden rulers, embodiments of ratio'nality and discipline inside the Panopticon, the architect of which is Jeremy Bentham. Bentham also came up with a rival term to dystopia, namely, caco'topia. When A. W. N. Pugin criticized panopticon, in his work, Contrasts, he contrasted it with the early medieval Gothic town, where medieval social structures are embodied in a natural way, with a Panopticon, where the all-seeing eye of the architect is like that of the painter in the perspectival ratio'nalization of the city, namely, Citta Ideale (Fra Carnevale, 1480s). In that depiction of the non-compartmentalized social structure of the medieval ages, the death, too is amongst the living in a heterotopian<sup>11</sup> sense.

And, to Zhi Cheng, in the post-Fordist economy, where the intellectual act of production cannot be separated from the product, a shift is also taking place in linguistics in the rise in the importance of the Aristotelian concept of topoi conoi (common places) over its counterpart topoi idioi (special places) as Paul Virno makes the argument in The Grammer of The Multitude.<sup>12</sup> Where *littera*, the level of construction of the text is the most grammatical level, sensus is the level of the signified, of the explicit and easy meaning; and sententia, which can justify the discipline of commentary, is the deep understanding of meaning, is another double-edged sword.<sup>13</sup> In a world, while Roland Barthes<sup>14</sup> was sentencing the author to death (1967), ou'topia islands were shrinking to the size of Oase No.7 (Haus-Rucker-Co, Dokumenta 5, Kassel, 1972). The 'architectural' projects of that period had nothing to do with a pyramidal hier'arrhy of the conventional social structure. Either putting the user at the center of their Villa Rosas (Koop Himmelblau) Pneumakosms (Haus-Rucker-Co.), expanding radially like tree branches at will as extensions of the nomadic body, or letting them 'put on' their suitaloons (Archigram) in a dystopian/post'architectural world can be regarded as a very anarchitectural<sup>15</sup> attitude. Another connotation of those projects is Peter Sloterdijk's Spheres trio, wherein the world is a foamy space filled with balloons of different scales and quantities in 'The World Interior of the Capital' as Slavoj Žižek, whose, "... dream of a house composed only of secondary spaces and places of passage- stairs, corridors, toilets, store-rooms, kitchen- with no living room or bedroom.", too feels an urge to mention his work while talking about 'Envelopes', in the chapter, 'Architectural Parallax' of his book, "Living in the End Times".<sup>16</sup> Those 'End Times' were the times, Herzog & de Meuron was coming up with an inverted, stripped down to corridors Panopticon, which consisted of 3D

extruded 'home screen' icons juxtaposed like containers in VitraHaus (2006-2009) and also were the times, stripped down to Grace Jones' body's modulations music video of 'Corporate Cannibal' (Nick Hooker, 2008) was broadcasted (Figure 3).



Figure 3. Corporate Cannibal, Nick Hooker, 2008.

To Steven Shaviro, as the central mechanism of what Gilles Deleuze calls the emerging control society is modulation, in this video, the medium really is the message, and the screen works as material support for his signal/image. Therefore 'Corporate Cannibal' does not offer us any preexisting structure of space within which Jones' signal/image might be located, and this video does not imply and does not take place within, the absolute, perspectival space. Rather, it constructs a relational space.<sup>17</sup> And as again Shaviro makes the connection, David Harvey describes it, the relational view of space holds that there is no such thing as space or time outside of the processes that define them. Processes do not occur in space but define their own spatial frame. The concept of space is embedded in or internal to the process.<sup>18</sup>. After the death of the author, where texts and labyrinths are the same in an intertextual 'Garden of Forking Paths'<sup>19</sup> matters can be taken into hands in different contexts, and even co-design groups are to be replaced by networks<sup>20</sup>, let alone the fields of expertise of disciplines in a hypertextual world where hierarch(y)itecture, molding the individual in accordance with the requirements of mass production -or manufacturing- replaced by modulations of the Post-Fordist, Post-Industrial and Post-'Modern Times' production (Figure 4).



Figure 4. Forking Paths, Saltuk Özemir, 2021.

While comparing mold, an enclosure in disciplinary society with modulations of the control society Deleuze also talks about the replacement of the mass/individual and signature/number pairs respectively with dividual and code in 'Postscript on the Societies of Control'.<sup>21</sup>

And, when commenting on interior designer/painter Francis Bacon's 'frame in a frame' paintings, Deleuze states that "...the painting is composed like a circus ring, a kind of amphitheater as place. It is a very simple technique that consists of isolating the Figure... The relation of the Figure to its isolating place defines a fact... Painting has neither a model to represent nor a story to narrate. It thus has two possible ways of escaping the figurative: toward pure form, through abstraction; or toward the

purely figural, through extraction or isolation." <sup>22</sup> Body/figure, face/head, flesh/skin, and figural/figurative dichotomies are what Deleuze talks about.

In a World, the days when Turkish poet Nazım Hikmet writes in his Plea, "To live! Like a tree alone and free, Like a Forest in Brotherhood" are over, and rhizome of Deleuze and Guattari take over, the rules of the game has changed, too. To put it in another way, in real life, wicked problems the gameboards now have so many stakeholders to such an extent that even threesome chessboard is far from being a realistic simulation of those problems. Instead of black & white individual personal spaces providing necessary social distance in between hierarchically defined stones, Go board, where a network of identical stones occupy not the spaces defined by lines, but the intersections of lines, make a much more realistic simulation. It is not only because of its tatami-like net, wherein communication makes the community and its equal stones but also because of not being a compartmentalizing and reductionist zero-sum left-brain game. Much better is a play'net, where the player does not play by the rules within the confined borders of an enclosure.

As to the word selection in naming the text they should abide by, actors in theatre seem to have a 'personal space' to act like the way they interpret the 'play'. Yet, the physical counterpart of that space must be a newly gained freedom as William Hogarth's painting, "A Scene from the Beggar's Opera" (1731) depicts a theatre where aristocracy sits on stage. Yet, the proscenium stage, separating the active actors and passive audiences, cannot compete with cinematographic techniques, let alone interactive media. And there are different stage types, such as thrust stage, theatre-in-the-round, and black box, all of which, by being much more inclusive, bring theatre much more into life, too. Due to today's social media technologies replacing conventional mass media, U2 360° Tour stage is a contemporary example where the 360° stage lets people with mobile phones take pictures or video throughout the concert.

#### **7ETOPIA**

3E (Explore, Explain, Expand), 5E (Engage, Explore, Explain, Elaborate, Evaluate), and 7E (Elicit, Engage, Explore, Explain, Elaborate, Evaluate, Extend) Learning Cycles are inquiry-based constructivist learning models. Regarding the tutor's active and the students' passive roles in a proscenium 'class-stage' system, applying this 'software' onto this conventional 'class system' may sound like applying an OS to a telegram machine. Yet, in Post-Covid, 'Co-Video' world of digitized education, that is exactly what happened. In a similar fashion to the anachronistic skeuomorph design approach of the designers of the first automobiles, tutors had to rely on their 'blackboard stage' live and one-off performance skills.

On the other hand, the student of our age is not a prime-time audience. They do binge-watching on Netflix and even broadcast a U2 concert live on YouTube, or much better, promote their music. And, thanks to the Internet, replacing 'enclosures' like libraries and books, information is no longer exclusive to the tutor's or the institution's hegemonic territory. Despite being controversial, another epistemological approach to education, like Behaviorism (1900s), Cognitivism (1970s), Constructivism (1980s), according to Connectivism (2000s) knowledge is created beyond the level of individual human participants.<sup>23</sup>

Not being able to achieve the necessary transition from a disciplinary society towards a control society, and from the 'Modern Times' to 'Modular Times', most only shared already digitized PowerPoint slides as in a traditional classroom. Even in the traditional class'room with summative assessment system in accordance with that, students to tutor were like note'books, judged by their covers and whether the students listened to them is highly questionable for there is no 'YouTutorial'

average view duration statistics. On the other hand, easily reachable online education platform formative assessment feedbacks might be revolutionary, as much as personalized medicine.

Regarding what is to be done, in an age where no one can concentrate for a long time and do not want to be 'round' peg in a round hole, returning to basics of learning, and questioning the nature of learning taking into account pedagogy, or much better, andragogy, embracing and making the most of the new education technologies might yield much more productive results, even surpassing those of the good old lecture theater (/design studio) days.

First, the nature of learning, just like designing, has changed tremendously. Losing the enclosure of the traditional class'room system, the designer tutor, who teaches 'co-design' but acts on the 'proscenium blackboard' got lost. That tutor is called a designer, thanks to the demise of the lodge system starting as of the reign of the Sun King and his Gobelins, acts like an omni-scient master criticizing his apprentice in one-to-one so-called humanistic and interactive design studio education system. Yet, they can be the avant-garde of online education since they are, at the same time, design thinkers by the very nature of their profession.

Like 5E/7E learning cycle methodology wherein the student's participation in active learning is essential, design thinking cycle processes involve the user from the beginning, whether in a participatory design or co-design format.

Secondly, a compatible purely relational space online education platform acting as an embodiment(/em'facement) of those techniques may help the design tutor co-design a 'round-table' 7Etopia with their students. Platforms, such as Blackboard, despite their skeuomorphic names, provide the tutors with the necessary tools that are not only providing icebreaking, grouping, and interaction tools but also tools to make interactive asynchronous videos to make open forums and to share other applications. Those platforms also let the tutor design a whole week as a module, both synchronous and asynchronous for a Netflix and YouTube generation.

Thirdly, as the medium is the message, through online education platforms, topic and topos in 7Etopia may become one in the same, on the heterotopia of computer windows. Sigmund Freud deployed a mirror just in front of the window facing his patients first to cause self-reflection, and after Freud sitting in between the mirror and the patient, to assume the role of 'the doctor'.<sup>24</sup> Intermittent reflection of one's self on a computer screen during an online course in a Baconian frame in a frame fashion might undermine the role of 'the tutor' who is already seen at eye level, stimulating a level'standing, instead of under'standing of 'low angle shots' in the classroom. Every tool that breaks the Fourth Wall to tear the veil of 'reality' as in a Brechtian play should be deployed in 'Modular Times'.

For Žižek, the inside and outside never cover the entire space, there is always the excess of a third space. With its indoor-outdoor experience, the Kimmel Center for Performing Arts in Philadelphia generates that third space<sup>25</sup>. That third space is generated on an online course session, through the frame in a frame self-image, not confined within the borders of an enclosure, but on the contrary as a relational place maker.



Figure 5. Exterior-Interior/Object/Subject dichotomy vs. Extimity, Saltuk Özemir, 2021.

And, an end, but like neither a map complete within itself (Figure 5) nor an anachronistic conclusion for the new ego-fugal, anarchitectural Modular Times, as Buchanan too cites from John Dewey, in his paper mentioned above, "The old center of the universe was the mind knowing by means of an equipment of powers complete within itself, and merely exercised upon an antecedent external material equally complete within itself. The new center is indefinite interactions taking place within a course of nature which is not fixed and complete, but which is capable of direction to new and different results through the mediation of intentional operations."<sup>26</sup>

#### NOTES

<sup>1</sup> Michel Foucault, *The Order of Things* (Vintage Books: Random House, 1994), 2-16.

<sup>2</sup> Charles Seife, Zero: The Biography of a Dangerous Idea (Viking: Penguin, 2000), 94-96.

<sup>3</sup> George Steiner, "The Order of Things" New York Times, February 28, 1971.

<sup>4</sup> Brian Hwui Zhi Cheng, "The Myth About Corridors," *behance.net*, 20 May 2021, https://www.behance.net/gallery/2104080/The-Myth-About-Corridors/.

<sup>5</sup> Brian Hwui Zhi Cheng, "The Myth About Corridors," *behance.net*, 20 May 2021, https://www.behance.net/gallery/2104080/The-Myth-About-Corridors/.

<sup>6</sup> Richard Buchanan, "Wicked Problems in Design Thinking," Design Issues Vol. 8, No. 2, (1992): 5-21.

<sup>7</sup> George Steiner, "The Order of Things" New York Times, February 28, 1971.

<sup>8</sup> Brian Hwui Zhi Cheng, "The Myth About Corridors," *behance.net*, 20 May 2021, https://www.behance.net/gallery/2104080/The-Myth-About-Corridors/.

<sup>9</sup> George Steiner, "The Order of Things" New York Times, February 28, 1971.

<sup>10</sup> Michel Foucault, preface to *The Order of Things* (Vintage Books: Random House, 1994), xix-xx.

<sup>11</sup> Michel Foucault, "Of Other Spaces, Heterotopias," foucault.info, 13 May, 2021, https://foucault.info/documents/heterotopia/foucault.heteroTopia.en/

<sup>12</sup> Brian Hwui Zhi Cheng, "The Myth About Corridors," *behance.net*, 20 May 2021, https://www.behance.net/gallery/2104080/The-Myth-About-Corridors/.

<sup>13</sup> Jacques-Alain Miller. "Extimity," *lacan.com.* 15 May 2021, https://www.lacan.com/symptom9/.

<sup>14</sup> Roland Barthes, *Image, Music, Text* (Fontana, 1977), 142-148.

<sup>15</sup> Brian Heagney, Anarchitecture: writings on architecture from an anarchist perspective (lulu.com, 2002-2004), https://www.lulu.com/en/ca/shop/brian-heagney/anarchitecture-writings-on-architecture-from-an-anarchistperspective/ebook/product-1gv7ernz.html?page=1&pageSize=4/.

<sup>16</sup> Slavoj Žižek, *Living in the End Times* (Verso: 2011), 244-278.

<sup>17</sup> Steven Shaviro, *Post-Cinematic Effect* (0-Books: 2010), 11-34.

<sup>18</sup> David Harvey, "Space as a Key Word," (paper presented at Marx and Philosophy Conference, London, May 29, 2004.

<sup>19</sup> Jorge Luis Borges, *The Garden of Forking Paths* (Penguin: 2018/1948).

<sup>20</sup> A.W. (Tony) Bates, Teaching in a Digital Age: Guidelines for Designing Teaching and Learning. (Tony Bates Associates: 2015), https://opentextbc.ca/teachinginadigitalage/.

<sup>21</sup> Gilles Deleuze, "Postscript on the Societies of Control," October Vol. 19 (1992): 3-7.

<sup>22</sup> Gilles Deleuze, Francis Bacon: the logic of sensation (Continuum: 2003/1981), 1-26.

<sup>23</sup> A.W. (Tony) Bates, Teaching in a Digital Age: Guidelines for Designing Teaching and Learning. (Tony Bates Associates: 2015), https://opentextbc.ca/teachinginadigitalage/, 61.

<sup>24</sup> Joel Sanders and Diana Fuss, "Berggasse 19: Inside Freud's Office," *joelsandersarchitect.com*, 15 May 2021, http://www.joelsandersarchitect.com/berggasse-19-inside-freuds-office-with-diana-fuss/.

<sup>25</sup> Slavoj Žižek, *Living in the End Times* (Verso: 2011), 275.

<sup>26</sup> John Dewey, *The Quest for Certainty: A Study of the Relation of Knowledge and Action* (Capricorn Books 1960/1929), 290-291.

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## CONSTRUCTION OFF-SITE: AN EXPERIMENTAL SUMMER PRACTICE PROGRAM

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#### INTRODUCTION

This paper introduces "Construction Off-Site", an online summer practice program developed in TED University Department of Architecture, as an alternative to on-site summer practices that suffered from the lockdown conditions caused by the Covid-19 pandemic. The program aims to fill in for the on-site summer practice through a tripartite structure: A narrative series on the history of the construction sector and stories of mega-projects in Turkey; documentaries covering real-life stories and construction processes of buildings that stand out in terms of the integrity of building technologies to design intentions, complexities of construction Off-Site was born out of urgency and shall not replace the typical on-site summer practice, the results of the student survey conducted at the end of the program indicate that this program overcomes some of the major shortcomings of the typical on-site summer practice and provides insight for the future to design a hybrid program which involves both on-site and off-site components.

#### **Summer Practices and Architectural Education in Turkey**

A four-year curriculum characterizes the undergraduate architectural education in Turkey, and graduates are entitled to register to the Chamber of Architects as soon as they get their diploma. Unlike many countries, no long-term internship after graduation is required to open an architectural firm and/or perform as an architect of record.<sup>1</sup> Instead, short-term summer practices with duration of approximately thirty workdays each are distributed throughout the curriculum in line with the learning outcomes and the level of expertise the students are expected to attain each year. Summer practices are considered an inseparable component of professional education in architecture since they introduce students to the real-life context and help them acquire practical knowledge through observation and one-to-one experience.

Two compulsory summer practices incorporated into the architectural curriculum in almost all universities in Turkey are (1) internship in construction<sup>2</sup> done at a new building construction, a renovation or an archaeological excavation site and (2) internship in professional practice<sup>3</sup> done at an architectural office, or design development department of a government institution or a construction company in the summer of the second year and third year respectively. Students document their internship in the form of a report and pass with success if their reports are approved by the company supervisor and the department's internship coordinator. This bipartite internship model helps

architecture students get acquainted with two different professional settings during their undergraduate education and provides them a wider perspective.<sup>4</sup>

Other forms of compulsory internships incorporated only in a number of universities are surveying and practice in building construction which takes place in the summer of the first year.<sup>5</sup> While surveying introduces the students to basic surveying equipment, measurement, or building documentation techniques, the practice in building construction introduces them to conventional techniques of construction and building materials, providing a hands-on experience in small-scale constructions. Practice in building construction is almost like a construction studio and has its roots in Bauhaus education, in which experimenting with different materials is an objective of the first year.<sup>6</sup> However, only a few universities implement the practice in building construction due to organizational difficulties and spatial and financial limitations.

For the universities which do not offer practice in building construction at the end of the first year, the internship in construction is a unique setting where students engage with actual building processes. During this internship, students observe construction processes in an actual construction site, document their experience with photographs and sketches in daily logs, and prepare a report depicting the whole process. Besides monitoring various construction works such as excavation and foundation works, structural works in concrete or steel, roof and wall construction, insulation and drainage works, exterior or interior finishes as well as landscaping, mechanical, electrical, and infrastructure works, students take part in an interdisciplinary team and get acquainted with how a construction site is managed. Students may also take an active role in simple construction works to have hands-on experience. Completing this summer practice, each student is expected to be able to describe the responsibilities of the actors in construction processes, identify construction works, building materials, and machinery used in construction sites, conceptualize the building as a system composed of integrated components, relate technical drawings and construction documents with actual building processes, and recognize the role of management in organization of construction sites. The summer practice in construction contributes to the acquisition of technical knowledge which is usually mystified by architecture students as if it is a domain, specific to senior architects.<sup>7</sup>

#### **CONSTRUCTION OFF-SITE**

As all universities have shifted to distant education, the compulsory internship in construction constitutes one of the most dramatically affected areas of architectural education from the negative impacts of the Covid-19 pandemic and the strict lockdown conditions in summer 2020. Within this period, most of the construction sites either stopped working or refused to offer internship positions. Considering the pedagogical value of internship as a form of experiential learning and the significance of practical knowledge in professional education, responding to the lockdown conditions and developing strategies to fill in for the internship in construction became urgent. Construction Off-Site is an online summer practice program developed by TED University as an alternative, not a substitute, to the thirty days long in-situ internship in construction.<sup>8</sup> Through a tripartite structure, it aims to fill in for a practical learning experience that would not be possible under these circumstances. Delivered simultaneously and distributed evenly into the five-week program in which students were asked to submit weekly reports and reflect on the outcomes, the three modules addressed a variety of topics and utilized different modes of delivery.



Figure 1. Poster of ARCH399 Construction Off-Site (prepared by Utku Coşkuner)

# Module 1: A narrative for the history of the construction sector and mega-projects in Turkey

The first module introduced to the students was a narrative series on the history of the construction sector and stories of mega-projects in Turkey in a chronological manner. This module was particularly crucial for the professional education of students who would get acquainted with building practices for the first time. Told by an expert<sup>9</sup> on architectural construction and construction management with publications on the topic as well as real-life experience, the narrative aimed to provide insight into the construction sector through a group of concepts varying in complexity: contemporary construction models, project life cycle, pre-construction, construction, and post-construction periods, technical specifications, construction and as-built drawings, integration, site organization, and distribution of responsibilities, interdisciplinary cooperation, planning, and scheduling, and time, cost, quantity, and quality management. Based on the narrator's personal experience in the field and the real-life stories of the projects in which he was involved, starting from what a project is and continuing with the means to its actualization, the narrative was organized in such a way that it would be complementary to the weekly themes of the second and third modules as well, helping the program attain a holistic quality.

This module introduced the concept of "mega-project" to underline the role of management in project development and construction processes. A mega-project can be defined as a complex endeavor that requires integration of a great range of systems "designed, coordinated, and collectively organized" at various levels.<sup>10</sup> Unlike a small-scale project, planning and realization of a mega-project accommodate a variety of complexities that cannot be merely dealt with improvisation; and a parameter that seems negligible for a small-scale project may have a determining role in the success or failure of a mega-project. In this sense, getting into real-life stories of mega-projects was expected to enhance the learning of construction and management practices. Another method utilized in this was to include a student project to accompany the narrative. To do so, a graduation project of one of the alumni was overviewed to discuss and demonstrate the main themes addressed in this module – as shown in Figure 2. Using a student project as a case -rather than an actual building project- was a strategic decision that not only eased students' comprehension and enforced empathy but also demonstrated how the drawing set and construction documents should be prepared so that a student project could be actualized.<sup>11</sup>



Figure 2. The graduation project of an alumna (project by Aylin Alicanoğlu, annotated by Selçuk Alten)

#### Module 2: Documentary screening and case-based learning

A selection of documentaries covering real-life stories and construction processes of buildings that stand out in terms of the integrity of building technologies to design intentions, complexities of construction technique, or contextual challenges constitutes the second module of Construction Off-Site. This selection was prepared to convey different stages of the construction process, a variety of problems solved on-site, and improvised solutions depicted thirteen different architectural projects. Each screening session was followed by a discussion session within which the key concepts, terms, problems covered in the documentaries were further elaborated.

The documentaries screened in this module can be grouped under three main themes even though some of the documentaries may fit into more than one category:

1. Documentaries conveying the construction process of mega-projects and architectural projects with formal complexities

2. Documentaries revealing context-dependent challenges of construction sites

3. Documentaries addressing tectonic investigation concerning construction techniques and details

The documentaries on Masdar City<sup>12</sup>, The Shard<sup>13</sup>, Dome Over Houston<sup>14</sup>, Guggenheim Bilbao Museum Building<sup>15</sup>, and Marina Bay Sands in Singapore<sup>16</sup> can be located in the first theme. The documentary on Guggenheim Bilbao Museum, for example, conveys the stages between the design and field application of a project with geometric complexities while the documentary on the Shard, addresses logistic challenges specific to constructing such a big project located in the city center as well as the problems common to all tower constructions, such as the wind load. The documentary on Masdar City Project, which delivers the construction site of a sustainable city's university complex in arid geography, can also be listed under the second theme, focusing on context-dependent challenges. Amsterdam's Futuristic Floating City<sup>17</sup>, a documentary on the construction of floating houses in Amsterdam and The World's Most Extreme Construction Site: Antarctica<sup>18</sup> can also be listed under the second theme. The documentaries on Renzo Piano and Richard Roger's Centre Georges Pompidou<sup>19</sup>, Frei Otto's tensile structures<sup>20</sup>, Frank Lloyd Wright's Johnson Wax Factory<sup>21</sup>, Santiago Calatrava's Lyon-Saint-Exupéry TGV Station<sup>22</sup>, and Peter Zumthor's Therme Vals<sup>23</sup> can be considered under the third theme, which aims at replacing students' problematic conceptualization of "building form and structure as separate" with a tectonic approach.<sup>24</sup>



Figure 3. A selection of students' reports

#### Module 3: Materials and applications

The third module was built upon webinars on materials and applications. These webinars presented by pioneering manufacturing firms addressed a group of topics, from formwork systems to finishes, parallel to the construction workflow on a construction site. Application stages were demonstrated with time-lapse camera recordings of real construction sites or 3D simulations. Technical specifications and catalogs provided along with the presentations helped the students learn how to distinguish right and wrong applications in an actual construction site. The webinars, like other modules, reinforced the conceptualization of logistic aspects of a construction site by including the demonstrations and schemes of the arrival and flow of materials, required machinery, and equipment within the construction site. Regarding the concerns on simulating construction experiences, this module aimed to support the conceptualization of the role of detail as a "design generator", which allows "the entire design to be revealed in the smallest piece".<sup>25</sup>



Figure 4. A selection of students' reports on formwork systems



Figure 5. A selection of students' reports

#### FEEDBACK AND DISCUSSION

A questionnaire with a total of eleven questions was applied to the students upon completion of the program: Four questions asking the students to rate the three modules and the program as total on a 5-point Likert scale, three questions asking them to state five keywords that they remember from each module, two open-ended questions asking them to define the positive aspects of the program and the aspects that could be improved and two yes/no questions which address overall satisfaction.<sup>26</sup> One of the yes/no questions, which allows multiple selections regarding the modules, asked the students whether they would like to join this program even if they had already done their internship at an actual construction site. Attendees who stated that they would like to attend materials and applications webinars, the narrative, and the documentary screening were 93%, 85%, and 37%, respectively. The responses given to this question suggest that, with the overall satisfaction of 98%, Construction Off-Site has the potential to support the typical internship on-site after the Covid-19 pandemic is resolved.



Figure 6. A selection of drawings from students' reports

The positive aspects of the program reported by the students can be grouped into four main themes. Indicated by 39% of the attendees, "being able to communicate with experts in person and benefiting from their experience" is the most mentioned positive aspect of the program; followed by "being able to experience a broader scope of materials and construction stages than an ordinary construction site", "being able to attend from home", and "developing awareness on how to choose a construction site for an internship position in the future" which were indicated by 37%, 15% and 12% of the attendees respectively. Adverse conditions related to broadcasting the videos in the documentary screening sessions, such as low resolution, unclarity of speech, or lack of subtitles, are cited among aspects that could be improved. A matrix was produced to relate the modules to the list of construction works observed in a typical on-site practice. The questionnaire results, the content of the reports prepared by the students, and the construction work-module matrix show that Construction Off-Site managed to realize the learning outcomes defined for the typical internship on-site.

Though similar learning outcomes are achieved with on-site and off-site programs using different methodologies, both models have pros and cons. The pros of the typical internship on-site can be listed as active participation in teamwork, active disciplinary collaboration, and hands-on experience. Yet, the typical model also has its cons. Fragmented knowledge obtained from observations is one of the shortcomings of the typical program since students are not able to observe the whole construction process in such a limited time, that is to say, thirty days, and some constructions do not involve a great variety of construction work.<sup>27</sup> Inability to distinguish wrong applications is another shortcoming since improvisations and false facts are very common in the construction industry. Thus, there is the risk that a student who encounters these applications for the first time would accept these

false applications as de facto. The other shortcoming is non-standard learning outcomes since not all construction sites have the same scale or complexity. Construction Off-Site overcomes these aspects through its tripartite structure, providing holistic knowledge obtained from a narrative in the first module, providing the ability to distinguish right and wrong applications by introducing cases, best practices, and technical specifications in the second and third modules, and standardizing the learning outcomes.

CONSTRUCTION WORKS	module-1	module-2	module-3
Excavation works	•	•	•
Foundation works	•	0	0
Basement floor, ground floor, and regular floor construction works	•	•	•
Reinforced concrete construction	•	•	•
Steel constrcition	•	•	0
Staircase construction works	•	0	0
Roof construction	•	•	•
Roof cladding	•	0	•
Insulation works	•	•	•
Drainage works	•	•	•
Exterior walls	•	0	•
Exterior wall finishes and cladding	•	0	•
Interior walls and partitions	•	0	•
Interior wall finishes and cladding	0	0	•
Floor finishes	0	0	0
Ceiling finishes	0	0	0
Stair finishes	0	0	0
Railing and balustrade	0	•	•
Joinery works	0	•	•
Glazing works	0	•	•
Acoustic installation works	0	0	•
Built-in furniture manufacturing	0	0	0
Plumbing works	0	0	0
Eletrical, electronics, communication, and data works	•	0	0
Heating ventilating air conditioning systems	•	•	•
Fire life safety systems	0	0	0
Elevator and escalator installations	0	•	0
Sustainable energy system installations	0	•	•
Smart building systems installations	•	•	0
Infrastructure works	0	•	0
Landscaping: Softscape	0	•	•
Landscaping: Hardscape	0		0

Figure 7. Construction works covered in three modules

#### CONCLUSION AND IMPLICATIONS FOR FUTURE RESEARCH

This paper presents Construction Off-Site, an online summer practice program developed in TED University Department of Architecture, locates the program within the context of summer practices and architectural education in Turkey, and elaborates on the outcomes and feedback. Although Construction Off-Site was born out of emergency as compensation for a typical on-site program within the context of the Covid-19 pandemic, student reports and the results of the questionnaire suggest that this program can be further developed to support the typical program after the pandemic is resolved. An integrative approach to these two programs would minimize the shortcomings and enhance the learning outcomes to a great extent. Construction Off-Site may be adapted to develop an introductory module to the typical program on-site.

In a recent study, which investigates the role of internship experience in architecture and interior architecture education in Turkey, a survey was conducted with second and third-year students who have just completed their summer practice in a construction site or an office.<sup>28</sup> This survey has detected several categories that students felt inadequate during their internship on site. The most mentioned inadequacies were related to implementation, material and construction techniques, lack of general knowledge, and technical drawing, while 45% of the attendees indicated that they could benefit from a preparation course before the internship. Development of an introductory module adopted from the Construction Off-Site could also support the gain of the three of the outcomes listed by the Architectural Accrediting Board in Turkey as a part of the required knowledge, skills, and competencies that graduates should acquire: building cost monitoring, implementation management, and building materials and applications.<sup>29</sup>

The fact that undergraduate education in Turkey is limited to four years and the absence of a compulsory internship after graduation is a matter of debate for over fifteen years. Studies have been conducted to extend the education to five years and implement long-term internships, and new educational models have been developed accordingly but never applied.<sup>30</sup> It is observed that there is a gap in the research field of internships in architectural education in Turkey. Studies addressing internships usually compare models developed in different countries and evaluate them in terms of accreditation standards or dwell on surveys applied to students. However, there are no studies that focus on the internship reports prepared by the students. A detailed text analysis or keyword extraction and word frequency analysis may help better understand the learning outcomes of both the on-site and off-site programs and detect the potentials and shortcomings of each. Such analyses may also help develop an integrated approach and define the scope of the introductory course to be proposed.

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<sup>9</sup> Selçuk Alten, architect, project manager, and board member of the International Construction Project Management Association for his contribution to the program.

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# USING TELEPRESENCE AND SOCIAL TECHNOLOGIES TO CREATE SOCIAL IMPACT

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#### INTRODUCTION

The year 2020 has seen extraordinary challenges, marking a significant shift in practices in learning and teaching and reshaping traditional settings with physical interactions into new modes of education. Over the past few decades, social media and technology have become an indispensable part of our lives. The rapid increase of communication on social platforms has not only increased people's connectivity on an everyday level but also encouraged collaboration between students, offering them an opportunity to learn without time or spatial limitations. The unexpected challenges during moments of crisis, on the one hand, brought disruptions. On the other hand, it forced the education sector to reconsider how technology could be harnessed as a valuable resource. This paper utilises the course I taught in 2020, Integrated Studies of Cultural Management, as a case study. By reviewing various strategies adopted in teaching and by illustrating projects produced by students who took the course, I aim to discover how the use of social media in teaching and learning could potentially transform knowledge for social change.

## PART 1: INTEGRATED STUDIES OF CULTURAL MANAGEMENT—PEDAGOGICAL APPROACHES

Integrated Studies of Cultural Management is a capstone course that has been offered as a part of the Bachelor of Arts (BA) Program of Cultural Management at the Chinese University of Hong Kong for five years. The course encourages students to apply knowledge they have acquired in real-world cultural projects. In previous years, students partnered with a variety of non-profit organisations and addressed different social issues. Due to the coronavirus outbreak in 2020, students were not able to meet with local communities face to face. In order to facilitate teaching and learning when in-person lesson and public community program were impossible, the weekly course contents and assignments were subsequently redesigned. During the course, students worked in groups and collaborated with various community partners relying on telepresence technology and social media, through which they aimed to preserve and disseminate local culture and heritage. As the instructor of the course, I employed various strategies to cope with the challenges brought by the pandemic. Below, I will illustrate three pedagogical approaches I adopted in the course.
#### Application of technology—Blog-based learning

Similar to many courses offered in universities across the globe, Integrated Studies of Cultural Management was forced to operate completely online during the pandemic, with weekly classes conducted via Zoom. Although Zoom serves as an effective alternative to face-to-face classes, a number of studies have suggested that 'Zoom fatigue' is quite common among students who begin to feel tired from prolonged video conferencing.<sup>1</sup> In order to create a more dynamic learning environment for my students outside of formal class time, I created a WordPress<sup>2</sup> website for my course. During the course, I used WordPress's blogging function to provide my students with external learning materials, offering them an opportunity to explore a wide range of course-related ideas. For example, my blog included a TED talk conducted by Elizabeth Lindsey,<sup>3</sup> an ethnographer and a fellow of the National Geographic Society.<sup>4</sup> Her collaboration with Google offered my students insight into how traditions of Indigenous people could be preserved and disseminated by using geospatial mapping technology. My students were able to use this WordPress site to acquire relevant information concerning cultural management. In addition to seeing my blog posts passively, my students also interacted with their peers and myself by using the blog's built-in comment system.<sup>5</sup> Through the course website, my students were given an opportunity to gain a deeper understanding of heritage and history by learning from real-world projects. As such, they were able to apply the knowledge they gained from these external learning resources into their projects, which were situated in a local context.

## Adoption of case method—Case-based learning

One of the intended learning outcomes of this course expects students to rethink the role of a cultural professional when dealing with critical issues that occur in society. In order to arouse students' interest in learning about social justice and provide a 'democratic environment for class discussion',<sup>6</sup> I also employed the pedagogical approach of a case method. Throughout the course, I used many relevant cases to stimulate active participation and debate. Indeed, by illustrating various scenarios and contexts in my cases, I aimed to strengthen my students' ability to provide solutions for realworld problems and challenges. For example, in week three, my class was divided into two groups with opposing positions to debate whether or not monuments of historical figures who symbolise oppression should be preserved. By using an incident that took place in Bristol where slave trader Edward Colsto's statue was torn down by protesters, students from both groups gained a better understanding of the current debates that critically address the complexity of heritage preservation and politics. Instead of delivering a lengthy virtual lecture session, I considered myself a facilitator rather than merely a knowledge provider.<sup>7</sup> My students were encouraged to actively seek information while discussing these cases and were given the opportunity to analyse them through critical discussions and collective analysis. As such, the case-based learning approach allows students to consider how their thoughts could create 'implications for others'.8

## Integration of theory and practice—Theory-enriched practical knowledge

Creating a meaningful online cultural project requires both technical expertise and the ability to articulate various issues surrounding history, identity, heritage and community engagement. In order to achieve this, I explicitly combined practice and theory in my course.

In terms of practice, my strategy sought to encourage students to create an effective social media campaign that was engaging and relevant to communities. Five workshops were offered during the course, which included information about initial project planning, identification of community, marketing strategy, curatorial strategy and budgeting. In order to optimise students' participation,

several cloud-based worksheets were prepared so that they could work together in the same document at the same time while using different devices. In their worksheets, I presented students with problems that required step-by-step solutions. Through such a problem-based approach, they developed strategies and implemented plans while exercising their critical knowledge and problem-solving skills through team participation.<sup>9</sup>

In terms of theory, several lectures about history, cultural heritage and community were delivered inbetween the workshops. In the matter of history, students were encouraged to think about how their projects could potentially meditate users' understanding of Hong Kong between past, present and future. The concept of 'micro-history' was introduced in one of the lectures. My students were taught to 'incorporate peripheral or marginal events, figures, and communities' into their research and analysis in order to shed light on hidden aspects in society<sup>10</sup> while also offering a continuing dialogue of the past for present-day purpose. As for cultural heritage, the course focused on the intangible aspects. Students applied theories of cultural heritage to their projects and addressed many issues such as class, post-colonialism, gender and identity. Regarding community, theories concerning participatory arts and relational aesthetics were thoroughly discussed. These concepts allowed my students to draw connections between collective participation and artistic expression. By integrating these various theories in the course, my students were able to produce meaningful projects that were marked by an agenda of social justice and empowerment.<sup>11</sup>

The integrated approach of theory and practice in this course was intended to inspire students to produce projects that were theoretically informed. Maximising social engagement and promoting the value on social interaction via social media were equally important. I hoped that the theory-enriched practical knowledge my students acquired from this teaching approach would create a positive impact, such as changing social norms and removing barriers for communities.<sup>12</sup>

## **PART 2: STUDENT PROJECTS**

After thirteen full weeks of classes, my students produced a plethora of projects that covered various social platforms and topics surrounding local farming, cross-generational gaps, ethnic minorities, urban spaces and the cultural significance of *Mahjong*. In this section, I will illustrate two projects and evaluate the impact that these students have made on society.

#### Farm's Whisper—A cheaper and healthier alternative to vegetables

In recent years, Hong Kong's land shortage has led to a high dependency on food imports. Mainland China is the biggest food source for Hong Kong, where 92 per cent of vegetables consumed by locals are from the mainland.<sup>13</sup> Due to the disruption of supply chains caused by the pandemic, the price of vegetables has continued to rise, and many people in Hong Kong have been forced to consider alternatives. In light of this, one of the groups in my course created a project called Farm's Whisper, which proposed alternatives to vegetable supplies and consumption.

During the four-month-long project, my students posted information about where to buy locally grown vegetables. For example, they introduced Plant Right Now, which is a cooperative that aims to connect the public to local farmers through a program that incentivises customers to buy vegetables on a recurring and collective basis (Figure 1).<sup>14</sup> Apart from building a network for farmers and consumers, this group of students also visited various farmlands and created stories about local farmers on their social platforms. In one of these stories, Becky Li—a professional turned farmer—started a farming business against the backdrop of the government's controversial development plan back in 2012, when massive farmlands were passed into the hands of land developers<sup>15</sup> (Figure 2). According to my students, Li's experience encouraged them to participate in various food

and farming activist movements. One of the posts on this group's Instagram page, captioned 'Stay behind, just to protect the land that should belong to our land', portrayed my students participating in a festival in Wang Chau, where residents and artists used live performances and art installations to rally against the government's decision to demolish several villages there (Figure 3).<sup>16</sup> Given that only 4.5 per cent of the total land area in Hong Kong is farmland and that agricultural labour only constitutes 0.1 per cent of the city's total workforce,<sup>17</sup> these students aimed to capitalise on the power of social networking and build a collective action that advocated for the sustainability of locally grown food and urban development.

Apart from creating awareness of local farming through Facebook and Instagram, this group of students also used Zoom to create an online event titled 'Dine with you'. This event included a Zoom dinner party where followers of my students' social media accounts shared their experiences of cooking with locally grown food. (Figure 4).<sup>18</sup> During the dinner party, one participant named Joey Leung (who was a famous stage actor) expressed his views about the importance of eating healthily while he showed participants his homemade dumplings, which were made with coriander he had grown at his home. Another participant named Lau Hoi Lung, who was a member of a local food activist group, said, 'Instead of gathering farmers, it is more workable to network with consumers and make use of community network'.<sup>19</sup> His insight inspired other participants to think about how forming a micro-network between consumers and farmers was crucial to sustaining local farming. After the event, images of the dinner were uploaded by many participants. Content about locally grown food was massively circulated on social media. This event proved that eating together—even in different households—could change people's perceptions of agricultural production and personal health.



Figure 1. Co-purchasing local and organic vegetables.



Figure 2. Becky Li, a professional turned farmer.



Figure 3. Activism in Wang Chau.



Figure 4. Zoom dinner party.

## Southside Story—A project breaking the invisible barriers between ethnic groups

Southside Story was a project created by another group of students. The project aimed to uncover stories that belonged to South Asian ethnic groups in Hong Kong. One of the strategies my students adopted in this project was to collaborate with and leverage resources of non-profits in order to make connections with ethnic minorities and maximise the reach of online audiences. For example, following a recommendation from a non-profit ethnic minority organisation, two of my students filmed a video of themselves playing hockey with some South Asian children. Their video was educational, entertaining and was able to promote the SPIN project: a hockey training program that was specifically offered to ethnic minority groups (Figure 5).<sup>20</sup> In addition to their video about hockey, this group of students also produced other recordings to promote the voices of the underrepresented. Contents such as Bollywood dance, South Asian food and a cultural tour of Ping Lai Path-a predominantly ethnic minority cluster in Hong Kong-were produced to introduce the history, religion and lifestyle of different ethnic communities on YouTube (Figure 6).<sup>21</sup> In addition to YouTube, my students also posted information about different ethnic groups on Facebook and Instagram. One of these posts, titled, 'When did the first group of South Asians come and live in Hong Kong?', traces the history of the first Opium War in 1841, when 2,700 Indian people first arrived in Hong Kong.<sup>22</sup> Another post discusses the term 'Hijras', which refers to intersex and transgender people in India. The post raised the awareness of how Hijras people are routinely facing discrimination (Figure 7).<sup>23</sup>

According to my students, social media is an effective way to reach diverse users instantly, though many online contents disappear easily as the retrieval function on social media platforms is not typically considered as an important part of interface design. As such, this group of students wanted to present what they have done on a platform where contents could be kept systematically. In the end, they created an online exhibition on ArtSteps, which is a browser-based platform that allows users to create virtual exhibitions (Figure 8).<sup>24</sup> During the exhibition, personal objects chosen by people from different ethnic backgrounds were displayed in a three-dimensional virtual environment. When audiences clicked on the images, which were projected on the walls, a narration expanded from individual micro-stories to wider topics, such as children, memory, food and religion. The online exhibition made these contents more accessible and viewing experiences less intimidating, as audiences could see the exhibition anytime with their computers and mobile devices. A week after the exhibition's launch, the project was reported by a local newspaper, HK01, where it was highlighted as an example of how digital media offered a bridge and new experiences to audiences during the challenging times in Hong Kong.<sup>25</sup>



Figure 5. The SPIN Project.



Figure 7. 'Hijra'.



Figure 8. Online exhibition on ArtSteps.

## **PART 3: CONCLUSION**

Despite the pandemic, which affected higher education learning across the globe, the ability to use technology to support teaching and learning indeed created a transformational effect, particularly regarding the arousal of students' sensitivity to and understanding of society. Indeed, students were equipped with multimodal literacy for the increasingly digitally-driven world and created an alternative educational environment that connected broader communities. When summarising the course Integrated Studies of Cultural Management, there are three possible points of relevance to consider.

## **Critical pedagogy**

The projects produced by my students in this course covered diverse topics that questioned the societal status quo. In Farm's Whisper, my students challenged the taken-for-granted assumptions of food supplies and offered insights regarding food sustainability and urban development. In the Zoom dinner party, my students turned a typical face-to-face dinner into a platform for exchange through digital media. Their participants felt a greater sense of support during lockdown and were informed by others about how cooking and ethical purchasing could be creatively and consciously accomplished. As for Southside Story, issues such as race, post-colonialism and gender were vividly addressed. By approaching the memories of minority groups through a micro-historical perspective, my students brought about a plurality of experiences from people who were less visible and thus offered an alternative form of representation of people's pasts, which were open for interpretation. The projects studied in this paper highlighted how critical pedagogies increased a student's awareness of the invisible oppression while they exercised sociocultural and analytic skills that addressed such frequently invisible topics.<sup>26</sup>

## **Multimodal literacy**

Using images, audio, videos, texts and various multimedia platforms, my students transformed from being passive learners to being engaged producers and participants of digital media.<sup>27</sup> By conveying ideas and content through a combination of representational strategies, my students proved themselves able to use multimodal narratives and be relevant to the public.<sup>28</sup> Combining the critical approach and multimodal skills enabled my students to successfully leverage social networks for a good cause. Overall, the projects produced in this course were capable of creating a real impact on society.

## The changing role of teachers, students, technologies and communities

This study showed that the adoption of telepresence and social technologies in teaching and learning informed a change in the role of teachers, students, technologies and communities. In terms of the role of teachers, I grew from being a 'sage on the stage' to a motivator and mediator who offered a multimedia-enhanced and learner-centred environment for students.<sup>29</sup> Conversely, my students played a more active role as creators to reflect their own compassion and critical thinking skills. Further, technology served as a tool for my students and me to orchestrate meaningful activities that pushed the limitations of time and space.<sup>30</sup> Finally, the communities involved not only created a hands-on learning environment for students but also provided them with active collaborations with community members and generated greater knowledge.

Ultimately, the cases studied in this paper represent alternative educational environments. Instead of confining teaching and learning in brick-and-mortar classroom that separate students from real-life environments, this course expanded the perceived boundaries of the learning environment and connected with the outside world as an integral part of the learning process.<sup>31</sup> As social distancing measures gradually relax in Hong Kong, due to their increased control of the pandemic, one must think about how experiences of digital teaching and learning during the crisis could potentially offer us greater direction in the future field of education, particularly about the role that technology will play when face-to-face interactions resume.

## NOTES

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<sup>2</sup> WordPress is one of the most popular web-blogging systems with over forty-five million active websites that constitute 20% of all self-hosted websites in the globe.

Matt Squirrel, '21 Fascinating Facts About WordPress,' Digital.com, May 6, 2021, accessed May 24, 2021, https://bit.ly/3ufkLKh.

<sup>3</sup> Isaac Leung, '[Reference] Curating Humanity's Heritage,' CUMT4001, May 5, 2020, accessed May 24, 2021, https://2019cumt4001term2.home.blog/2020/05/05/reference-curating-humanitys-heritage/.

<sup>4</sup> Elizabeth Lindsey. "About," Elizabeth Lindsey, accessed May 24, 2021,

https://www.elizabethlindsey.com/about.

<sup>5</sup> One student commented on the post about Lindsey's talk—'Elizabeth Lindsey's talk was impressive, reminding audiences of the ironic happening that human's cumulative wisdom and knowledge are disappearing in this modern scientific world which possesses explosive data. The Hawaiian chanting and the skills of navigating without any artificial tools that the speaker mentioned are valuable heritage to humans that connect people's past, present and future. However, they are vulnerable to extinction, partly because eurocentrism is more dominant in global heritage management practices (intangible heritages are receiving more attentions though) and people are less aware of

"ordinary people's life-way and knowledge".

Isaac Leung, '[Reference] Curating Humanity's Heritage,' CUMT4001, May 5, 2020, accessed May 24, 2021, https://2019cumt4001term2.home.blog/2020/05/05/reference-curating-humanitys-heritage/.

<sup>6</sup> Edward R. Ducharme, Mary K. Ducharme, and Mary R. Sudzina. "Organizing Instruction for Case-Based Teaching." In *Educating for Democracy: Case-Method Teaching and Learning*, edited by Robert F. McNergney, 16–16. London: Routledge, 2017.

<sup>7</sup> For example, I offered many other real-life cases throughout the course, which include Humans of New York a photoblog with interviews collected on the streets. I used examples of Humans of New York from both New York and an edition about Hong Kong and raised open-ended questions concerning whether culture can be connected, juxtaposed and translated through the use of social media.

<sup>8</sup> Edward R. Ducharme, Mary K. Ducharme, and Mary R. Sudzina. "Organizing Instruction for Case-Based Teaching." In *Educating for Democracy: Case-Method Teaching and Learning*, edited by Robert F. McNergney, 16–16. London: Routledge, 2017.

<sup>9</sup> Bunga Putri Syafina, 'Designing Student Worksheets to Improve Critical Thinking Ability Based on Problem Based Learning,' *International Journal of Scientific & Technology Research* 8, no. 10 (October 2019): 1194–99.

<sup>10</sup>Heather Murray, 'Literary History as Microhistory,' in *Home-Work: Postcolonialism, Pedagogy, and Canadian Literature*, eds. Cynthia Conchita Sugars (Ottawa: University of Ottawa Press, 2004), pp. 406–422.

<sup>11</sup>Alison Rooke, *Curating Community? The Relational and Agnostic Value of Participatory Arts in Superdiverse Localities.* Goldsmith's, University of London: Research Online, 2016. http://research.gold.ac.uk/id/eprint/17791/.

<sup>12</sup> Wil Oonk, Nico Verloop, and Koeno P. Gravemeijer, 'Enriching Practical Knowledge: Exploring Student Teachers' Competence in Integrating Theory and Practice of Mathematics Teaching,' *Journal for Research in Mathematics Education* 46, no. 5 (2015): 559–98. https://doi.org/10.5951/jresematheduc.46.5.0559.

<sup>13</sup> Vivienne Chow, 'In Hong Kong, Buying Locally-Grown Vegetables Is about More than Just Fighting Coronavirus,' Quartz, April 2, 2020, https://qz.com/1819651/local-farms-in-hong-kong-are-thriving-because-of-coronavirus/.

<sup>14</sup> Farm Whisper,'"CUHK Can Buy Local Organic Dishes Together!' Facebook, published September 7, 2020, https://www.facebook.com/farmswhisperr/posts/173578234266617.

<sup>15</sup> The post reads, 'When I was working in Central, I took the subway to work in every day. Then I stayed in front of my computer for eight hours. I felt so frustrated and it seemed like I was wasting my time everyday ... What is the meaning of life? Do I have a chance to return to the village?'

Farm Whisper, 'Dialogue with Becky of Mabaobao Community Farm'. Facebook, March 23, 2020, https://www.facebook.com/farmswhisperr/posts/116991226591985.

<sup>16</sup> Farm Whisper, 'Stay behind, just to protect the land that should belong to our land,' Facebook, July 16, 2020, https://www.facebook.com/farmswhisperr/posts/158916095732831

<sup>17</sup> Vivienne Chow. 'In Hong Kong, Buying Locally-Grown Vegetables Is about More than Just Fighting Coronavirus,' Quartz, April 2, 2020, https://qz.com/1819651/local-farms-in-hong-kong-are-thriving-because-of-coronavirus/.

<sup>18</sup> Farm Whisper, 'Aftertaste and dream chasing,' Facebook, April 7, 2020,

https://www.facebook.com/farmswhisperr/posts/124555179168923.

<sup>19</sup> Ibid.

<sup>20</sup> Southside Story, 'I used to shoot "Hockey Smash Bros." with my friends from Tree Centre, and Tree Centre made teaching videos about hockey! If you are interested, you can take a look,' Facebook, May 17, 2020, https://www.facebook.com/southsidestory2020/posts/139866307628684.

<sup>21</sup> Southside Story, 'Crashing Ping Lai Path (Part 2),' YouTube, April 1, 2020,

https://www.youtube.com/watch?v=jtf50F4Mk0E.

<sup>22</sup> Southside Story, 'How much do you know about the history of South Asian in HK? Let's take a look!' Facebook, April 7, 2020, https://www.facebook.com/southsidestory2020/posts/106791644269484.

<sup>23</sup> Southside Story, 'India's Third Gender Rises Again by Ina Goel,' Facebook, December 28, 2020, https://www.facebook.com/southsidestory2020/posts/214895133459134.

<sup>24</sup> Southside Story, Southmery—ArtSteps, May 25, 2020, https://bit.ly/3c8qSdh.

<sup>25</sup> Ying Man Lui.'"[Ethnic Communion] Online Exhibition of South Asians Telling about the Past of Their Hometown,' HK01, April 13, 2020, https://bit.ly/3bLdhbx.

<sup>26</sup> Saman Talib. "Social Media Pedagogy: Applying an Interdisciplinary Approach to Teach Multimodal Critical Digital Literacy." *E-Learning and Digital Media* 15, no. 2 (2018): 55–66.

https://doi.org/10.1177/2042753018756904.

Colin Lankshear and Michele Knobel. *Digital Literacies Concepts, Policies and Practices*. New York: Peter Lang, 2008.

<sup>27</sup> Ibid.

28 Ibid.

<sup>29</sup> Edwina Spodark. "The Changing Role of the Teacher: A Technology-Enhanced, Student-Centered Lesson on French Fashion." *Foreign Language Annals* 34, no. 1 (2001): 46–51. https://doi.org/10.1111/j.1944-9720.2001.tb02801.x.

30 Ibid.

<sup>31</sup> Kyungmee Lee. "Everyone Already has their Community Beyond the Screen: Reconceptualizing Online Learning and Expanding Boundaries." *Educational Technology Research and Development* 66, no. 5 (2018): 1255–68. https://doi.org/10.1007/s11423-018-9613-y.

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# CHALLENGES OF TEACHING EMBODIED PEDAGOGY DURING COVID EMERGENCY

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# INTRODUCTION

Embodied Pedagogy is a mandatory course in University of Milano "Bicocca" (Italy) for future teachers and educators. This discipline is to be intended as a whole of knowledge about the pedagogical value of body experiences and as a perspective on education that enhances the sense perception and holistic participation (body, mind, emotion) in educational contexts, while it is not intended just as a toolbox for physical education interventions. Besides, it represents a critical perspective on nowadays educational scenarios, where the body is often neglected or objectified simply as a matter of study, nurturing the separation between knowledge and life experiences<sup>1</sup>.

Predictably, our field has been highly impacted by the restriction due to Covid emergency, since we could say that, from February 2020, there has been a general and collective stop of movement and contact, which have traditionally been two focal points of our content proposal, in a theoretical and in a practical manner. Inevitably, in our research and teaching team, the following questions arose:

-what is going to happen to the embodied aspects of teaching and learning in virtual settings, especially (but not only) for lower grades, where sensory experiences, group belonging, and movement have a critical role in development and learning?

-How can we highlight the importance of these aspects to students, while we must ourselves teach in distance learning settings?

-How can we contribute to develop a critical vision towards the indiscriminate adoption of a setting that seems to primarily encourage a transmissive didactic?

The massive transition to online classes in schools and universities represented the opportunity to amplify our theoretical reflections and to create practical solutions that could allow to not forget the body even in these unknown circumstances. We dedicated great energy in our research activity investigating the details of these possibilities.

The academic course comprehends also practical workshops that are an essential part of the class. Even in traditional circumstances, this proposal has a double aim:

-make student teachers and educators aware of the hidden and submerged experiences of bodies in scholastic and educational contexts, giving the opportunity to live, verbalize and represent them.

-Witness, in our own teaching practices, an embodied approach.

We believed that this same posture, expressed by these aims, can be embraced when using digital technologies and can be critical for the current challenge of not losing unity between thought and

action in learning and transformative environments. We summarized the challenges we met in order to communicate our insights about how to preserve the sensorial and embodied aspects of teaching and learning in emergency and non-emergency digital learning contexts.

# THE REMOVAL OF BODIES

The first challenge we encountered was the one concerning the removal of bodily presence in digital learning environments. In a transmissive traditional classroom environment, bodies are not the main protagonists. Confined in a sitting position, still, bodies are just considered for their upper part, towards which the teacher addresses his/her speaking, which, besides, is usually the main part of the words pronounced in classroom.

Traditional teaching aims to address minds and consider minds separable from bodies, while now even neurosciences confirm that body and mind are profoundly interrelated, and sense perception have impacts even in constructing abstract thoughts<sup>2</sup>. What we can see in scholastic environments is a dispositive in action, reflecting values and ideas of education, learning and teaching. In a traditional setting, we can see that bodies are disciplined for docility, stillness and silence<sup>3</sup>. Distance learning settings easily call for a transmissive didactic: often students turn off cameras and lessons and workshops become a monologue by the teacher. These closed eyes on bodies are the natural opposite of an embodied perspective on education. Moreover, when bodies are visible, in these kinds of settings they're confined in little windows upon the screen, and they're forced in two dimensions, where lived experiences and differences are neutralized. Bodies can live and be lived only in relationship with others, with nature, experiencing real things, and this is how they contribute to learning constructing and building memories. Considering all of that, it seemed necessary to overturn the characteristics of the virtual pedagogical dispositive, which, like in some solutions proposed by some of the major video-conferencing platforms, gives an absolute power to the teacher. We needed to find ways to make students protagonists of their learning paths, calling them to act and to live experiences, in order to take care of the physical aspect of learning.

The removal of the body in learning settings is adding up to the critical condition of bodies due to the pandemic situation. Bodies were generally confined in homes, still in front of screens, in a situation that reduced the space for each one's life. Our teamwork reflected upon the symbolic and concrete centrality of breath in this global medical emergency: one of the main symptoms of Covid 19 syndrome is the lack of breath and the lung medical conditions.

For this reason, we proposed activities to enhance the awareness and the knowledge of each one's breath, like activities for breath awareness inspired by the Feldenkrais Method<sup>4</sup>, just with the audio, making possible to students to lay down and forget the webcams and the exposition we're all forced into with video-conferencing platforms. After that, we asked them to write a letter to themselves, like if the author was their own breath<sup>5</sup>. Then, we turned on cameras and we shared insights of this activity, coming back to a more traditional use of video-conferencing platform for discussion purposes.

## THE REMOVAL OF SPACE

The second challenge we met has been the non-physical nature of the learning environment. Recent research in the field of neuroscience<sup>6</sup> demonstrated that the activation of autobiographical memory does not happen in video-communication, since video-conferencing platforms are not perceived by our brain as actual places. Even though this doesn't happen in case of augmented and immersive virtual reality<sup>7</sup>, we can see that the digital transition of schools' didactics has moved to videoconferencing for the most part. These findings confirmed that the learning experience should

integrate in one's own history, to become meaningful for the subject, and this prompted us to find solutions in this way.

For this reason, we interpreted the "Distance learning" device as a tool to help connection between participant and not as the main learning environment, as it is the case of transmissive approaches applied to virtual environments. In our vision, the learning environment would comprehend the domestic one, and the experiences possible in it. So, we tried to seize the opportunity of being, students and professors, in daily and domestic spaces and grasping the possibility to move, to lay down, to walk, with the aim of enhancing the awareness towards perception of self and the environment around the person. This kind of overturn has been possible due to a revolution of space perception, with an active movement towards one's immediate environment, where learning activities take place. For example, we asked to take action in each one's space, change it in order to build a safe place in which working upon the self, before starting to give instruction for the workshop. We also looked at homes as autobiographical resources, and we built activities that embraced bodily practices and autobiographical writing and sharing<sup>5</sup>. Autobiography in Pedagogy shares common roots with embodied pedagogy approach, and they both have the aim to give back meaning to the person and his/her presence while living a learning experience<sup>8</sup>. For example, we proposed the sensorimotor exploration of daily objects that symbolized the current period for everyone like, for example, the chair. The object-chair has been sensory explored and then transformed in a scenic object, choreographic and symbolic partner, and this encouraged participants to narrate their "stay" - and related desire to move - in this pandemic period with short compositions of instant dance. Students during the sharing and reflecting moment highlighted the importance of domestic element as a pedagogical device. Some students-workers in Primary School classes expressed interesting considerations about the link between Distance Learning and Inclusion. A., for example, speaking about his teaching experience with a ten-year-old student suffering from behavioral disorders:

A.: "During the first video calls, it was clear that the situation was really uncomfortable for him, you could see the frustration in the way he moved. Then his mom stopped the video-calls because he kept crying... he was really frustrated. Then slowly he began to understand how it worked, he started to manage it and he put the computer in his bedroom: something changed.

Teacher: "In your opinion, what was helpful for him in Distance Lessons?"

A.: "I think it was important for him to be in a familiar environment, to be in his bedroom. In my opinion it was significant for him to be in his own space. I saw the effects of doing lessons in a protected environment".

## THE REMOVAL OF GROUPS

The third challenge was the risk of the removal of group experience. From the neurosciences we know that mirroring is significantly reduced by the impossibility of seeing the entire body of others and the lackness of haptic perception and proxemics<sup>9</sup>. Mirror neurons are, for this reason, less activated and so the intuition of another one's emotions and intentions decreases. However, these activations are very important in the pedagogical relationship, since they act as psychological motivators<sup>10</sup>. Moreover, the fact of being together physically in a physical classroom is also the reason of a synchronization of brain waves of students and teacher<sup>11, 12</sup>, which is a physiological marker of involvement in social dinamics and interest for the activity.

We had the aim of re-creating this kind of circularity in the online workshops, and for this reason we exploited the use of breakout rooms and the possibility to turn on and off the cameras. We proposed activities to speak with one another, sharing experiences and building representational products of the experience together, like the composition of short films of the choreographies. The com-position

makes a synthesis of the work, canalizing energies into a relational flow. During the lessons we worked in small groups for short, cooperative, choreographic products, and this dimension of "making things together", starting from an embodied experience, generated in participants a nice sense of belonging. To promote this feeling, we worked also on body rhythmicity, creating ritual moments so that they could spark - this is true in distance learning, but even more in presence teaching - a deep sense of belonging. So, we started and finished each class sharing a small, embodied practice, like a circular, open dance or a collective gesture built by the group and this have strongly contributed to generate in the group human warmth, sense of sincere interest each other. This group climate for a teacher is often an important indicator that teaching/learning process is moving forward and that something significant is happening in terms of education and knowing.

We also proposed mirroring theatrical activities, where students could imitate and conduct one another's body, in a growing feeling of connection<sup>13</sup>. Theatre and improv are a source of practices and theoretical reflections in our approach, and for this reason we used proposal from these disciplines to achieve that desired circularity. For example, the classical improv exercise of word-by-word sentence production, where two or more actors produce meaningful sentences one word each, without reaching agreement before. This practice is possible in virtual learning settings, in pairs or in group. Here's the notes of one of our instructors:

We're connected in the videoconferencing platform, it's the first fifteen minutes. These 27 students don't know each other, it's April 2020, and we've been in lockdown from a month. After some warming up exercises, I ask them to produce a word-by-word storytelling, without reaching an agreement of who will speak. For this to happen, they'll need to listen carefully to the virtual environment, and try to take their turn to speak when there's silence. To foster the collective listening, I ask them to start again when two or more people speak together; instead, to enhance the acceptance of the mistake and the collective creation, I tell them that, if more than one people speak together, the person who'll speak next will decide what word pronounced was "right".

## CONCLUSION

Our research group does not find the distance learning setting optimal for embodied experience, however this particular setting opened unexplored possibility in our didactics, as, for example, the domestic environment as a learning environment and as a chance to root learning, autobiographically. This gave us the possibility to have meaningful individual learning experiences while, in the virtual platform, we reached a group dimension that is nowadays still lacking in the academic lifetime. For this reasons, even if we still find preferable the in presence didactics for our contents, we think we developed a meaningful path to get students to experience directly the value of body in teaching/learning settings, and we think that the strategies we found could be implemented and developed further for blended and virtual learning courses not just in our field, but for every course that wants to highlight the value of body perception and experience. We hope that this work can contribute opening and expanding a discourse about the marginalized position covered by bodies in teaching/learning settings, generally and particularly in the digital ones.

#### NOTES

<sup>1</sup> Ivano Gamelli, *Pedagogia del corpo* (Milano: Cortina 2011)

<sup>2</sup> Fausto Caruana and Anna Maria Borghi, *Il cervello in azione* (Bologna: Il Mulino, 2016)

<sup>3</sup> Alessandro Ferrante, *Che cos'è un dispositivo pedagogico?* (Milano: Franco Angeli, 2017)

<sup>4</sup> Moshe Feldenkrais, *Lezioni di movimento* (Roma: Edizioni Mediterranee, 2003)

<sup>5</sup> Ivano Gamelli and Chiara Mirabelli, *Non solo a parole* (Milano: Cortina, 2019)

<sup>6</sup> May-Britt Moser, David C. Rowland and Edvard I. Moser, "Place cells, grid cells, and memory". Cold Spring Harbor perspectives in biology, 7.2 (2015), doi: https://doi.org/10.1101/cshperspect.a021808. research (Moser, M.B., Rowland, D.C., &Moser, E.I., 2015). These researchers have highlighted how GPS neurons, "place" neurons, are not only specialized in mapping places and spatial orientation, as was believed by previous studies, but that they would have a central role in autobiographical memory.

<sup>7</sup> Giuseppe Riva and Andrea Gaggioli, *Realtà virtuali: gli aspetti psicologici delle tecnologie simulative e il loro impatto sull'esperienza umana* (Firenze: Giunti 2019).

<sup>8</sup> As the autobiographical movement in education has shown, knowledge is not knowledge if its processes are not incorporated by the person who learn and especially if the experience is not integrated into the history of the person.

<sup>9</sup> Giuseppe Riva, *Relazioni didattiche online e in presenza, con il professor Giuseppe Riva,* online seminar, June 4, 2020 accessed May 27, 2021, https://www.youtube.com/watch?v=wpIGf8MoHNI

<sup>10</sup> Kevin Laland "The Foundations of Human Cooperation in Teaching and Imitation". The Spanish Journal of *Psychology*, 19, E100 (2016). doi: 10.1017/sjp.2016.101.

<sup>11</sup> Suzanne Dikker, Lu Wan, Ido Davidesco, Lisa Kaggen, Matthias Oostrik, James McClintock, Jess Rowland, Georgios Michalareas, Jay J. Van Bavel, Mingzhou Ding, David Poeppel, "Brain-to-Brain Synchrony Tracks Real-World Dynamic Group Interactions in the Classroom". Current biology: CB, 27.9 (2017): 1375–1380. doi: https://doi.org/10.1016/j.cub.2017.04.002

<sup>12</sup> Andrea Gaggioli, Carlo Galimberti, Antonio Bova, Pietro Cipresso, Giuseppe Riva, Alice Chirico, Eleonora Brivio, Elvis Mazzoni and Martina Benvenuti, "Networked Flow in Creative Collaboration: A Mixed Method Study", Creativity Research Journal, Vol. 32 (2020): 41-54

<sup>13</sup> Lior Noy, Nava Levit-Binun and Yulia Golland, "Being in the zone: physiological markers of togetherness in joint improvisation". Front. Hum. Neurosci. 9.187 (2015): doi: 10.3389/fnhum.2015.00187

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# PIVOT! NEGOTIATING TACTILE AND DIGITAL MANIPULATION IN THE VIRTUAL CLASSROOM

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## INTRODUCTION

This paper will focus on an approach to empower foundation students to experiment and communicate their design ideas despite their limited tactile experience and early digital development. The PIVOT imposed collaboration of Digital Media and the Foundation Studio to overcome the limits of the traditional Bauhaus influenced delivery. The virtual platform encouraged students to think critically and strategically in solving creative problems using both tactile and digital tools.

The study of tessellations was a tactile departure point that morphed into a three-dimensional translation based on a self-imposed organizational system investigated the material, architectural, and structural aspects of the framework. In this context, three-dimensional paper objects present an interface to gain cognitive experience on spatial configurations and form finding, and acts as a tool for further morphological explorations in the architectural design process.

Working collaboratively, Digital Media took on an intensive focus on digital process and effective documentation techniques to support Foundation Studio. For example, editing model images and scans of drawings in addition to sequencing Digital Media to build upon topics covered in studio such as diagramming, creating a narrative and collaging. The focus was to facilitate the visual communication and design development in the iterative process. Beyond the use and application of two-dimensional software such as Photoshop, Illustrator, InDesign, and AutoCAD, it was also important to deploy a similar digital workflow to the analog methods used in studio.

This haptic approach to the introduction of Digital Media in Foundation Studio enabled the students to understand the creative and unique applications of digital tools to create a distinct graphic identity. Course innovation to integrate and coordinate the Foundation Studio with Digital Media included customized assignments to support the studio project. Emerging pedagogical strategies were developed in online architectural education through a collaborative methodology leveraging technology to promote expression and creative problem-solving.

#### **Pedagogical Intent**

The didactic purpose of the Foundation Studio is to ensure that the beginning design student is growing in confidence and feels free to explore, risk, fail, and discover through making. Fundamental in assisting this objective is to ensure that the benefits of exploration are always to exceed the risks involved; that they are to be valued above any other objective or criteria. This teaching model displaces the teaching-style which coerces students into a fearful, dependent, and submissive 'tell me

what you want me to do'-style of learning and replaces it with a summons for all students to discover a personal way of working, using their own history and individual ways of apprehending and imagining the world. The task is used to initiate and cultivate the dialogue with the student, which has aroused their curiosity and provoked insight.

The introduction of creative problem solving through a design-based curriculum where iterative study is embraced is essential to assisting students with the concept of curiosity to help them learn. The typical beginning design student is encouraged to reach beyond their experience of a typical high school classroom and is encouraged to become a "creative" problem solver. The pedagogical model of this Foundation Architecture Studio is to provide projects that challenge the process of design. Abiding by Bauhaus principles, "To experiment is at first more valuable than to produce, free play, in the beginning, develops courage."

This paper will further examine how the courage to fail induces creativity through making in the iterative design process based on the pedagogical model of this studio. The class introduces heuristic digital and tactile exercises that challenge the way beginning design students transition from their precollegiate curricular experiences (especially students that are taught to a test) to ones that allow, and celebrate mistakes, ultimately evoking innovative solutions and embrace creativity. The iterative process of making and re-making is introduced and is assessed to understand that each revision is itself a learning experience.

## Creativity and the Act of Making

"Our hands are organs for thinking. When they are not working in order to know or learn, they are thinking. Drawing, building models, sketching... is a matter of "doing" that turns into a way of "thinking" where hands and ideas are joined together." Martin Heidegger

The understanding of craft – the process of making by hand – and its outcome is constantly explored in this studio for the beginning design student. This also requires an understanding of creativity as an embodied process in which thinking takes place through the whole body, not only in the mind. As such, thinking takes place through doing. Such a process is important because of the way the creation takes place through the relationship between the body and materials; creativity is a matter of the 'thinking hand'.<sup>2</sup> Making demands the actions of the body. The manual manipulation of materials creates a new item. In pre-industrial societies, the material world was 'handmade'. It can be argued that the centrality of the body to making things is defining element of craft.<sup>3</sup> Hands, therefore, are critical to creativity in the production of objects. If we think through our hands, then the hands also provide the link between knowledge, thought, and creativity since it is only by way of a haptic understanding of the world that it becomes possible to imagine something new. The way that the hands seek out materials is critical to understanding the nature of substances. It is only through direct physical experience that it is possible to understand materials. The feel of materials is vital to the ways that craftspeople work with them and explore their innate properties.<sup>4</sup>

Bauhaus principles emphasize the value in students interacting with materials in the earliest stages of a Project. Alfred Barr, in the preface of his book on the Bauhaus, describes experimentation with materials as "essential to the student of design experience - at first confined to free experiment and then extended to the practical workshop".<sup>5</sup> Therefore, the studio curriculum is based on abstraction and synthesis of objects, and how it exposes students to the unique blend of visual orientation, creative process and academic investigation that forms an architectural education.

# MODELING THE FOUNDATION STUDIO PEDAGOGY

The Bauhaus school curriculum encouraged the embrace of current technologies in order to succeed in a modern environment. While the Bauhaus school of thought believed that the building itself was the pinnacle of all design, their students focused on artistry and crafts across all mediums of design and their school followed a regimented syllabus, which focused on the connection between theory and practice.<sup>6</sup> These skills built the totality of the designer and informed their ability to embrace the tactile and theoretical aspects of the procession with confidence and curiosity.

This beginning design student pedagogy surveys the conceptual concerns of buildings through several lenses. The students seek to understand the relationship between the environment and inhabitants and while simultaneously studying materials through model making to understand their origin, ways in which they are processed, and behavioral characteristics that determine methods of craftsmanship. Materiality is further explored for its experiential qualities as it is linked to the physical properties, capacities, and vulnerabilities of substance. Finally, techniques used to work those materials are studied as they inform the basic principles, procedures, and details of assembly through tectonic language.

The Foundation Studio curriculum is an orchestrated set of pivotal experiences which extend for the first three semesters with small design problems defining space introduced in the first year, and a specific architectural program is introduced in the second year. This strategy originates from the premise that learning links to the iterative pedagogical model. The main objective is to provide the students with a studio environment which is most conducive for this complex process to occur. Most importantly, project formulations are designed deliberately to foster the gradual progressive development of students. This way, inquiries about essential design issues are dealt with gradually and progressively within carefully chosen parameters. This serves the purpose of limiting and focusing the projects content in order to ensure that mastering the basic skills take place prior to introducing more complex ones.

## **Heuristic Encouragement**

Curiosity becomes the catalyst that drives search, exploration and discovery. It is best achieved in an environment which is heuristic in nature, that is, a studio environment where the primary incentive is exploration and discovery. Project formulations are conceived as experimental tasks. The heuristic process essentially operates as a cyclic and nonlinear network wherein students seek to synthesize whole yet incomplete formulations during all of the phases of a project. This approach is echoed by Paul Feyerabend: "Creation of a thing, and creation plus full understanding of a correct idea of the thing, are very often parts of one and the same indivisible process and cannot be separated without bringing the process to a stop... [This is a] process [that is] guided by...a vague urge, by a 'passion'."<sup>7</sup> In this context, team teaching, and periodic group reviews are the best venue to foster a more dialogue for a constructive exchange of ideas from all participants. This approach amplifies the scope of the project on a daily basis and the ensuing questioning by students and faculty.

Design students must learn at the onset of their design education to engage big ideas and formulate intelligence and ethical positions of their own concerning matters of significance. At the onset of any investigation, rough constructs are developed by the student. These constructs are based on the agenda the ensuing explorations by the student expands and amplifies programmatic intentions as well as the clarity, complexity and rigor of the executions. This cycle is repeated and elaborated throughout the duration of the project, with a sense of progress viewed in terms of iterative understandings of the intentions being sought and developed.



Figure 1. Physical model and drawings of spatial construct. Student: Cydney Lahr

## **Technology and Design**

Screen based games and online social media influence current students who are immersed in computer-based activities and are comfortable in the virtual arena during their youth. With the exposure of interactive online media, a dominant paradigm for everyday interaction for students, interaction with people and objects in the real world must compete with those that are web based as even forays into the real world tend now to be expressed through online sharing. There is a danger of their growing disconnect between the abstract view of the world interpreted through the computer screen and their experience of the environment they physically interact with. This disconnect has implications for teaching design and for the attitudes and understanding. A lack of understanding of how objects are fundamentally constructed reduces the likelihood that young designers understand how materiality is explored, how connections are truly made, and will not produce the best design solution. However, to harness the familiarity and excitement with emerging digital technologies can further drive the student's curiosity and consequently their iterative process. The challenge presented to deliberately integrate and encourage learning through making and shift the emphasis of the digital to reflect the importance of that learning through making, and away from exclusively a visualization based, design resolution.



Figure 2. Working through the digital and tactile simultaneously. Student: Cydney Lahr

## THE ONSET OF COVID-19 \_ THE DIGITAL INTEGRATION

With the onset of COVID-19, students were relegated to virtual learning modalities, and the traditional haptic method of learning was redefined. Both students and instructors overcame the limits of the traditional delivery methods with the implementation of an innovative virtual platform to

positively affect design education. As these students have the ability to learn fast and adapt to the ever-changing technical environment, the new platform encouraged students to think critically and induce online creative problem-solving strategies. There is a delicate balance of integrating new technology while maintaining the confidence and ability to work through problems through physical experimentation in the design process to achieve validity in their design decisions. Integrating the digital and the tactile is essential to produce the quick results in the design process.

Constructing a physical model forces the maker to commit to decisions and problem-solve in real time. The rigorous discipline of making is a critical supplement to digital design, as it remains the closest medium to the reality of buildings. This maintained the spirit of curiosity, continually seeking ideations by hand and by computer. The use of photography proved to be an essential element of the students' exploration and assessment of their iterative process. Incremental photography also enabled the students to capture the iterative process without the need to recreate several models.

An acute moment in the trajectory of the studio arrived when students were introduced to the illusion of three-dimensional depth on a two-dimensional computer screen. This encouraged digital experimentation, reviving Bauhaus principles again through digital means.



Figure 3. Initial digital exploration of inhabiting the tessellation. Student: Kyle Brosenne



Figure 4. Further iterations exploring the tessellation as a facade. Student: Kyle Brosenne

# ITERATING BETWEEN A TACTILE AND DIGITAL CONTINUUM

The design profession currently relies heavily on sophisticated software to generate the perspective, a powerful representation tool that communicates the concept, experience, and materiality of a project, all in one view. This type of rendering typically requires that a three-dimensional computer model to which we assign materials, then use another program to assign lighting and generate the rendering, which immediately produces the comprehensive view. As it is important for beginning students to absorb spatial lessons through focused exercises, this type of representation is generally premature in a foundation studio because it requires a high level of digital facility and detailed technical knowledge.

However, using Photoshop as a projective tool, students were taught to generate tessellations as digital collages that test ideas rather than represent designs. This enabled students to explore inhabitation within the tessellations furthering the spatial dimension of the initial proposed forms.



Figure 5. Capturing the intricacies of the form through photography. Student: Enzo Cicco



Figure 6. Exploring light, shadow, and inhabitation. Student: Enzo Cicco

This approach required an immediate and direct participation from the designer and provided a setting for opportunistic accidents to occur in the computer. Using two-dimensional drawings as a point of departure, students learned to produce digital vignettes that quickly explored scale and materiality in the third dimension. This type of manually driven digital collage is an invaluable skill for beginning architecture students, allowing them to experiment with ideas without the rigorous constraints of computer modeling and rendering.<sup>8</sup> This also enabled students to being to establish a project narrative and guide their process to support their investigative process.



Figure 7. Sketch and photo collage capturing the aperture. Student: Erin Bankert

Progress needs to be managed so that the vital nature of learning through making can be brought to the front as an inseparable part of the design process. To do this, the assessment model must move the emphasis from 'finished' objects and the idea of 'completely resolved' designs, towards a weighting that rewards learning through experimentation. Assessment tasks that promote engagement of materials outside their traditional uses would be an example of how to foster a culture of making and experimentation. First-hand knowledge gained through repeated exposure to materials and tools is vital for this type of knowledge to take root. Rather than reducing students' time spent in the workshop, an integrated learning experience should be in place that increases it and promotes a 'culture of making' inspired by creativity with students confident in their ability to make and design.

## CONCLUSION

Bauhaus principles emphasize the value of student's interaction with materials in the earliest stages of a design project. In the preface of his book on the Bauhaus, Alfred Barr describes experimentation with materials as "essential to the student of design experience - at first confined to free experiment and then extended to the practical workshop".<sup>9</sup> Through a haptic approach, students are able to engage with material properties while utilizing digital methods as integrated tools in the design process. In turn, documentation takes on a heightened role giving students incremental snap shots of the design process and providing opportunities for reflection and development along the way. Today's students are well versed with the technology to maneuver digital platforms, providing architecture utilizing a blend of tactile and digital methodologies.

#### NOTES

<sup>1</sup> Bauhaus Master Josef Albers explains the link between "playing" and how to make as an experiential way to learn.

<sup>2</sup> Pallasmaa encourages the designer to embody the tool or instrument and internalize the nature of the material they are working on. He speculates that physical models are incomparable aids in the design process of the architect. (It would be interesting to ask Pallasmaa, as addressed later in this paper, how technology is catching up to this tactile methodology).

<sup>3</sup> Mudras of India contextualizes, with detailed instructions on technique, application, health and spiritual benefits and historical background of specific hand gestures and how they affect the individual.

<sup>4</sup> Sofaer expounds that learning material languages is not simply a matter of abstract intellectual thought, but of physical experience.

<sup>5</sup> The student architect or designer should be equipped for the modern world in its various aspects, artistic, technical, social, economic, spiritual, so that (the designer) may function in society not as a decorator but as a vital participant.

<sup>6</sup> Margret Kentgens-Craig shows that the fame of the Bauhaus in America was the result not only of the inherent qualities of its concepts and products, but also of a unique congruence of cultural supply and demand, of a consistent flow of information, and of fine-tuned marketing. The transfer of artistic, intellectual, and pedagogical concepts from one cultural context to another is a process of transformation and integration.

<sup>7</sup> Feyerabend argues that scientific advances can only be understood in a historical context. He looks at the way the philosophy of science has consistently overemphasized practice over method.

<sup>8</sup> Traditional beginning design studios take students outside the world of their experience by teaching representation strategies that rely on abstraction. In this article, Lin presents an example of a first-year studio that sought to integrate hand techniques with digital image manipulation to extend and reinforce the lessons of spatially based conceptual design exercises. This pedagogical model encourages students to develop a digital sensibility at the inception of their design process.

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# LEARNING FROM/THROUGH SOCIAL MEDIA. INSTAGRAM AS A TRANSMEDIA EDUCATIONAL TOOL FOR AN AUGMENTED CLASSROOM

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# INTRODUCTION

The emergence of information and communication technologies nowadays represents the drive to rethink new communication strategies and innovative ways of educational activities in different fields. In this scenario, schools and universities' role as a knowledge production system becomes crucial to define, stimulate, and support new landscapes of material, technological, and cultural competencies linked to CCIs.<sup>1</sup>

Given this framework, research opportunities are therefore established for the development of new hybrid, interdisciplinary learning pathways that can prepare professionals capable of interfacing with new technologies and the systems they generate, and that can handle undefined solutions as well as undefined problems. Therefore, interdisciplinary and transmedia knowledge is a parameter capable of interpreting and guiding the new design scenarios.

We are increasingly witnessing the transition from the teacher operator's paradigm to that of the teacher designer, from the design of content to learning experiences through new forms of content and activities, tools, and channels. The article is part of an experiment underway at the fashion studies course of the design school of the Politecnico di Milano and in the reflection on the evolution and innovation of educational processes, to exploit the potential offered by new digital channels (and in particular by social channels focused on the use of visual stimuli such as Instagram).

The article aims to present the first results of this research project that exploits the potential offered by new digital channels (and social channels focused on using visual stimuli such as Instagram) to implement new transmedia educational processes. In this context, Instagram becomes an "augmented space", enabling new learning methods and relating the different knowledge required. Thus, social media become one of the interfaces to create and augment the learning experience.

# NEW FORMS OF TRANSMEDIAL DESIGN EDUCATION

Increasingly, digital communication is defining itself as an essential element, not only in the staging and narration (both of the brand and personal) of the fashion system but also in defining new ways of interaction between companies, designers and consumers. Fashion, as a manufacturing, cultural and creative industry,<sup>2</sup> represents a complex system where the interaction between product, communication and services intercepts the new trajectories of social and digital transformation:

factors that are redefining business models and the creative, communication and representation modes of the system as a whole.<sup>3</sup> The digital transformation drives new processes of visualisation, promotion and storytelling of the fashion system. New relationships are defined between physical and digital spaces. Users are not just the spectators of creative processes but are increasingly involved in processes of "value co-creation"<sup>4</sup> and "cooperative investment".<sup>5</sup>

New communication models are emerging, changing the culture, how companies and consumers relate to each other, and the tools they use.<sup>6</sup> Social media, such as Instagram, are increasingly being defined not only as communication channels but as a creative tool capable of defining 'undisciplined'<sup>7</sup> and non-codified learning paths.<sup>8</sup> If, on the one hand, Instagram allows targeted and user-governed searches, on the other, it also defines a form of digital "serendipity"<sup>9</sup> through the constant reception of stimuli and feeds generated by algorithms.

Within this context, Instagram is now the key tool for digital natives to get to know and share information about fashion (and other areas) through the interfaces of their devices, using the various interaction methods and communication actions implemented by social media.

As Meyer and Norman<sup>10</sup> state, now is the time for the design education community to follow the transformative spirit of the early Bauhaus to modify design pedagogy to accommodate the many different styles and goals of 21st-century design.

While the origin of the design was identified in the creation of physical artefacts, today, these needs have changed, not only because of the introduction of new materials, innovative tools and production techniques but mainly because of the ever-increasing interaction between different scales of design and disciplines, between heterogeneous tools, physical artefacts as well as digital media. The areas of interest of design have expanded considerably, increasing the creative and problem-solving aspect of the field, which now encompasses innumerable application contexts requiring increasingly in-depth knowledge of a wide variety of topics and disciplines.

This is increasingly a situation in which educational models, as well as working models, are also changing in terms of spaces and modalities of interaction, the transmission of information and sharing of creativity: there is an increasing shift from classrooms (and offices) concentrated in one place, to distributed learning (and working) spaces, where teachers and students, as well as increasingly multidisciplinary design teams, might be scattered all over the world; it becomes essential to train figures capable of managing this expansion of times, places and disciplines, which are overlapping, increasingly intersecting modes and approaches proper to different design fields. In this context, digital technology facilitates a participatory culture with flows of knowledge, creativity and information. It can therefore be understood as an activator of new opportunities for teaching and training within design schools.

The emerging digital flows define new forms of participation and sharing, making students and teachers, at the same time, users and producers of contents<sup>11</sup> supporting a discipline, that of design, "blurred at the edges",<sup>12</sup> stimulating a reflection on the possibilities (and criticalities) offered by the increasing complexity of the subject concerning the complexity of contemporary society. As Maldonado<sup>13</sup> states: "In each of these periods, the producer-consumer relationship differs, for in each one, the product functions in a different way. As a result, the design cannot always have the same function or the same significance [and increasingly the designer becomes the one who is called upon] to coordinate, in close collaboration with a large number of specialists, the most varied requirements" – tangible and intangible, punctual and systemic.

Traditional design education – which remains valid and important – needs to be "upgraded" by introducing and experimenting with new teaching methods capable of providing students with an open-minded approach to even the most complex problems. In addition, design schools are called

upon to develop a new generation of creative thinkers, practitioners, facilitators, activists, innovators, advocates and entrepreneurs, and designers capable of gathering, processing, and transmitting information quickly as speed is determining all new socio-economic activity.

From an academic perspective, we need to open up pathways and establish links with other professions (particularly those based on similar notions of creativity), producing research that facilitates and enables professional designers to make sense of complexity, which also takes shape and propagates through the web defining a magma of potential creativity, which increasingly requires an "undisciplined" (non-interdisciplinary) design education and an "irresponsible", co-designers<sup>14</sup> who can feel at ease with the complexities typical of the network society, the economy, information and the culture of virtual realities.<sup>15</sup>

The challenge is activating and stimulating cognitive and creative capacities concerning observing and perceiving to mobilise and bring about the future. Inspiration and intuition become decisive factors in today's multi-layered and super-complex world,<sup>16</sup> the foundations are increasingly being laid for educational experiments in the area of what is defined as the third type of knowledge: "self-transcendent knowledge"<sup>17</sup> that capacity to perceive the presence of potential, to see what does not yet exist<sup>18</sup> and that captures the knowledge of the sources or the "place" where thought and action are born.

In this context of paradigm shifts, considering the inevitable pervasiveness of social media and digital in general (accelerated by the pandemic), the research project has been set up as a reflection, not so much of the impact of digital on teaching, but on the unexpressed opportunities of some tools, now in daily use, such as social media. Thus, following what Roberto Casati<sup>19</sup> expressed, we did not consider that form of progress that occurs when we look at use, then looking for the right technology to support or assist it, but that which manifests itself when we look at existing technology and try to imagine new uses for it, also considering that there are more (technological) answers than (social) questions. We should therefore start looking for good questions.

Digital and social media, Instagram in particular, are becoming the field of experimentation for an undisciplined form of didactics, with the aim of testing ways and processes capable of defining a self-transcendent form of knowledge. As a result, both the teacher and the student understood as potential Digital Masters who bring to life and construct content through technology, assuming increasing importance.

## WHY INSTAGRAM?

The visual and interactive aspect of the various functions of the social media<sup>20</sup> can contribute to the construction of an actual educational programme in which the use of images, their selection and composition within the framework of the visual grid of the social media could become an effective tool both for the teacher (to experiment with new forms and methods of content creation and interaction with the class) and for the students (to be involved through new forms of learning and to implement the project, presentation and sharing methods supported by digital technology).

Iconographic research and the use of images organised in a specific space concerning each other to compose mood boards are fundamental actions for the design process in fashion (but more generally in creative fields), a creative/visual process that puts into action different forms of visual thinking,<sup>21</sup> activating a way of knowing and experiencing that is complementary – and not opposed – to the logical-linguistic and logical-mathematical forms of knowledge. "Instagram is like thinking. It is thinking through images."<sup>22</sup> It is a kind of Aby Warburg and Giovanni Morelli in the square format: the image conveyed through Instagram could activate new forms of "thinking with the eyes"<sup>23</sup> that allows students to observe, to detect and consequently discern, distinguish, select. Therefore, the

visual form of Instagram constituted a starting point for generating a series of reflections and implementing various actions to explore an image-based teaching methodology. The social channel is considered here as a tool that can not only convey information but also stimulate the creative process through analogical or metaphorical procedures, activating "divergent thinking,"<sup>24</sup> "lateral thinking,"<sup>25</sup> stimulating the eye (and the mind) to continuous actions of analysis, reading and understanding of images, but above all to their recomposition in new design forms, to stimulate actions of creative "bricolage."<sup>26</sup>

## **INSTAGRAM AS AN EDUCATIONAL TOOL**

The project starts from an analysis of the different functionalities of Instagram, looking at these tools through the lens of the Bloom Taxonomy,<sup>27</sup> and in particular of the Digital Bloom Taxonomy;<sup>28</sup> to define their possible application in the educational context. The same analysis was also applied to the technological tools linked to digital learning, which have been used the most in the last academic year. Suppose, on the one hand, it can be seen that the different technologies for online, blended or asynchronous teaching allow multiple functions. In that case, it is also interesting to highlight that none of them allows a complete "coverage" of the different levels of the Digital Bloom Taxonomy. However, on the other hand, if well used, Instagram could activate various activities and thus enable all the levels of the Digital Bloom Taxonomy to be covered. This potential becomes the focus of the experimentation.

The choice to refer to the characteristics of the revised Bloom's Taxonomy is based on the consideration that it is becoming increasingly necessary to create online learning activities and define actions aligned with the interaction and learning modes experienced by students increasingly passing through the digital domain.<sup>29</sup> Thus, the Digital Bloom Taxonomy helps us navigate the myriad of digital tools and choose based on the type of learning experiences we want students to engage in, considering that knowledge is the result of the activity, context, and culture in which it is developed and used. This is why it becomes crucial for us to accept the different forms of learning implemented by digital technologies, supporting educators in applying practical tools concerning the defined learning objectives.<sup>30</sup> Therefore, selecting the most appropriate digital activity will depend on the level of activity challenge linked to the cognitive levels indicated within Bloom's revised Taxonomy. The concept of sharing (which is the highest level of Bloom's Digital Taxonomy) is inherent in Instagram, making an active contribution to all design phases through posting, broadcasting, and networking. Both teachers and students can activate by also implementing peer review activities.

• it defines a virtual information board: visual and textual;

adaptable to the different levels of Bloom's Digital Taxonomy, as:

- it allows different levels of communications: long-lasting and short-lasting;
- allows different types of interaction: likes, reactions, comments, direct messaging, tags, polls, quizzes, questions, live video;
- allows archiving and sharing of images;
- allows different levels of insights;
- contains an exhaustive archive within the platform (museums, companies, designers, publishing houses, collectors have complete IG profiles in terms of information);
- it represents a potential creative stimulus.

These are some of the elements that have stimulated the research, which therefore intends to consider Instagram not only as a channel to display the design process or the effective outcome but as an opportunity to enrich the project.

## **EXPERIMENTATION**

Starting from these premises, experimentation was set up, split into two phases, within different courses in the Fashion Design course: the first two were implemented during the first semester, within the Meta-Design course of the second year of the Bachelor's degree (46 students) and the Textile and Print Design for fashion course of the third year of the Bachelor's degree (31 students). The second part, currently ongoing, involves two Visual Communication Classes of the first year of the Bachelor's degree (85 students in total) and two Fashion Retail Experience Classes of the Master's degree (77 students in total).

The choice of this type of course, which are all project-based, was based on experimenting with an ultra-visual social platform, such as Instagram, as a tool:

- to deepen and explain content introduced during lectures
- to stimulate creativity and design
- to share information
- to stimulate dialogue between students
- to share the different design and creative processes of the students

## CONCLUSION

At the end of the first semester, two actions were implemented to verify the experiments carried out: the first using an online survey involving all the students of the two courses and a second activity carrying out two in-depth focus groups with twelve students Meta-Design course.

Setting up the survey.

The survey was set up in four sections:

*Overview of users:* to understand the type of digital user and what kind of use usually Instagram was made of.

Instagram as a creative tool: to understand if and how Instagram is already used as a design and creative stimulus tool.

Analysis of the experimentation implemented through the Instagram profile of the Course managed by the teaching staff: to understand if and how the contents and actions implemented within the channels managed by the teaching staff were effective both in supporting the understanding of the design process and as a creative stimulus.

Analysis of the experimentation of a Group Instagram profile (in the Meta-Design course) and of the Class (in the Textile & Print Design for Fashion course): to understand if and how the tool helped implement the project.

A first finding that emerged from the literature review and sources is an underutilisation of the possibilities offered by Instagram as an educational channel, often considered, by the very nature of the application, exclusively a tool for presentation and staging. A second finding concerns using the tool within design training, or more in general, training related to creative fields. Despite its potential, it is used more in areas traditionally less linked to creativity or the visual/aesthetic aspect of the contents - as, for example, in training courses linked to linguistics or medicine. The third result confirms the students' interest in using an Instagram channel in the course as support for didactics, both from the point of view of information and from the perspective of creative stimulation, whether

structured or generated by digital serendipity. The fourth outcome highlights the need for the teacher to define a media plan for the course that can support content and topics covered during class, defining different levels and type of interaction with the class. The existence of an Instagram channel for the course presupposes its constant and effective updating. The fifth result highlights the flexibility of the tool that allows implementing different levels of interaction, whether long or short term. Still, above all, it allows opening the course to the contemporary, inserting within the schedule references or events, consistent with teaching content, in real-time. The sixth outcome observed is the immediate involvement of students in defining and curating the form of content more, considering the social nature of the tool. The seventh result is the awareness of the need to define rules and guidelines for adopting Instagram as an augmented classroom concerning learning activities. Whether teachers or students, users must be able to select the most appropriate set of tools about the type of project and the design phase being addressed. Further results could be inferred with future reflections on the data obtained.

We are now working on creating guidelines for implementing Instagram profiles to support teaching could open up new possibilities for experimentation by integrating content and tools from other digital channels, such as Pinterest, for example. With the return to face-to-face teaching, moreover, there will be further opportunities to investigate the use of social channels to support hybrid learning, to discuss the creation of updated learning approaches, to reflect on the role of both teachers and students as social media managers in the design of new types of learning environments.

## NOTES

<sup>1</sup> Terry Flew, *The Creative Industries: Culture and Policy* (London: SAGE Publications Ltd, 2012).

<sup>2</sup> David Hesmondhalgh, *The Cultural Industries* (London: SAGE Publications Ltd, 2018).

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<sup>4</sup> Coimbatore Krishnarao Prahalad and Venkat Ramaswamy, "Co-creation Experiences: The Next Practice in Value Creation," Journal of interactive marketing, 18 (3) 2004: 5–14.

<sup>5</sup> Yeon-Koo Che and Donald B. Hausch, "Cooperative Investments and the Value of Contracting," The American Economic Review, 89 (1) 1999: 125–147.

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<sup>8</sup> Paul A. Rodgers and Craig Bremner, "Exhausting Discipline: Undisciplined and Irresponsible Design," Architecture and Culture, 1(1) 2013: 138–158.

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Uotila, Tuomo and Helina Melkas. "Complex knowledge conversion processes and information quality in regional innovation networks." Knowledge and Process Management, 15(4) 2008: 224–234.
# UNMASKING THE PANDEMIC DESIGN STUDIO: STUDIO-CULTURE REVISITED

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#### INTRODUCTION

Back in 2004, when an architectural educator was sharing his personal viewpoint about the experience of learning in the design studio, he used the following words that echo an experience that is pretty much common and familiar to all architects:

"Like most of us, I went through design studio in architecture school. It was a formative experience for me; I survived - even thrived. Some of my closest friendships were made there. *The studio had been a home, probably too much of one.*"<sup>1</sup>

Since March 2020, a new 'home' started housing all educational activities around the globe: our home. In the case of the school of architecture of Athens, Greece, an email from the Dean, on 10. 03. 2020, informed all staff members that "the operation of the National Technical University of Athens is suspended for two weeks, starting from tomorrow 11<sup>th</sup> March 2020, as part of the preventive measures against the spread of the Coronavirus, according to the announcement of the ministry of Health that applies to all levels of education."<sup>2</sup> Architectural education, switched to take place remotely, through the use of digital communication technologies. It is more than a year now that that design education has not returned back 'home,' in the physical design studio, but remains isolated and enclosed to our every single and individual home.



Figure 1. Student in her one-room-flat day and night

There is no doubt that the continuation of academic endeavors was a positive fact, especially considering the other major alternative that would be to seize teaching and learning overall. The paper will attempt a reflection upon this positive event, by reviewing the problems that occurred during the educational activities, as they were specialized in architectural design education, through the author's experience of teaching at the school of architecture of Athens, Greece.

Methodologically this paper is going to focus particularly on the notion of 'studio culture' a fundamental aspect of architectural design education that relates to a sense of community that is being created between students and educators. In particular it will use the reports that have been created through time by the American Institute of Architecture Students, who, since 2000, have been documenting the positive and negative aspects of studio culture, that they define as "the experiences, habits, and patterns found within the architecture design studio."<sup>3</sup> The question of that this paper address is how much of this studio-culture was lost during the remote educational activity?

The paper will focus on a set of four themes that make architectural education in the design studio unique in its experience: sense of community, insularity and isolation, embodied communication and skill transmission. Through the change of studio-culture between these four five themes the paper will attempt to map the territory of what happened during the pandemic situation and speculate on what extend will these changes affect the future of the design studio education.

#### THE DESIGN STUDIO AND ITS CULTURE THROUGH AIAS DOCUMENTATION

Edward Burnett Tylor, the founder of cultural anthropology described culture as "that complex whole which includes knowledge, belief, art, moral, law, custom and any other capabilities and habits acquired by man a member of society."<sup>4</sup> According to the initial definition by AIAS that was presented before 'studio culture' merges all the above characteristics in the world of architectural education. But lets see in more detail how this is happening.

Studio culture takes place in a certain territory, the design studio, that is the physical place for teaching and learning design in schools of architecture. The design studio is the 'core' around which all other modules and subjects weave architectural education. The studio integrates all peripheral knowledge in a practical way that is based on a learning by doing model of education. The design studio today is the dominant approach in the education of architectural design, being the locus where tutorials, crits, reviews and discussions about projects to-be-designed take place.<sup>5</sup> It has the most credit hours a fact that mirrors the great workload and respectively the time that is committed both by students and teachers.<sup>6</sup> Despite various local differences, it appears that 'studio culture' is somehow universal around the globe. Studio culture offers a shared understanding or a horizon that "holds the architecture world together, it gives everyone involved a mutual understanding of each other's fundamental being."<sup>7</sup>



Figure 2. The reports produced by the AIAS about Studio Culture

This culture has been the focus of analysis by the American Institute of Architecture Students, who, for the last twenty years, have been documenting its positive and negative aspects. According to their first such *Task Force Report* this culture was described as a set of experiences, habits and patterns, that included, not only "late nights, exciting projects, extreme dedication, lasting friendships, long hours," but also "unpredictable events, a sense of community, and personal sacrifice."<sup>8</sup> It also reported some problems that required this culture to make some radicals shifts since the students complained for "long hours in studio, poor sleeping habits, unhealthy eating patterns, and high levels of stress."<sup>9</sup>

#### SENSE OF COMMUNITY: LEARNING WITHIN A FAMILY

The very first characteristic of the design culture that the 2004 Studio Culture Summit highlighted as having great value and had to be retained was the sense of community.<sup>10</sup> The fact that students spend a lot of time in the design studio fosters the creation of relationships and bonding in an environment that encourages creativity. This notion of belonging within a community that shares the same perspective is the most important characteristic that was lost during the transition to online education. The AIAS reports, early on, identified this notion of belonging as a fundamental characteristic of the design studio and even assimilated it with being inside a family: "Studio culture becomes embedded into your everyday lifestyle, it changes the way you live. After experiencing long hours, insane interior climates, rigorous professors, and a lot of fun times with the same group of people, you get used to that family-collaborative feeling."<sup>11</sup> Of course relationships within a family are not always easy and very often go through tensions. It is not only fun and play, there is also tears and disappointment. "[Y]ou're forced to become family with everyone that you're around and you choose to be with them as a community through thick and thin regardless of whether you want it or not. And that is exactly what you do with family."<sup>12</sup>



Figure 3. Students working together in the design studio

Since the design studio seized to be the home that kept us together, this family has scattered to single individuals who remain enclosed and isolated to their own homes. It is no wonder that 'place specificity' was the second value that the *2004 Studio Culture Summit* highlighted. Being present together in a shared physical space, what we usually call home, is a prerequisite for building healthy family relationships. Everyone knows how difficult and awkward it is to keep in touch with your beloved from a distance, especially for long time.

#### **INSULARITY AND ISOLATION**

Despite the need for a close community that share their everyday life, insularity and isolation was a major concern of the 2004 report. One of the main problems that the students identified was the fact that they were burned out of "long hours in studio, poor sleeping habits, unhealthy eating patterns, and high levels of stress."<sup>13</sup> Cloistered in the captivity of the studio, spending all their waking time and some of their sleeping time, with each other, the students become disconnected from the outside world and the public realm.<sup>14</sup> The report wished for an outreach quoting Richard Quinn's paper titled *Studiomania*:

"If you think about what you should be learning while in school, it should extend well beyond studio to include much more outreach, rather than being sequestered in a building 24 hours a day."<sup>15</sup> In contrast to the students' fair complaint of insularity and isolation in the design studio, a much more severe enclosure took place during the pandemic period. Every student became isolated in their own home, having barely the possibility to get out. Every bedroom became a fragment of the old design studio that never comes to a synthesis as a whole. The only meeting point has been the parathesis of the small windows of video conferencing.



Figure 4. Student working in his bedroom

When Boyer and Mitgang were complaining that "[w]e were, first of all, concerned by the sense of social, physical, and intellectual isolation of architecture schools on their own campuses," <sup>16</sup> I guess that they could never imagine the isolation of architecture schools that took place in every student's bedroom.

In order to overcome the isolation that the AIAS students were feeling when the studios were open, they suggested an active engagement with the public realm and the wider communities: "Studio culture captivates everyone - it expands beyond the realm of architecture and embraces the public with outstretched arms."<sup>17</sup> During the current situation the metaphor of hugging each other is completely out of question. At the same time though, the isolation of architecture students and the disconnection of architectural education from the larger society has never been greater.<sup>18</sup> The students could not even visit the places of the projects that were designing.

#### EMBODIED COMMUNICATION

Another important aspect of studio culture is the immediate and direct communication that takes place between teachers and students. "Few other disciplines have courses with such direct one-on-one interaction between faculty and students, whereby students receive immediate feedback on their work."<sup>19</sup> One could argue that this aspect dialogical communication was something that was not lost in on-line teaching, since the various video conferencing platforms allow the bilateral transmission of voice and image.

Recent research has proved how tiring this new type of communication is, due to the little discrepancies in voice and image, coining a new term 'zoom fatigue.'<sup>20</sup> But, furthermore, I would like to argue that communication in the design studio is not based only on words, but is an embodied action that is much poorer when the participants are not physically present. Communication transfers also emotions that most often are conveyed through miniscule muscle contractions especially around the eyes and mouth that cannot be captured through the current pixelated video technology.<sup>21</sup>

Gestures, facial expressions and body postures, do not just accompany oral talk, but, rather, form a foundation upon which words construct their arguments. This is particularly important in architectural education since one constantly have to point to things like drawings and models and creates metaphors and analogies of space through gestures.<sup>22</sup> The pointer that is the virtual endpoint of the movement of one's mouse is extremely redundant in this aspect.



Figure 5. Gestural communication in the design studio over a model

Gesture has been thoroughly researched by various disciplines as an opening process of distinct cognition that often lies outside language.<sup>23</sup> Gesture, in a literal context, is generally perceived as an intentional bodily movement that seeks to convey a meaning. Gestures can accompany, emphasize, contradict or even *replace* a particular utterance. It, thus, becomes an alternative to language by offering a more "appropriate mode of communication, the right expression for what we want to convey."<sup>24</sup> A gesture can be *functional* when it is used to clarify language (pointing something by saying 'this') or *behavioral* (moving the head to mean 'I don't like this'), which is self-sufficient and independent of language. The important is that gestures vary indefinitely and continuously invite constant interpretation by the participants. Responding to a gesture with another gesture one shows that she understands what is all about. She gets involved in what is going on and plays a game.<sup>25</sup> During the education process of the design studio we constantly give gestures and we take them, most often without even noticing it.

#### SKILL TRANSMISSION: DRAWING AND MODELING AS EMBODIED PRACTICES

The 2004 AIAS Summit highlights that the design studio has a universal endorsement as a model for "experience-based learning and skill development."<sup>26</sup> The environment of the studios allow this to happen "in the presence of more skilled persons as well as fostering learning from peers."<sup>27</sup>

During the pandemic period, what hurt the educational process the most was the lack of direct embodied skill transmission of the technical and the artistic part of architecture. I am referring to the immediacy of sketching on an existing drawing or manipulating a physical model. The speed and immediacy of sketching is an invaluable educational tool for the communication of ideas and most teachers have reached a mastery of drawing with simple media like pen or pencil. However the technical limitations of annotating in the various video conferencing platforms and the lack of experience of using more specialized equipment, in most cases, forced highly skillful draftsmen into creating childish scribbles on screen. The absence or luck of this technical aspect of the art of the teacher-architect lead to a radical reduction of the 'tools of the trade.'



Figure 6. Snapshot of online annotations on a student's drawing

Moreover, the students, by large, quit practicing their technical skill of drawing by hand and making physical models, since the design process moved altogether to a digitalized realm. The debate on the use of digital technologies in architectural education has already a long history, with strong advocates and polemics. Still though, a lot of schools of architecture ask their students to draw by hand at least during the first years of their study. As Renzo Piano was pointing out some years ago, technology has not find a way to make meaningful architecture since it deprives its users of the repetitive transfer that occurs during education. This fact is highlighted by Richard Sennet in his book *The Craftsman*, where he further states that "It is at the level of mastery...that ethical problems of craft appear."<sup>28</sup> And it is there that the craftsman is rewarded emotionally, being anchored in tangible reality and taking pride in her work.<sup>29</sup>

#### CONCLUSION

The early AIAS 2004 Summit had established a research theme that was called the 'hybrid studio' that wished to explore the join of physical and virtual studios, "including those that combine virtual space and digital communication while maintaining a physical studio center."<sup>30</sup> One could think that the current pandemic situation offered a great opportunity to experiment with virtual studio and remote digital communication techniques.

It is more than a year now that design studios are closed and there is a good reason for it; to keep us safe. While we have at large ensured this ontic existence, we can reflect on what we missed, some important aspects that form our wider existential identity. For the architects, part of this identity, is studio culture, that as it was described above, is so fundamental to the core of architectural education, that puts to question the outcomes of the remote design studios.

The main issue at stake is not the mere physical presence of being together. It is rather the immaterial influence that this presence creates to the participants. I am wondering if it would be too much to argue that studio culture is some sort of "intangible cultural heritage." With this term the UNESCO chart describes "the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides

them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity."<sup>31</sup> Studio culture during the pandemic years came under threat and is in need of urgent safeguarding.



Figure 7. Snapshots of a digital board where participants visualize their presence and contribution

There is no doubt that educators made great efforts to substitute what was missed. Various methods and tricks were invented to maintain this culture alive (e.g. Fig. 5). But was this enough? The students of the second year studio, that I am currently teaching, have already passed <sup>3</sup>/<sub>4</sub> of their overall study time away from the studio (they just had a quick glimpse of it) and they barely remember participating in the shared community of this family. Moreover, the vast majority of the students that started architectural education within this pandemic period never felt the design studio culture at all. I cannot help but thinking that their situation, resembles to the problems of a close friend who struggles to maintain a relationship with his son who was born, just as he divorced with his wife and was forced to move out of home. Video conferencing and text messages do not help much when real human problems arise.

The current pandemic situation can be been seen as a catalyst that has already triggered changes in higher education that are here to stay. For example, the wider sociopolitical pressure to reduce the operating costs of studio, since it is an educational model that requires a lot of space and great teacher/student ratio, can tempt many administrators to propose to maintain parts of the existing status quo. The worst scenario would be to end up with few 'good' and pricey architecture schools offering studio culture as a privilege, while most of the rest of schools would abandon it overall. So, the academics who urge to prove their studio outcomes as being even better during the current situation, by over-presenting their students work, should keep in mind that the question will always be why not maintain this new model of education for mass culture architecture students, who will not be able to afford the 'real thing,' the physical studio culture, instead of its virtual counterfeit.

The recent pandemic came to remind us what is very important, almost critical to architectural design education. And this is the bonds that are shared by its members, a sense of self-determination and, most importantly, a set of codes and stereotypes that have developed over long time and hold its practice together. Hopefully, in the academic year 2021-22, in most countries, we will be able to return back 'home.' We are not, still, in a position to be sure of the damage that has been created. The scars of the wounds will take time to heal, but they must. This paper suggested that there is a need to safeguard the studio culture that became under threat during the pandemic years, and that we have to make sure that whatever hybrid methods will emerge in the future, will never lose its 'physical studio center' as the main locus that holds this culture together.

#### NOTES

<sup>1</sup> Clark Kellog, "A Personal Viewpoint," in *The Studio Culture Summit*, ed. American Institute of Architecture Students, 2004, 22, http://cacp.utsa.edu/images/uploads/Studio\_Culture\_Summit\_2004.pdf. [italics added]

<sup>2</sup> Dean NTUA, "Suspension of Operation of NTUA – Preventive Measures Due to the Coronavirus," March 10, 2020.

<sup>3</sup> American Institute of Architecture Students and Aaron Koch, "The Redesign of Studio Culture: A Report of the AIAS Studio Culture Task Force" (American Institute of Architecture Students, 2002), http://www.aias.org/chapter\_resources/documents/AIASStudioCultureReport.pdf.

<sup>4</sup> Edward Burnett Tylor, *Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Art, and Custom* (New York: Gordon Press, 1974).

<sup>5</sup> Leonidas Koutsoumpos, "Ethics and the Architectural Design Studio: 1+3 Ahistorical Metaphors," *EAR (Edinburgh Architecture Research)* 30 (2007): 63–71.

<sup>6</sup> American Institute of Architecture Students and Koch, "The Redesign of Studio Culture: A Report of the AIAS Studio Culture Task Force."

<sup>7</sup> American Institute of Architecture Students, "The Studio Culture Summit," 2004, 23, http://cacp.utsa.edu/images/uploads/Studio\_Culture\_Summit\_2004.pdf.

<sup>8</sup> American Institute of Architecture Students and Koch, "The Redesign of Studio Culture: A Report of the AIAS Studio Culture Task Force," 7.

<sup>9</sup> American Institute of Architecture Students and Koch, 7.

<sup>10</sup> American Institute of Architecture Students, "The Studio Culture Summit," 11.

<sup>11</sup> American Institute of Architecture Students, 21.

<sup>12</sup> American Institute of Architecture Students, 21.

<sup>13</sup> American Institute of Architecture Students and Koch, "The Redesign of Studio Culture: A Report of the AIAS Studio Culture Task Force," 7.

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<sup>15</sup> American Institute of Architecture Students and Koch, 9; Richard Quinn, "Studiomania," *Crit* Fall, no. 24 (2000). <sup>16</sup> American Institute of Architecture Students and Koch, "The Redesign of Studio Culture: A Report of the AIAS Studio Culture Task Force," 9; Ernest Boyer and Lee Mitgang, *Building Community: A New Future for Architectural Education and Practice* (Princeton, New Jersey: Carnegie Foundation for the Advancement of Teaching, 1996).

<sup>17</sup> American Institute of Architecture Students, "The Studio Culture Summit," 4.

<sup>18</sup> American Institute of Architecture Students and Koch, "The Redesign of Studio Culture: A Report of the AIAS Studio Culture Task Force," 6.

<sup>19</sup> American Institute of Architecture Students and Koch, 4.

<sup>20</sup> Julia Sklar, "'Zoom Fatigue' Is Taxing the Brain. Here's Why That Happens," National Geographic, April 24, 2020, https://www.nationalgeographic.com/science/article/coronavirus-zoom-fatigue-is-taxing-the-brain-here-is-why-that-happens; Manyu Jiang, "The Reason Zoom Calls Drain Your Energy," BBC, April 22, 2020, https://www.bbc.com/worklife/article/20200421-why-zoom-video-chats-are-so-exhausting.

<sup>21</sup> Kate Murphy, "Why Zoom Is Terrible," *The New York Times*, April 29, 2020, sec. Sunday Review, https://www.nytimes.com/2020/04/29/sunday-review/zoom-video-conference.html.

<sup>22</sup> Leonidas Koutsoumpos, "Inhabiting Ethics: Educational Praxis in the Design Studio, the Music Class and the Dojo" (PhD Thesis, University of Edinburgh, School of Arts, Culture and Environment, 2009), http://www.era.lib.ed.ac.uk/handle/1842/3294.

<sup>23</sup> Jean Francois Lyotard connects artwork witht he processuality of gesture. Ronald Barthes sees it as an event that transgresses the work of art itself. Adorno discusses gerturality in music.

<sup>24</sup> Jochen Schuff, "Wittgenstein on Architecture" (Use-Value in Architecture: Reconceptualizing Buildings' Functions, Vienna: International Society of Philosophy and Architecture, 2015). In Niels Albertsen, "The Artwork in the Semiosphere of Gestures, Wittgenstein, Gesture and Secondary Meaning," in *Architecture, Language, Critique: Around Paul Engelmann*, ed. Judith Bakacsy, A. V. Munch, and A.-L. Sommer (Amsterdam; Atlanta: Rodopi, 2000), 67–104.

<sup>25</sup> David Macarthur, "Reflections on 'Architecture Is a Gesture' (Wittgenstein)," *Paragrana* 23, no. 1 (2014): 88–100, https://doi.org/10.1515/para-2014-0009.

<sup>26</sup> American Institute of Architecture Students, "The Studio Culture Summit," 12.

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<sup>30</sup> American Institute of Architecture Students, "The Studio Culture Summit," 18.

<sup>31</sup> UNESCO, *Convention for the Safeguarding of the Intangible Cultural Heritage* (Paris, 2003), 2, http://portal.unesco.org/en/ev.php-URL\_ID=17716&URL\_DO=DO\_TOPIC&URL\_SECTION=201.html.

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### MAKING THE CASE FOR INCLUDING ONLINE TEACHING BEST PRACTICES IN TEACHER EDUCATION PROGRAMS

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#### INTRODUCTION

The first online course was offered in the mid 1980s when Linda Harasim experimented with conducting a graduate course with computer conferencing.<sup>1</sup> Online learning, though, largely remained a fringed activity, taken almost predominantly by nontraditional students, for nearly 20 years after this first course. Many simply did not believe that people could learn online or that learning online could ever be as good as learning in a face-to-face in person environment.<sup>2</sup> This skepticism fueled 100s of media comparison studies during the 1990s and early 2000s where researchers compared outcomes of students taking online and face-to-face courses.<sup>3</sup> The majority of these studies resulted in what is often referred to as the no-significant difference phenomenor;<sup>4</sup> that is the tendency when comparing student outcomes between two different methods resulting in no-significant difference.<sup>5</sup> Enrollments in online courses and programs began to grow in higher education during the 2000s.<sup>6</sup> All of a sudden, online courses and programs were no longer simply a fringe activity taken by nontraditional students. In fact, between 2010-2020, about a third of students were taking an online course each year in higher education.<sup>7</sup>

Around this time, enrollments in K12 virtual schools started to grow.<sup>8</sup> K12 virtual schools began to appeal to people for many reasons, such as families wanting to homeschool their children, or students needing credit recovery or who were not successful in traditional school settings, or students wanting a course not offered at their local school.<sup>9</sup> Enrollments in virtual schools had grown to the point that by 2019, there were an estimated 2.7 million K12 students enrolled in virtual schools or programs.<sup>10</sup> Even prior to COVID-19, growth in virtual schools motivated districts throughout the US to create their own virtual schools to meet these growing needs.<sup>11</sup> Further, recognizing the importance of online learning in higher education and the workplace, some districts even began adding online learning as a graduation requirement or requiring it as a method of credit recovery.<sup>12</sup>

Despite this growth, teacher education programs have for the most part failed to prepare teachers to teach in blended and online environments.<sup>13</sup> This has become evident during the past 18 months as the COVID-19 pandemic forced schools throughout the country to switch to some type of blended, remote, or online format.<sup>14</sup> To be fair, teacher education programs for decades have faced increased scrutiny<sup>15</sup> and are often blamed for all of our education problems.<sup>16</sup> They are expected to prepare highly qualified teachers in as little time and credits as possible. As a result, for decades, teacher educators have debated about what topics, standards, and even courses should be included in teacher

preparation programs.<sup>17</sup> For instance, teacher educators have regularly debated whether a teaching with technology course is needed in a teacher preparation program or whether preservice teachers would be better off having technology integration learning opportunities integrated throughout their teacher preparation coursework.<sup>18</sup>

Technology is not a panacea. And in many ways, good teaching is good teaching.<sup>19</sup> However, we posit that with continued growth in online and blended learning on the horizon, there is a need for all educators to have some experience and training teaching in blended and online environments. In the following paper, we argue that teacher education programs need to finally formally incorporate online pedagogy training in their programs, we then identify some key competencies that they might focus on, and conclude with ways they might accomplish this.

#### BLENDED, REMOTE, AND ONLINE LEARNING-THE NEW NORMAL

The COVID-19 pandemic forced K12 schools to switch to some type of remote, blended, or fully online format almost overnight. While we see glimmers of hope that things might return to "normal" by the Fall of 2021, many questions remain about what the new normal might look like. Despite the growth of online learning, prior to COVID-19, many still questioned the value of learning online and some educators even outright refused to teach online. Unfortunately, research suggests that teaching remotely or online might not have improved many teachers' perceptions. Prior to COVID-19, only a small fraction of educators had any formal training teaching online or at a distance. Most teachers were unprepared for the technological demands of moving to a distance learning environment, many lacked the technical skills to operate in a primarily digital environment. As a result, many of these teachers showed low levels of job satisfaction, technological self-efficacy, and ultimately burnout.<sup>20</sup> At the same time, other teachers who had greater levels of technological self-efficacy and creativity were able to bounce back from challenges they faced during the pandemic<sup>21</sup>--with many of them actually finding it comforting, if not enjoyable, to be able to continue teaching from the safety of their home.

While none of us know what the future might hold, one thing is clear. Teacher's ability (many with little-to-no training) to continue teaching online (if even at times poorly) has illustrated that education can continue in the future, despite whatever pandemics, disasters, or emergencies come our way. Thus, in many ways, we contend that blended, remote, and online learning is without a doubt a new normal. The question is, how can we better prepare teachers to successfully teach in these new formats? What skills and abilities do these teachers need?

#### **ONLINE TEACHING COMPETENCIES**

As online learning started to grow, educators tried to identify competencies needed to successfully teach online. Educators first turned to well established face-to-face teaching principles--Chickering and Gamson's "Seven Principles for Good Practice in Undergraduate Education".<sup>22</sup> This is not without good reason, Chickering and Gamson's seven principles are applicable to nearly any instructional situation. For instance, it would be hard for any educator to argue that things like "Good Practice Encourages Student-Faculty Contact" or "Good Practice Gives Prompt Feedback" are not important when teaching online. And while Graham et al.'s translation of these seven principles to online learning is helpful, we contend that it did not go far enough. In fact, long before COVID-19, research has suggested that teaching online differs in certain ways than teaching face-to-face in person.<sup>23</sup>

High quality online learning experiences consist of both quality course design and quality instruction and facilitation.<sup>24</sup> However, Hodges et al. point out that high quality online courses take months and

specialized skills and abilities to design and develop.<sup>25</sup> Thus, in many ways, K12 teachers should not be expected to have the same level of expertise as seasoned online course designers. However, we do believe that it is still realistic for K12 teachers to be introduced to and have some opportunities to experience certain online teaching competencies.

Over the years, researchers and practitioners have tried to identify core skills or competencies that teachers need to be successful in online and blended learning environments (see Table 1). For instance, early on Berge, building on previous literature, suggested that online instructors play four roles: pedagogical, social, managerial, and technical.<sup>26</sup> Then later, working in part from Berge, Anderson et al. proposed that successful online educational experiences involve teaching presence, social presence, and cognitive presence and that teaching presence in particular involves instructional design and organization, facilitating discourse, and direct instruction.<sup>27</sup> In 2016, Diel created the following standards after conducting a review of the literature on online teaching: institutional context, technologies, instructional design, pedagogy, assessment, and social presence.<sup>28</sup> Not long after, Pulham et al. identified pedagogy, management, assessment, technology, instructional design, dispositions, and improvement.<sup>29</sup> Then in 2019 Martin et al. identified course design, course communication, time management, and technical competence.<sup>30</sup> Finally in 2019, the Virtual Learning Leadership Alliance & Quality Matters updated the National Standards for Quality Online Teaching which include standards focused on professional responsibilities, digital pedagogy, community building, learner engagement, digital citizenship, diverse instruction, assessment and measurement, and instructional design.<sup>31</sup> While lists of competencies like these have some differences, one can quickly identify similarities that many would agree are important when teaching online (see Table 1).

Berge	Anderson et al	Martin et al.	Diel	Putham et al.	Virtual Learning Leadership Alliance
-Pedagogical -Social -Managerial -Technical	-Instructional design and organizational -Facilitating discourse -Direct instruction	-Course design -Course communication -Time management -Technical competence	-Institutional context -Technologies -Instructional design -Pedagogy -Assessment -Social presence	-Pedagogy -Management -Assessment -Technology -Instructional Design -Dispositions -Improvement	-Professional responsibilities -Digital pedagogy -Community building -Learner engagement -Digital citizenship -Diverse instruction -Assessment and measurement -Instructional design.

Table 1. Common Teaching Online Roles and Competencies

#### **ONLINE TEACHING COMPETENCIES K12 TEACHERS NEED**

Having a basic level of digital literacy is key for anyone wanting to or needing to teach in blended or online environments. However, other key areas we noticed when reviewing online teaching competencies that we think all K12 teachers need some basic experience with include: the ability to design online instruction, facilitate discourse, and to develop social presence and classroom community.

#### **Design Online Instruction**

K12 teachers, whether they regularly teach online or not, need to have some basic experience designing instruction that can be delivered online. This involves being able to work from some basic learning objectives and design instruction that can be delivered or facilitated face-to-face and then adjusted so that it could be delivered in an asynchronous and/or synchronous format. For instance, teachers need to know how to deliver a lecture not only face-to-face but also online in a recorded asynchronous format or in a live synchronous format.

#### **Facilitate Discourse**

A key component of formal education, regardless of the format, is discourse. While many teachers have experience communicating online (e.g., email or even Facebook), facilitating discourse and discussions online is a different skill. K12 teachers need to know how to effectively use asynchronous (e.g., email, discussion forums, video) and synchronous (e.g., messaging apps, phone, web conferencing) forms of communication.

#### **Social Presence and Classroom Community**

Despite the hours people spend online each week, research has shown that many people still struggle communicating in fully online learning environments.<sup>32</sup> This is largely due to the text-based and asynchronous nature of most online courses. However, through regular and intentional interactions, teachers and students can begin to develop social presence (i.e., a sense that others are "real" and "there") and over time a sense of classroom community can emerge.<sup>33</sup> In order to accomplish this, teachers need to be able to employ the two aforementioned competences--that is, design online instructional experiences as well as to facilitate discourse.<sup>34</sup>

#### FOUR WAYS TO CHANGE TEACHER PREPARTION

There are numerous ways teacher preparation programs could advance pre-service teachers' knowledge of online education. We have identified four ways that we believe teacher preparation programs could implement immediately to start preparing pre-service teachers for a new normal, which will likely involve more blended and online learning.

#### **Online Learning Requirement**

Teachers are influenced by their experiences as learners. We think that all K12 teachers should have to complete at least one course online during their teacher preparation program. Having an experience learning online will help teachers better understand their own students' experiences learning online.

#### **Blended and Online Lesson Planning**

One of the greatest factors in the success of K12 students is the impact of the teacher themselves.<sup>35</sup> Teachers with lower self-efficacy regularly underperform those with higher self-efficacy<sup>36</sup> and many teachers suffer from low self-efficacy when it comes to integrating technology into their classrooms.<sup>37</sup> Research has also, unsurprisingly, shown that teachers with less familiarity with blended teaching are

less effective at deploying blended methods than teachers with more experience.<sup>38</sup> Thus, pre-service teachers need more experiences in developing in-person as well as fully virtual and blended lessons if they are to succeed in the future teaching environments where these elements are more likely to be expected of them. Teacher preparation programs can begin requiring students to create lesson plans for blended, remote, and fully online learning experiences.

#### **Virtual Field Experiences**

Teachers that have observed other teachers using technology in their classrooms tend to show greater technological efficacy.<sup>39</sup> While pre-service teachers frequently travel between schools observing different teachers and classrooms, these experiences are primarily focused on in-person teaching and rarely focus on virtual or blended classrooms. Thus, new teachers, like during COVID-19, found themselves needing to teach with methods or mediums they possibly never witnessed themselves. Having pre-service teachers complete some of their teacher observations online would increase preservice teachers' understanding of how these teaching environments differ from traditional classrooms.

#### **Online Methods and/or Student Teaching**

Traditional teacher preparation programs typically have some foundational courses on learning theory and instruction, then some methods of teaching types of courses, and then culminate with a student teaching experience. While preservice teachers cannot be expected to experience or learn every aspect of teaching during their teacher preparation program, it is during methods and student teaching that preservice teachers begin to spend increasing amounts of time in schools and learning how to teach. It is during this stage of their program, that we contend that pre-service teachers need to be given meaningful opportunities to observe as well as to develop the skills necessary to produce asynchronous and synchronous content as well as an understanding of the underlying pedagogy that accompanies it.

#### DISCUSSION

Providing pre-service teachers with additional training in both integrating technology into their classroom as well as basic online pedagogy will better prepare these future teachers to not only teach in technology-enabled classrooms, but also to design and facilitate blended, remote, or fully online lessons as needed in the future. As many districts struggle to provide necessary technology professional development to their teachers, teacher education programs must ensure that their graduates are well versed in the 21st century learning environment which will continue to include more digital tools and blended learning environments.

Both traditional classroom teachers and virtual teachers have continually expressed a need for new technology training with top skill requests in technology based skills, content based technology education, and finding and evaluating quality digital resources for classrooms.<sup>40</sup> While advancements in the availability of technological resources has decreased the overall impact of technology self-efficacy on job satisfaction of teachers there remains to be a strong tie between the two.<sup>41</sup>

The impact of proper technology training on teachers job satisfaction and self-efficacy is well documented. As time progressed through the pandemic, teachers' technological self-efficacy increased as did their sense of accomplishment but generally teachers believed less and less in the positive effects of remote teaching as an alternative to in person instruction.<sup>42</sup> Proper training in online pedagogy and technology tools could alleviate some of these concerns.<sup>43</sup>

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# USE OF GAMIFIED PLATFORM TO IMPROVE FRESHMEN APPROACHES TO LEARNING

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#### INTRODUCTION

The transition to university can be challenging for freshmen. Student Approaches to Learning (SAL) is an important trait for students to develop which may help them meet the academic demands of university education. A large body of literature has identified three main approaches to learning: (1) *deep*, (2) *organised*, and (3) *surface*.<sup>1</sup> A *deep* approach is characterized by understanding information and connecting ideas, while an *organised* approach refers to how students plan their studies and manage their time. A *surface* approach on the other hand, refers to students' use of rehearsal strategies such as memorization and note-taking.

Building upon a long history of educational research on approaches to learning, recent studies have identified mounting evidence for the link between approaches to learning and performance.<sup>2,3</sup> Parpala et al.<sup>4</sup> found different clusters of students for example: (1) organised students, (2) students applying a deep approach, (3) students applying a surface approach, and (4) unorganised students applying a deep approach. Among these clusters, organised students and those applying a deep approach performed best, academically.<sup>5,6</sup> A longitudinal study by Haarala-Muhonen et al.<sup>7</sup> also found that unorganised students applying a deep approach and students applying surface approach experienced a delay in graduation. Providing adequate support for underperforming students has long been on the agenda of educators. For nearly five decades, Career Academies in American high schools have identified and provided academic support to struggling students to prevent dropouts.<sup>8,9</sup> Similarly, universities across the United States<sup>10,11</sup> and more recently, Asia<sup>12,13</sup> have also established academic probation and support programmes for at-risk students.

Traditionally, these support programmes come in the form of courses that teach students technical study skills, such as reading comprehension and academic writing, and have been well documented to positively impact students' self-efficacy<sup>14</sup> and performance.<sup>15,16</sup> More recently, student support efforts in other areas, including personal wellness<sup>17</sup> and approaches to learning<sup>18</sup>, have also reported positive impact on student performance. Despite this growing body of academic support research, interventions discussed are mostly confined to traditional face-to-face methods of counselling<sup>19</sup>, tutoring and coaching<sup>20</sup>, guided self-monitoring and reflection<sup>21,22</sup>, or group training.<sup>23,24,25</sup> Given that many students still have a negative perception of utilising professional support services,<sup>26</sup> those in need of support might not willingly seek help. While the use of online learning has risen over the

years, there is a lack of research exploring the possibilities of online interventions specifically to overcome barriers of support service utilisation.

As such, in line with Koydemir and Sun-Selışık's recent study<sup>27</sup> on online strength-based training, we aim to contribute to the literature by examining the effectiveness of an online gamified micro-learning platform, AdventureLEARN, as an early intervention to help develop effective learning traits such as approaches to learning, well-being, resilience and growth mindset for freshmen. In this paper, we specifically address the following two research questions:

1. Do students who used AdventureLEARN show lower surface, higher deep, and higher organised approach to learning scores as compared to students who did not, as measured by the Approaches to Learning & Studying Inventory (ALSI)?<sup>1</sup>

2. What are the correlations between (1) deep and surface approaches to learning, and (2) organised and surface approaches to learning, at pre-test and post-test, respectively?

#### **ADVENTURELEARN PLATFORM**

AdventureLEARN is a newly developed online platform for helping students cultivate important traits for learning.<sup>52</sup> There are four key literature-informed features developed in the platform.

#### Feature 1

Survey participation and progress tracking (Figure 1): As recommended by Haarala-Muhonen et al.<sup>7</sup> in their longitudinal study, the UniHow platform centres on the use of inventories to promote freshmen's awareness of their study practices and track their progress throughout their undergraduate journey. The tool has been well-documented and studied across Europe over the past fifteen years.<sup>7,4,28</sup> In AdventureLEARN, we provided validated surveys for students to complete, helping us learn more about their learning traits.



Figure 1. Main menu of survey page (left), and survey question regarding attitudes towards studying (right)

#### Feature 2

Personalised resource recommendations (Figure 2): The AdventureLEARN platform directs each individual to the most relevant resources based on their profile determined by the Approaches to Learning, Well-Being, Grit & Resilience, and Mindset inventories. These include both online resources in the form of readings, short videos, and exercises as well as existing offline professional services (e.g., counselling) from the university. The micro-learning topics range from time management, stress management, effective resource utilisation to note-taking techniques. Combined with nudges of encouragement,<sup>29</sup> such targeted resources and guidance towards effective actions can induce efforts for positive behavioural change.<sup>30</sup> These resources were created and curated by a multi-disciplinary SIT team with expertise in psychology, occupational therapy, education, and gamification.



Figure 2. Personalized resource recommendations

#### Feature 3

On-demand micro-lessons (Figure 3): Ryan and Deci's Self-Determination Theory<sup>31</sup> posits that the satisfaction of an individual's needs for competence, relatedness, and autonomy can boost his or her intrinsic motivation. As such, the platform provided a series of micro-lessons on various topics, delivered on-demand for students to access anytime and anywhere to enhance autonomy and ownership over learning. Indeed, a recent study by Nikou and Economides<sup>32</sup> found that the use of a mobile-based micro-learning environment for homework activities enhanced high school students' self-perceived sense of autonomy, competence, and relatedness as well as exam performance.



Figure 3. On demand micro-lessons, in this case an informative video on self-discipline

#### Feature 4

Elements of gamification (Figure 4): Given that the success of the platform hinges on student's participation in answering surveys and completing recommended micro-lessons, the platform's ability to constantly engage students is crucial. In light of survey fatigue<sup>33</sup> and high dropout rates in massive open online courses (MOOC),<sup>34,35,36</sup> we adopted a gamification approach to keep students engaged. The success of gamification in learning has been mixed, <sup>37,38</sup> which indicates that gamification has to be carefully design within the context of application. In general, it has been established that a meticulously designed meaningful gamification approach that focuses on intrinsic motivation is found to successfully engage users.<sup>39</sup> In the context of post-secondary education, a recent systematic review of 41 published articles advances a strong case for the use of gamification and game-based learning in higher education, citing benefits such as improved engagement, motivation, confidence, attitude, perceived learning, and performance.<sup>40</sup> Similarly, Klemke, Eradze, and Antonaci also found gamification to enrich MOOC experiences.<sup>41</sup> Grounded in these findings, we developed several game elements (e.g., visualization of growth, challenge levels, rewards) as appropriate to our context, in order to engage students in completing surveys and micro-lessons throughout their undergraduate journey.



Figure 4. Elements of gamification in the form of a visual progress bar and main menu (top), virtual pet (bottom left), and reward redemption (bottom right)

#### METHODS Measurement Tool

The three-factor Approaches to Learning and Studying Inventory (ALSI) was used to detect changes in students' approaches to learning.<sup>1</sup> Items from the ALSI were adapted from the 12 items in University of Helsinki's HowULearn questionnaire.<sup>42</sup> The ALSI contained three subscales: (1) deep (4 items), (2) organised (4 items), and (3) surface (4 items) approaches to learning. Students responded to statements based on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The ALSI has been validated in European, UK educational environments,<sup>7,43</sup> Asian contexts,<sup>44</sup> as well as in our university. This scale proved to be a reliable measure, with a Cronbach's alpha of 0.75.

#### Sample

All freshmen enrolled in SIT and SIT-joint undergraduate degree programmes at the beginning of Academic Years 2018 (AY18) and 2019 (AY19) were invited to participate in this study, with participation made voluntary. Freshmen enrolled in both AY18 and AY19 completed a freshmen survey (FMS) at the start of their respective AY and an end-of-year survey (EOYS) at the end of the same AY. Both the FMS and EOYS contained the ALSI. Only students who completed both surveys were considered for the present analysis.

The AY18 cohort was designated as the historical comparison group, with the sample comprising 398 students. The AY19 cohort on the other hand, were divided into two groups: (1) students that did not or minimally used AdventureLEARN (AY19 No-Inadequate AL, N = 221), and (2) students that used AdventureLEARN (AY19 AL, N = 81). Usage was defined as having completed three or more content materials on the platform during their first year of university. Participants came from a range of programmes, including accountancy, engineering, and the health sciences.<sup>45</sup> Table 1 summarises the number of participants in each group who took part in this study.

			No. of Respondents
Historical group	comparison	AY18	398
Cohort group	comparison	AY19 No-Inadequate AL (0-2 content materials completed)	221
Experimental group		AY19 AL (3 or more content materials completed)	81
		Total	700

Table 1. Survey Respondents

#### **Data Collection**

Only data from the ALSI was used in this study. Data was collected at two time points – at the beginning of the AY (i.e., pre-test) and at the end of the AY (i.e., post-test), for all three groups (see Table 1). The AY18 historical comparison group did not have access to AdventureLEARN, while the AY19 cohort comparison and experimental groups had access to AdventureLEARN.

#### **Data Analysis**

Scores in each subscale (deep, organised, and surface approaches to learning) were added together, providing a total score for each approach to learning. The difference between the scores of each subscale at pre-test and post-test were computed to determine the change in approaches to learning after one year.

A one-way analysis of variance (ANOVA) was conducted to examine if there were significant differences amongst the three independent groups (i.e., AY18, AY19 No-Inadequate AL, and AY19 AL) for each approach to learning (i.e., deep, organised, and surface).

Following that, a Pearson correlation analysis was undertaken to examine if any correlation(s) existed amongst the dependent variables of deep, organised, and surface approaches to learning at pre-test and post-test, respectively.

#### RESULTS

The descriptive statistics for the learning approaches of all groups are shown in Table 2.

		Ν	Mean Change	Std. Dev	Std. Err
	AY 18	398	93	2.804	.141
Organizad Lagraina	AY19 NO AL	221	-1.00	2.684	.181
Organised Learning	AY19 AL	81	64	3.059	.340
	Total	700	92	2.796	.106
	AY 18	398	42	2.516	.126
	AY19 NO AL	221	55	2.459	.165
Deep Learning	AY19 AL	81	35	2.608	.290
	Total	700	45	2.506	.095
	AY 18	398	11	2.746	.138
	AY19 NO AL	221	67	3.273	.220
Surface Learning	AY19 AL	81	-1.02	3.768	.419
	Total	700	39	3.065	.116
	Та	able 2. Resul	ts of All Groups		
	Statistic <sup>a</sup>	df1	df2	Sig.	
Organised Learning	.422	2	210.552	.656	
Deep Learning	.266	2	213.372	.767	
Surface Learning	3.794	2	197.161	.024	

a. Asymptotically F distributed.

Table 3. Welch's Robust Tests of Equality of Means

As the assumption of homogeneity was violated in the one-way ANOVA, Welch's ANOVA was conducted to compare the effect of AdventureLEARN usage on the three approaches to learning. Results in Table 3 indicate that the effect of AdventureLEARN usage on Surface Learning was significant, F(2, 197.16) = 3.79, p < .05. However, the effect of AdventureLEARN usage on Organised Learning, F(2, 210.55) = .42, p = .66, and Deep Learning F(2, 213.37) = .27, p = .77, were not significant.

Correlations between (1) Surface Learning and Deep Learning, and (2) Surface Learning and Organised Learning at pre-test and post-test for all students are shown in Table 4 below.

Surface Learning	Pre-test	Post-test
Deep Learning	.100	284**
Organised Learning	.048	521**

\* p < .05

\*\*p < .01

 Table 4. Correlations between (1) Surface Learning and Deep Learning, and (2) Surface Learning and

 Organised Learning

As shown in Table 4, there was a statistically non-significant positive correlation between Surface Learning and Deep Learning at pre-test, r = .100, p > .05. However, at post-test, the correlation became statistically significant and negative r = -.284, p < .01. This suggests that there was a change in the trend observed between Surface Learning and Deep Learning scores across both time points. In particular, students who had lower Surface Learning scores were more likely to have higher Deep Learning scores at post-test. The same trend was also observed between Surface Learning and Organised Learning. At pre-test, there was a statistically non-significant positive correlation between both variables, r = .048, p > .05. However, at post-test, a statistically significant negative correlation was observed, r = -.521, p < .05. Students who had lower Surface Learning scores at post-test.

#### DISCUSSION

The gamified intervention platform AdventureLEARN was found to aid freshmen in reducing their surface learning approaches in their first year at SIT. AY19 students who used AdventureLEARN lowered their surface learning by 1.02 points on average, as compared to a decrease of 0.11 for AY18 students and 0.67 for AY19 students who did not use the platform or used the platform minimally. Practically speaking, a decrease of surface learning is beneficial considering the evidence showing a high onset of surface learning in undergraduate students.<sup>46,47</sup> AdventureLEARN could potentially be introduced as a supplementary tool for future batches of freshmen to help reduce surface learning in their first year of university.

It was also observed that both deep and organised learning decreased at post-test in all three groups. Although there was no significant increase in deep or organised learning despite a significant decrease in surface learning at post-test, however, we found statistically significant negative correlations between (1) surface and deep learning, and (2) surface and organised learning. This suggests that at post-test, students who had lower surface learning scores were more likely to have higher deep and organised learning scores. We believe that this is an important contribution as the AdventureLEARN platform appears to have produced a trend amongst the students towards higher deep and organised learning, while lowering surface learning simultaneously. Further research is needed to better understand such a trend.

As observed in all groups without intervention, i.e., the AY18 historical control group and the AY19 group who did not engage minimally in AdventureLEARN, their organised and deep learning both decreased at the end of the freshmen year. Initially, this was surprising as we expected university-level students to show an increase in deep and organised learning approaches to address the higher demands of the university curriculum. However, Asikainen and Gijbels'<sup>48</sup> systematic review of longitudinal research on how students' approaches to learning develop during higher education also

reported that the results remain inconclusive as to the question of whether students do develop deeper approaches during higher education. It is not uncommon for students to use mixed learning approaches within and across semesters, due to the variances in workload and expectations from teaching staff.<sup>49</sup> For example, a student may predominantly use a surface learning approach for an assessment that focuses on recollection of information, while using a deeper approach while preparing for an assessment that requires critical thinking.<sup>2,50,51</sup> Taken together, this could have meant that students alter their approaches to learning according to their needs.

From the students' feedback gathered through interviews and surveys, we learnt that while most students appreciated the AdventureLEARN platform, many had little time to spare as their curriculum was too demanding. This trend raised some concerns. The findings and students' feedback raised further questions on the interaction between a heavy curriculum and an intervention that aims to promote deep and organised learning approaches. It can be challenging for students to apply the deep learning approaches they have learnt if the curriculum is packed and allows little opportunity for deep approaches to take place. Indeed, the biggest barriers reported by students in terms of accessing the platform was their heavy workload and finding time to watch the video resources on the platform. Students who did take time to use the platform and develop their learning traits showed reductions in surface learning. Therefore, one practical question moving forward could be, "how can we help those who exhibit poor learning patterns find the time and motivation to improve their approaches to learning?"

#### Limitations

The analysis presented in this paper is not without its limitations. Firstly, our current sample was limited to students who completed both the freshmen and end-of-year surveys. Our sample did not include students who completed only one survey; hence, we may have excluded students who used AdventureLEARN adequately and shown a change in learning approaches. Future research could consider sending reminders to increase the completion rates of both surveys.

Also, there might be some selection bias as students who participated in this study may not be representative of the population of SIT students. This could be attributed to the use of a convenience sample where participation in the study was voluntary. It is possible that students who chose to use AdventureLEARN possessed different traits from those that did not. However, our naturalistic study design could also have been beneficial in observing authentic behavioural outcomes, where students would pick up and use AdventureLEARN on their own volition.

#### **Future directions**

In view of the heavy workload and lack of time students have reported, more attention can be shifted towards revising the delivery of education. As the needs of undergraduates, the university, and the workforce may change over time, it can be beneficial to re-examine the course structure students receive. Our results have further emphasized the need for a constant evaluation of education.

The inclusion of additional meaningful gamification elements such as those that tap on to the construct of 'relatedness', <sup>38,39</sup> which not only provide extrinsic incentives but also serves psychological needs, will be included in future versions of AdventureLEARN.<sup>31</sup> As 'relatedness' is linked to being socially connected, one consideration can be for AdventureLEARN to adopt multiplayer functionalities. Students would log in together to view learning content and complete team quests on the platform, with added rewards for team completion. Peer-to-peer functions such as the ability to chat or post personal study tips to other students could complement 'relatedness' as well.

#### CONCLUSION

AdventureLEARN, a gamified platform that provides micro-learning learning content was found to help freshmen reduce their surface learning approaches. The platform also appears to have produced a trend amongst the students towards higher deep and organised learning. While the platform shows potential in helping students improve learning traits, we believe that two key issues deserve further attention: whether students can consistently apply deep and organised learning approaches amidst a heavy workload, as well as identifying areas of a university curriculum that reduce opportunities for students to use the platform and develop learning approaches. These are practical challenges we hope to address in our future research.

#### NOTES

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# SEEKING TO REDUCE PHYSICAL DISTANCING IN TEACHER-STUDENT INTERACTIONS

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#### INTRODUCTION

With the COVID-19 pandemic, face-to-face interaction in classes in Singapore were stopped. Higher education lecturers were required to conduct emergency remote teaching (ERT) defined as "a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances"<sup>1</sup>, from one day to the next. Consequently, lecturers had to rapidly offer instructional support through online means and strive to develop a "sustained network"<sup>2</sup> or online community of practice with students that they had never taught before. Saint-Onge and Wallace<sup>3</sup> define a community of practice (COP) as a group of people who "share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis". In the context of these three case studies, the educative communities consisted of cohorts of undergraduate students. Two case studies involved first and second year students from multiple faculties taking academic literacy courses; the third involved a cohort of second year undergraduate nursing faculty students taking various modules such as clinical practice, healthy living community, medical sociology, and mental health nursing.

As Kollock<sup>4</sup> explained two decades ago, the quality of online interaction not only concerns its users' knowledge of technology:

"The key challenges the Internet community will face in the future are not simply technological, but also sociological: the challenges of social interaction and social organization. This is not to diminish the difficulties of creating new technologies, but rather to emphasize that even these tasks will pale beside the problems of facilitating and encouraging successful online interaction and online communities".

The difficulty of developing participant interaction has been a recognized issue since the beginning of educational practice online. An online model with a high level of learner trust is required if learning can take place<sup>5</sup>. The model should strive to bridge the gap between a dispersed group particularly if, from the outset, little online community incubation is allowed, and participants are required to participate in discussions about topics of learning early on<sup>6</sup>. Difficulty may arise because of the distance between participants when engaged in online interaction compared to that during face-to-face relationships<sup>7</sup>. To create a sound platform for online learning, Garrison, Anderson are Archer<sup>8</sup> outline the need to nurture three types of presence. The first is cognitive presence, which refers to the construction of a communicative platform that can sustain its participants' critical thinking. The
second presence is social presence or participants' ability to successfully project their personality online and interact communicatively with other participants. The third presence is teaching presence, which is the ability of the teacher to support and enhance social and cognitive presence for the purpose of realizing educational outcomes. This latter presence concerns the design of the educational experience as well as the facilitation of the learning of course outcomes.

This chapter reports on 3 case studies depicting lecturers' experiences during emergency remote teaching (ERT) at a leading Asian higher education institution. The first details how one lecturer teaching a sociology of sport module sought to develop teacher presence to maintain positive rapport with his students through different communicative moves and using more modal verbs such as 'may' and 'should' rather than imperatives to increase dialogism<sup>9</sup>,<sup>10</sup>. Case study 2 highlights the importance of instructor presence, cognitive presence, and social presence in promoting student engagement in a social psychology CLIL module. The third presents a nursing research fellow implementing an online blended learning module to facilitate student's engagement and their appreciation for learning. Case study 3 outlines the underpinning of Moore's<sup>11</sup> framework of interaction to strengthen learner's community of inquiry. Community of inquiry was cultivated via a three-pronged strategic approach: learner to learner engagement, learner to educator engagement and learner to content engagement<sup>12</sup>.

#### CASE STUDY 1 Context

This first case study explores teacher presence and how positive student-teacher rapport was nurtured to facilitate a more meaningful student learning experience during emergency remote teaching (ERT). This study follows on from previous research<sup>13</sup> that recommends tutors be aware of the potential problems related to rapport building with students due to the distance in online environments. Rapport building is particularly difficult if in addition to online learning, feedback to student writing is primarily given via asynchronous text-based written communication (AWC)<sup>14</sup>.

Brooke<sup>15</sup> trialled strategies to make his feedback more dialogic by employing Walker's<sup>16</sup> DISCOUNT coding system, a form of Socratic dialogue with different communicative moves. In the findings, examples of moves embedded in the student's text are presented. These are: "inform opinion; encourage; challenge: inform-fact; metastatement; counter; critique; prompt; instruct; ask/clarify". Brooke<sup>17</sup> also explicitly employed the meaningful use of modalization to soften feedback rather than consistently using imperatives ("Change this to …"), to avoid an authoritative voice<sup>18</sup>,<sup>19</sup>. Modalization can be construed in many forms in academic texts, particularly in the form of verbs ("might, could, appear, seem"), adverbs ("it is likely that …"), adjectives ("this is a little confusing") and nouns ("it is a possibility but"). Student feedback at the end of the semester demonstrated that these strategies had great impact:

"He demonstrates more care and concern for his students' education than required of him".

"He is supportive as a teacher and understanding that such a module can be challenging for some people. He provided a lot of feedback on how to improve my assignments and always found ways to encourage me to better the assignment".

"He treats every single student, and assignment with care".

"He genuinely cares for every student and does not hesitate to reach out to students that requires his assistance"<sup>20</sup>.

However, Brooke<sup>21</sup> did not report on the most effective moves from Walker's<sup>22</sup> DISCOUNT coding system when giving feedback. This information could also be useful to teaching neophytes dealing with providing emergency remote teaching (ERT).

#### Discussion

Following on from Brooke's<sup>23</sup> study, the same teacher feedback embedded in students' drafts was examined. 50 texts comprising approximately 100,000 words in total made up the corpus. From these analyses, "encourage" from Walker's<sup>24</sup> DISCOUNT coding system was the most common with over 360 examples. In most cases, "encourage" preceded other moves. The other moves were much less frequent. For example, "Instruct", the second most common move, appeared 220 times. Below are examples of teacher-student asynchronous text-based written communication (AWC):

#### Example 1:

Teacher feedback: "<u>Good synthesis – glad you remembered to start the literature review in that way</u> (<u>Encourage</u>). But try not to repeat terms e.g., "eSports fandom" like this in a sentence. It is a little awkward" (Instruct).

#### Example 2:

Teacher feedback: <u>"It is great that you bring up special meanings here (Encourage).</u> However, the claim could be better – you mean we adopt behaviours based on the special meanings we give to them (Instruct) Also, it is not theory from Sandstrom & Kleinman, 2005 - Sandstrom, Martin and Fine<sup>25</sup> wrote the chapter – it is Blumer's<sup>26</sup> Symbolic Interactionism" (Inform-fact). Example 3:

Teacher feedback: <u>"I think you have a sound idea for a theoretical framework here with critical race theory and Habitus (Encourage).</u> However, you could bring in more concepts such as Field and Capital to explain the theories better" (Critique).

In the analyses, a very common pattern in the teacher feedback was to invite students to rewrite their texts with an "instruct" (provide information that constitutes a teaching point), "inform-fact" (state a fact), "inform-opinion" (state one's personal opinion) or a "critique" (give constructive criticism). However, these moves were frequently softened by an initial "encourage" move. The "encourage" is an acknowledgement that the tutor is aware of students' good work, which as Salmon<sup>27</sup> argues, is essential in motivating learners at a distance. Moreover, according to Curzon-Hobson<sup>28</sup>, encouragement can help to build student confidence as well as their trust in a teacher. Students are more likely to be motivated to take the risks needed to pursue learning when confidence and trust are nurtured in student-teacher interactions.

It is recommended that tutors are aware of potential problems related to rapport building, if in addition to online learning, feedback to student writing is primarily given via asynchronous text-based written communication (AWC)<sup>29</sup>. Awareness of communicative moves as well as modalization can help towards building effective teacher communication. Moreover, from this extension of Brooke's<sup>30</sup> study, "encourage" moves preceding other common moves like "instruct" and "inform-fact/opinion" can help to soften the force of the instruction. These combined strategies may help to produce a conducive educational environment that helps to reduce the physical distancing in teacher-student interactions.

## CASE STUDY 2

#### Context

This second case study explores possible ways to create a conducive online learning community to engage students in learning in a 13-week Content and Language Integrate Learning (CLIL) module. Consistent with research on promoting student engagement in an online learning community. This study reinforces the importance of instructor presence, cognitive presence, and social presence <sup>31</sup>in promoting student engagement in a social psychology CLIL module.<sup>32</sup>

The study shows that instructors should be present to provide a positive educational experience for students. Instructors should organise and present the course materials, and scaffold content using multiple learning activities and assessments online. Secondly, Instructors must create social presence through time and space for peer interactions/support so as to develop higher-order and critical thinking skills. 1hr-45-minute synchronous online lessons should be divided between teacher presence whereby instructors explain and facilitate class discussions in teacher-student interactions, and social presence whereby students are given time and space in breakout rooms for group discussions (see Table 1).

Instructor's explanations and class scaffolding	20 mins (instructions / recap / overview of reading).		
Group discussion (breakout rooms)	20-30 mins (Application of concept)		
Student Presentation & Class discussion	30 mins		
Instructor's explanations / wrap up	15 mins		
Breaks	2 x 5-min breaks in between getting in and out of breakrooms		

 Table 1. Time allocations for teacher-student and student-student interactions in synchronous online

 lessons

As can be seen in Table 2, all students were interested and engaged in the lessons because of the lecturer's clear explanations in content, reading skills, and writing skills. In fact, approximately 78%, 90%, and 84% of students were highly/very highly interested and engaged in the lecturer's clear explanations in content, reading skills, and writing skills respectively.

How engaged/interested were you:									
1	2	3	4	5					
Instructor plays a critical role in student engagement.									
0	22.6	58.1	6.5	12.9					
0	9.7	74.2	6.5	9.7					
0	16.1	64.5	9.7	9.7					
Zoom class/group discussions play a critical role in student engagement.									
0	25.8	64.5	9.7	0					
0	41.9	48.4	9.7	0					
0	12.9	64.5	16.1	6.5					
	1 nt engages 0 0 0 ritical rol 0 0 0	12nt engagement. $0$ 022.609.7016.1ritical role in student en025.8041.9012.9	1       2       3         nt engagement. $0$ 22.6       58.1         0       9.7       74.2         0       16.1       64.5         0       25.8       64.5         0       41.9       48.4         0       12.9       64.5	1       2       3       4         nt engagement. $\overline{0}$ 22.6       58.1       6.5         0       9.7       74.2       6.5         0       16.1       64.5       9.7         ritical role in student engagement. $\overline{0}$ 25.8       64.5       9.7         0       41.9       48.4       9.7 $\overline{0}$ 12.9       64.5       16.1					

1. Low (No interest because it's not relevant/interesting as I cannot see how the concept applies to me)

2. Average (Low interest because it's only a little bit relevant/interesting as I like learning about it but I cannot imagine how the concept applies to me)

3. High (High interest because it's relevant/interesting as I can imagine how the concept applies to me, but I have never experienced it) 4. Very high (High interest because it's very relevant/interesting as I have experienced this and learning the concept helps me understand my/others' behaviours)

Table 2. Instructor and social presences: balancing the interactions in synchronous lessons (%)

Thirdly, students are interested in learning if they are cognitively engaged. This means students must be able to see the value and relevance of the course materials used and knowledge or skills taught in content and academic literacy skills. This also extends to scaffolding the content and academic literacy knowledge/skills required for assessment tasks.<sup>33</sup>

In this module, academic literacies were taught to equip students with the necessary skills to complete the three set course assignments and to cope with academic rigour in other disciplines. Assignment 1 was a critical reflection whereby students were asked to summarise/synthesise and respond to an academic text. Assignment 2 required students to write a comparative analysis based on an academic text and real-life examples of autocratic leaders (e.g. Elon Musk) and democratic leaders (e.g. Howard Schultz in Starbucks). Assignment 3 required students to write an expository paper based on a concept discussed in the course. Interestingly, students' engagement/interest levels to complete the assignments increased with the application of the content in real-life contexts (Table 3). Assignment 1 was least applicable/relevant to real-life contexts, so students were less interested compared to Assignments 2 and 3.

How engaged/interested were you:						
	1	2	3	4	5	
Assignment 1: Reflective		3.3	30	46.7	20	
summary: Psychosocial vs						
sociocognitive perspectives						
Assignment 2: Compare and			23.3	40	36.7	
contrast leadership						
Assignment 3: Expository			6.7	40	53.3	
paper: choose a topic of						
interest.						

1. Low (No interest because it's not relevant/interesting as I cannot see how the concept applies to me)

2. Average (Low interest because it's only a little bit relevant/interesting as I like learning about it but I cannot imagine how the concept applies to me)

3. High (High interest because it's relevant/interesting as I can imagine how the concept applies to me, but I have never experienced it) 4. Very high (High interest because it's very relevant/interesting as I have experienced this and learning the concept helps me understand my/others' behaviours)

#### Discussion

Consistent with previous research,<sup>34</sup> this study highlights the importance of an instructor's presence in synchronous online lessons as students indicated the importance of having both teacher-student and student-student interactions to engage them. Instructors should give clear instructions on tasks, recap key concepts, demonstrate how to critically analyse information and construct meaning through communication, and facilitate group discussions.

Online writing tasks are challenging as they require higher-order cognitive learning and critical thinking skills. Students may feel inadequate, confused, and embarrassed if they cannot finish the writing tasks, or make mistakes which will become visible to others. Therefore, students need more support and guidance before they are encouraged to collaborate meaningfully in group tasks.<sup>35</sup> Once students understand the instructions and tasks, they should be given time to demonstrate/apply their understanding and support their peers in learning in small group discussions during student-student interactions in Zoom breakout rooms. Very importantly, too, beyond the student-student and teacher-

Table 3. Student's engagement/interest levels of assignments (%)

student interactions, students will only be cognitively engaged if they see the value and relevance of the course materials used and knowledge or skills taught.<sup>36</sup>

The success of synchronous online lessons depends primarily on an instructor's ability to provide an appropriate balance between teacher, social and cognitive presences to reduce the physical distance between instructors and students.<sup>37</sup> It is recommended that instructors promote student engagement in a safe online community by giving clear instructions, systematically scaffolding relevant materials, <sup>38</sup>allowing students time to voice concerns and seek clarification, as well as supporting and providing time and space for students to interact with peers.<sup>39</sup>

## CASE STUDY 3

### Context

The third case study focuses on the systematic design of online blended learning and building a community of inquiry<sup>40</sup>. Based on initial surveys, many students found lessons conducted via the online medium (MS Team and Zoom) to be less engaging. Teaching delivery largely remained the same without the underpinning of existing theoretical models to guide efficient online teaching and learning. Some students requested face-to-face teaching options where possible. To change more effectively to online teaching and learning, Moore's <sup>41</sup>theory of interaction was embedded in the curriculum. It was found that a holistic curriculum that prioritises the engagement of students, educators and content encourages learners to be active and more involved in their modules. <sup>42</sup>A community of inquiry was facilitated through a three-pronged-approach, namely "engagement of learner to learner to educator and engagement of learner to content<sup>43</sup>".

#### Learner to learner

During the first session of class that was delivered via the Zoom medium, some of the students were found to be camera shy. They were uncomfortable to turn on their video and interact with the educator and their peers. One student verbalised that, "my room is very untidy; therefore, I am not willing to show myself right now". To overcome this challenge, students were taught to explore the Zoom background functions and apply one of these as their backdrop. Afterwards, an "ice breaker" activity was introduced. The students were asked to introduce themselves, and share an interesting picture captured in their phone. Students enjoyed the session as they were able to share and learn more about their peers through active engagement. Periodically, students were divided into groups of five to discuss case scenarios and to synthesize ideas. They wrote and shared notes via Google Doc where they had an account access. Over the seven weeks, group dynamics were cultivated in this way.

#### Learner to educator

To improve learner-educator interactions, several strategies were put in place. During the breakout discussion sessions on Zoom, the educator entered each breakout room to monitor and discuss activities with groups. Additionally, an interactive tool known as "polls everywhere" was utilised to find out students' opinions on subject matter. This tool has a "word cloud" function. Students were invited to share their thoughts based on the prominent terms in the "word cloud". Students reported that they found the class discussions to be thought provoking with the use of these online teaching tools.

#### Learner to content

In addition to learner to learner and learner to educator interactions, engagement of learner to content is of paramount importance in the online teaching paradigm. Prior to students attending sessions, it was found that it is key to prepare students with teaching resources that empower them to lead group discussions. In order to do this, it was found that equipping students with interactive slides and research articles as reading materials prior to the classes was effective.

#### DISCUSSION

In an unprecedented COVID-19 world, it is pivotal for educators engaged in emergency remote teaching (ERT) to adapt to the online learning environment. One important strategy to do this is to underpin instruction with frameworks such as Moore's <sup>44</sup> theory of interaction. Only focusing on learner-educator interactions in the online teaching platform is not sufficient. Learner to learner interactions as well as learner to content engagements are also essential for cognitive development, leading to the academic success of students. In addition, interactions among peers, facilitator and content reduces boredom and isolation while learning in an online medium. A survey conducted by Shea et al<sup>45</sup>., revealed that students experienced more satisfaction in their learning when they were engaged in manipulating the content and interacting with their classmates and course facilitators. Other creative strategies that would improve learner to learner interactions among students include the use of chat sessions, blogs, and online tools such as Mural, Miro, and Sutori.

This case study identified that when students commence studies in an online platform, they could be inexperienced. Timely support, as guided by Moore's<sup>46</sup> interaction framework, is needed by educators to engage students in different online tools and maximise their confidence in digital learning. A community of inquiry can be developed using various online tools such as Google Docs, "polls everywhere" in combination with effective use of Zoom and its functions.

#### CONCLUSION

In this article, best evidence-based practice for developing and implementing online learning from three case studies has been shared. From the case studies presented, it is concluded that teachers should be mindful of the way that they give feedback to students' work, especially if it is read asynchronously. Teachers should also be cognizant of the importance of instructor presence, cognitive presence, and social presence in promoting synchronous student engagement online. Finally, teachers should consider the development of their synchronous online classes in relation to different interactional patterns, namely the engagement of learner to learner, learner to educator and learner to content. To increase the effectiveness of emergency remote teaching, studies of this genre are needed in various subject curriculum development contexts. These studies help to provide insight into which strategies suit the learning needs of higher education undergraduate students in multiple disciplines, a much-needed field of inquiry in our unprecedented times.

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