Teaching & Research

Exploring Academia – From Practice to Publishing

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INTRODUCTION

Research & Teaching

Exploring Academia – From Practice to Publishing

In contemporary academia the boundaries between research and teaching are blurred and complex. Sometimes deliberately. Oftentimes by chance. Other times by need. We live in an age of research-informed teaching, practice-based learning, academic publishing and global collaboration. As a result, we are simultaneously educators, researchers, authors and practitioners. We are place-bound but international in outlook. It is a complex scenario further complicated by cross-disciplinary thinking and an ever-growing emphasis on impact, rankings, internationalization, our social role and most recently, the digital turn and AI.

In this context, the understanding of what we do as academics is far from clear. In the arts, educators continue to practice. In design, professionals engage in teaching and learning. In our schools, teachers are involved in lifelong learning. In the humanities and sciences, what we teach is often the very thing we research. In every discipline, whatever our country, we are frequently asked to publish, engage communities and adapt to change.

While this specific volume is focused on issues of art and design, the overall publication seeks to better understand current practices in research and teaching from across disciplinary and geographical boundaries. It is interested in presentations on specific research projects, innovative teaching, questions of ethics, equity and inclusion, innovations in academic publishing and the impact of technologies and AI on how we operate. In all cases, it seeks an interdisciplinary perspective.

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LEARNING 'TO STUDIO': THE ROLE OF CREATIVE PEDAGOGY IN DELIVERING FUTURE SKILLS AND HOW TO MAKE IT HAPPEN

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INTRODUCTION

This research project began with a focus on the Fine Art studio in contemporary Higher Education. We have worked with artist-teachers across the sector with whom we wanted to identify the values fostered by studio-based learning, but as we have gathered and shared evidence with our peers, students and with colleagues from other subjects, we found that the studio and its practices of learning and knowledge creation might hold value for a wider academic sector.[1]

Through this project, we have come to refigure the studio as a verb rather than a place, considering how students learn 'to studio' and the benefits they gain from so doing. The research reframes the studio as a pedagogic method, as 'studio-ing'.[2] As a transferable pedagogic method, 'studio-ing' is separate from the discipline specific teaching activities such as crits, tutorials and skills workshops that might take place in an art and design studio and it is, rather, a platform for an interdisciplinary approach to individual and collective learning and problem solving.

We set out to articulate a new language, a voice of 'the studio' and its activities that might support our own sector and beyond to argue within current higher education business models for the maintenance of studio time, and for essential space and resources. We wanted to resist any romantic fetishisation of the creative studio and its easy defamation by institutions as an elitist, redundant and expensive resource. We also wanted to resist the idea that time 'to studio' is left to sit outside of a formal, taught schedule, a hidden or additional curriculum resourced by free labour and available only for those students able to afford time beyond officially designated sessions.

Our 'studio-ing' research has identified conditions that enable effective creative learning, and it foregrounds inclusion as a structural necessity. It then seeks to align these approaches with wider international, institutional and OFS[3] goals, deliberately using the language and aims of policymakers and politicians in order to offer productive resistance to the very conditions which prevent the realization of these essential creative strategies. We assert that the 'studio-ing' of creative arts education can be 'useful' to the development of graduate attributes widely acknowledged to be

essential and to sustainable and equitable futures in the creative sector. (We use the term 'useful' advisedly, considering Sara Ahmed's assertion that "use is an ongoing commitment to learn about things from things," and that "use requires we rethink how we give value to things."[4]) Ultimately, our findings suggest that the conditions for creative learning, the ability 'to studio' with others, should be important to future educational strategy across disciplines in higher education and beyond. This paper defines the conditions and infrastructure for creative learning that can be adapted to different subjects and situations and calls for inclusivity as a core value so students from all diverse backgrounds and subjects have the support to 'usefully' develop imagination and creativity as key future skills.

METHODOLOGY

Experienced Fine Art lecturers understand the university studio very well, continually reflecting upon the spaces and practices used by staff and students in teaching and learning. However, with increasing teaching loads and other institutional demands, the time necessary for such knowledge and analysis to become formalised into academic publications has become constrained. We wanted to gather evidence and share knowledge of these practices in such a way as to enable the participation of colleagues across the sector who are all too frequently time poor, and who are also weary of the questionnaires and justifications of internal monitoring processes. Therefore, we chose to begin creatively, with two calls for short films. The first call asked for documentation of contemporary university educational studios and the second for artist-teachers to show how they go about 'studio-ing' and the spaces used 'to studio'.

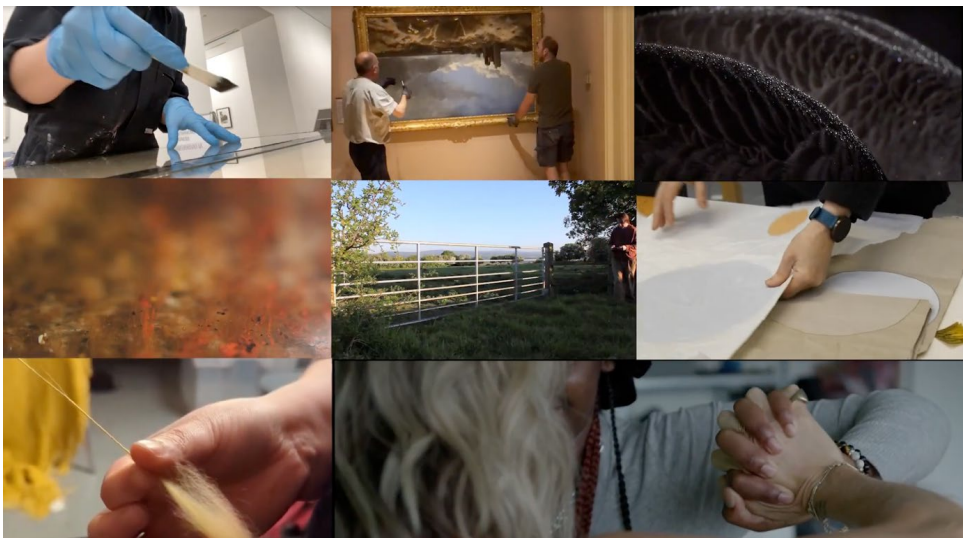

Figure 1. Film Still, Gentle Gestures

We have shared these one minute films (Fig 1) in conferences, workshops and seminars with a range of different audiences and participants: lecturers from creative disciplines, academic leaders and managers, undergraduate and postgraduate students.[5] Recognizing that essential professional conversation in universities often takes place informally over lunch with colleagues (since time is so limited) we chose to use formats that prompted such dialogue, as for example providing printed table cloths and paper plates for participants to draw and write upon as the discussion developed (Fig 2).

In these events, we sometimes provided materials and opportunities for doing along with the screenings: as participants played with bread dough (Fig 3), they were able to watch themselves and others at play, making visible their different ways of 'studio-ing'. They were encouraged to reflect

together on what had been made visible and on their own experience of working in and out of studios. Participants identified which aspects of studios and studio-ing are the most valued and which the most difficult to manage or justify. These methods allowed us the opportunity to engage with and hear from an extended community of Fine Art lecturers and artists but also with participants from other creative and humanities disciplines.

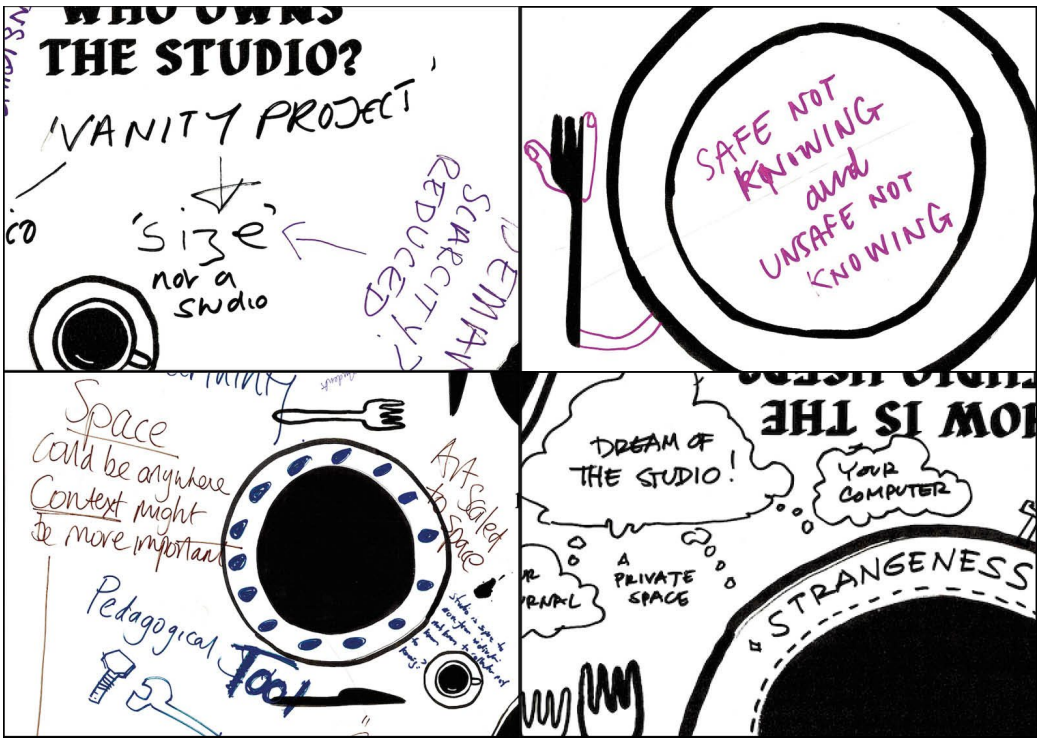

Figure 2. Examples of table cloth notes from discussions

Figure 3. Workshop Documentation, Making bread with your feet

Through this process, we identified five key themes that relate to the conditions for learning 'to studio' and the factors necessary for meaningful, engaged, and sustainable creative education. In this paper, they are explored under these headings: *Inclusion, Time and Space*, *Valuing the Process, Co-Learning*, and *Quality.* As we have indicated, our choice of terminology is deliberate, making clear that we are speaking to existing institutional drivers.

INCLUSION: ACCESS AS A CREATIVE PREREQUISITE

Inclusion within studio-based education is not simply about who can enrol, but about who is able to fully participate and how they are able to do so. Meaningful inclusion requires time, materials, funding and support structures that enable students to genuinely engage with creative learning. Financial pressures, physical and mental health challenges, caring responsibilities, and systemic inequities of race and class all shape who can make the most of their education. While these issues are widespread beyond the university, we recognise a shared institutional aspiration to support all learners.[6]

True inclusion expands access not only to physical spaces, but to opportunities for reflection, failure, experimentation, and growth - through time, space, attention, and appropriate materials. It reaffirms that creative education must meet students where they are—and then support them to go where they otherwise could not. When time, materials, or mental space are lacking, the studio becomes a site of constraint rather than possibility.

Inclusion, then, is not positioned in opposition to the university, rather, it is a mutual goal, one requiring practical, thoughtful strategies that recognise the lived realities "on the floor." It means student-focused learning opportunities rather than financially driven top-down delivery. Flexible timetables, appropriate support, materials budgets and accessible pathways—especially for those with work, care, health or cognitive needs—are not 'add-ons', but conditions for equity. Confident graduates with clear expectations of support and inclusion can effect necessary change in creative industries and beyond, diversifying and strengthening the workforce and the voices that are heard.

TIME AND SPACE: CONDITIONS FOR ATTENTION AND CREATIVITY

Time and space are not abstract pedagogical ideals but practical necessities for fostering creativity. This theme acknowledges the institutional challenge of allocating resources within constrained funding models, shifting priorities, and a culture of metrics, but insists that time and space are essential, not optional. Students and staff both require unregulated time: time that allows for risk, reflection, and the 'not-yet' to occur. The demand for productivity and measurable outcomes risks flattening the very conditions that support creativity, deep learning and personal development. Space, too, is not just about square footage but about the kinds of social and practical environments we foster—safe spaces for mess, material storage, rest, contemplation, and conversation. Such spaces can support creativity by accommodating how creative people actually work. When reduced to efficiency, we lose the environments that make slow, thoughtful learning possible.[7]

Maslow's *Hierarchy of Needs*[8] made clear that if basic needs—time, space, security—aren't met, creative self-actualisation is compromised. Our research has shown how students juggling jobs, financial stress and poor mental health struggle to fully engage, while staff, overwhelmed by administrative demands or employed precariously, cannot offer the attention that learning and learners require. These pressures reflect a broader neoliberal shift in education, where knowledge is increasingly defined by its market utility. As the Critical Hive Manifesto argues, this "vandalism of arts and humanities" redefines knowledge as "that which an individual can bring to the economy."[9] Neoliberal academic approaches limits both pedagogical depth and artistic possibility. Nancy Kline's

Time to Think[10] reminds us that giving clear and focused attention itself is a crucial pedagogical and developmental act. By valuing unstructured time and fit-for-purpose space, universities can affirm their commitment to meaningful, process-led education. We argue not against the institution, but alongside it—for a model that recognises attentiveness and spaciousness (both time and place) as being vital to creative learning.

Figure 4. Film Still, On Not Knowing – Art School Studios

VALUING THE PROCESS: EMBRACING UNCERTAINTY AND SPECULATION

To support creative learning, we must value process *over* outcome. This point affirms that creativity emerges not despite failure, unlearning, messiness, or uncertainty—but because of them. These are not weaknesses to avoid but strengths to nurture. As Jenny Walden argues, there is "something about finding the space for unlearning and trying to approach things entirely differently … building a set of values and a sense of culture which we are in terrible danger of losing. We probably need to be very bold and proud about that value proposition."[11] Juhani Pallasmaa similarly emphasises that "un-learning is just as important as learning, forgetting as important as remembering, uncertainty as important as certainty,"[12] suggesting that knowledge becomes creatively useful only when it is absorbed and then forgotten—allowing the artist to encounter the world anew. By affirming process, we align with core governmental goals for education: developing critical, reflexive, and resilient learners, humans, artists, and workers who can navigate the world's complexity with curiosity and care.

Teaching process requires space and time for experimentation, risk, and play. Paulo Freire reminds us that education is an ongoing activity rooted in our awareness of being "unfinished, uncompleted beings in and with a likewise unfinished reality."[13] This framing positions creative learning not as a linear acquisition of knowledge, but as a continual process of becoming—one that embraces

uncertainty, transformation, and the not-yet-known. Tacit knowledge[14], speculation, and vulnerability[15] cannot be measured by simple rubrics, but they are essential to artistic growth. We must hold space for what is uncertain, what might not work, and what cannot be rushed. Jeroen Lutters describes artistic knowing as being "in the process of knowing… like a piece of clay,"[16] where formal rationality obstructs rather than supports creativity. This highlights the need for imaginative, embodied engagement in learning—something studio-based education is uniquely positioned to foster. In doing so, we prepare students not only for academic achievement in Fine Art courses but for sustainable creative engagement beyond the university.

This doesn't oppose the institution—it reinforces its mission. Valuing process is central to cultivating graduates who are adaptable, resourceful, and innovative. The studio (and its analogues) is a site for process replete with potential for dialogue, reflection, and the capacity for returning to what remains unfinished. In an educational setting this facilitates the relational, responsive, and situated nature of learning.

CO-LEARNING: SHARED AGENCY IN KNOWLEDGE PRODUCTION

Co-learning recognises that staff and students are both learners and contributors within a creative ecosystem. As Mike Neary argues, we are (or should be) producers of knowledge, not passive consumers.[17] This theme supports a shift away from top-down, delivery-based models toward an egalitarian studio-ing culture, where knowledge is co-created through dialogue, proximity, and shared inquiry. This aligns with what Orr and Shreeve describe as the "sticky curriculum," where knowledge is tacit, explicit, and experiential—including "the known, the unknown and the search for the 'not yet known.'"[18] In such a model, learning is not linear or easily mapped; it is shaped by the student's direction, context, and evolving understanding. This ambiguity is not a flaw but a feature of creative education, where co-learning thrives in the space between what is known and what is yet to be discovered.

Co-learning amplifies the university's broader mission to nurture independent, critical thinkers and foster collaboration. It values mutual presence over hierarchy, where spontaneous insight, peer exchange, and informal reflection are seen as educationally rich—not extra to the curriculum, but central to it. While this kind of learning may have historically occurred informally, outside of scheduled teaching, we want to structurally embed it within core hours.

Crucially, it also challenges entrenched hierarchies. When tutors and students learn together by 'being alongside'[19] each other—through shared making, experimenting, and problem-solving—they model horizontal learning relationships. This levelling fosters community, dissolves rigid boundaries, and supports an accessible culture where everyone can meaningfully contribute. As Heidegger writes, "teaching is more difficult than learning because what teaching calls for is this: to let learn. The real teacher, in fact, lets nothing else be learned than – learning."[20] This ethos of "letting learn" underpins co-learning, where the educator's role is not to dictate outcomes but to create the conditions for discovery, dialogue, and shared transformation.

Creating the conditions for co-learning requires structural recognition of its value: time, space, and permission to dwell in the uncertain and what we are yet to know. Emily Ogden offers a resonant perspective, describing "unknowing" not as a lack of information but as "a capacity to hold the position of not knowing yet – possibly of not knowing ever… living with the dimness that I will mostly inhabit."[21] This framing supports the ethos of co-learning as a shared, open-ended inquiry rather than a fixed transfer of knowledge. When this is in place, we see not just collaborative outputs, but communities of practice[22] that extend beyond the studio. These networks reflect the best ambitions of Higher Education—supporting not just what students make, but how they come to

understand their place as thinkers and makers within a shared, evolving field that extends beyond the university and into the world. As Graham and Goldsberry argue, for encounters in the art classroom to be "meaningful, generative, disruptive, and productively disturbing," both students and educators must "lean into conditions and encounters with events, objects and spaces that put them in relation to an outside—the unforeseen, unthought, and unmade."[23] This type of openness is central to co-learning, where the educator is not a transmitter of fixed knowledge but a co-navigator of emergent possibilities.

QUALITY: FIT-FOR-PURPOSE ENVIRONMENTS FOR CREATIVE LEARNING

Quality in studio education can often be misunderstood as luxury or excess.[24] In reality, it refers to the baseline conditions necessary for meaningful creative learning. This theme repositions quality as infrastructure, not indulgence—encompassing materials, facilities, and people that can support experimentation, failure, and growth.

We align with the university's aspiration for excellence by advocating for environments that are fit-for-purpose. Budgetary constraints, shrinking course allocations, reduced technical support and metric-driven accountability systems risk reducing "quality" to what can be counted—attendance, module outcomes, student satisfaction surveys - but what is measurable in this way is not always what matters most in studio learning.

A high-quality creative education depends on access to materials and resources that invite and allow process. It requires tools, materials, and enough studio space so that ideas can be tried, can fail, and can be tried again. Likewise, quality relies on staffs ability to attend to students' evolving trajectories, not just to deliver predetermined content. Quality emerges when staff have the capacity to offer attentive, responsive guidance—something that cannot happen when their time is fragmented across too many demands. Experienced staff and skilled technicians who are not 'run off their feet' are vital.

Central to this is trust: trust in staff to exercise academic judgement in recognising what students need, and trust in students to navigate uncertainty as part of their creative development. Institutions must have the confidence to allow educators to teach in ways they know foster deep learning even when these outcomes can't be tracked on a spreadsheet and may only be fully recognised by students long after they have graduated. Quality thrives when staff have the autonomy to shape teaching according to the context of the field, rather than conforming to externally imposed requirements. Too many enforced modules and paperwork-heavy systems risk replacing attentiveness with administration, thereby lowering quality and diverting energy away from the very conditions that nurture meaningful learning.

This is not a call for indulgence, but an articulation of what supports rich, complex, and lasting learning. Quality is not the cherry on top—it is the soil in which creativity takes root. By framing it as foundational rather than aspirational, we affirm our shared commitment to educational environments where students and staff alike can thrive.

CONCLUSION

At the heart of this research is a pressing paradox: creativity is now identified as one of the four essential skills for future employment and yet the very conditions that make it possible are being steadily and institutionally eroded. While each of our five themes stands on its own, together they articulate a shared recognition: creativity requires fit-for-purpose conditions—time, space, attention, materials, and an inclusive environment—that can support uncertainty, curiosity, and growth. These conditions are not extras—they are the groundwork of innovation. We advocate for better, recognising that quality creative learning is not a luxury, but a necessity. 'Studio-ing' can fully reflect the

university’s best ambitions: space and time for critical inquiry, collective learning, and the kind of creativity that responds to—and shapes—the world.

NOTES

[1] In work with colleagues from different subject areas, we found a common recognition that in addition to high-level discipline-specific knowledge, our graduates need to have the skills to 'create' and apply their knowledge in interdisciplinary teams and settings as we respond to 'wicked' problems and future complexity. This correlates with governmental and industrial strategies for the importance of developing a creative skill set for graduates across all subjects. Many of the core learning outcomes in art and design—curiosity, analysis, criticality, reflection, peer-to-peer learning, and student agency—align with these priorities and have been identified as essential attributes for surviving and thriving in the future world of work. As the World Economic Forum notes, "creative thinking and resilience, flexibility and agility are also rising in importance, along with curiosity and lifelong learning." The OECD's Future of Education and Skills 2030 project highlights well-being, co-agency with peers, teachers, parents and communities, and student agency as key orientation points for future learning. See: Till Leopold, 'Future of Jobs Report 2025: The Jobs of the Future – and the Skills You Need to Get Them', World Economic Forum, 8 January 2025, https://www.weforum.org/stories/2025/01/future-of-jobs-report-2025-jobs-of-the-future-and-the-skills-you-need-to-get-them/ and OECD, 'Future of Education and Skills 2030/2040', OECD, accessed 17 July 2025, https://www.oecd.org/en/about/projects/future-of-education-and-skills-2030.html.

[2] Artist-teachers understand that in 'studio-ing' we are describing a practice-based method where 'the studio' is not just a place – it is a state of mind or way of thinking and being. Members of Smatterings have previously explored some of the characteristics of such 'studio-ing' for creating and challenging knowledge. See: Maggie Ayliffe and Christian Mieves, 'Dirty Practice: A Painting Workshop and the Hidden Curriculum', in *Teaching Painting: How Can Painting Be Taught in Art Schools?*, ed. Ian Hartshorne, Donal Moloney, and Magnus Quaife (London: Black Dog Publishing, 2016), 52–57; Christine Stevens and Danica Maier, 'The Effect of Summer Lodge on Artistic Research and Pedagogy at NTU and Beyond.', (*Research Catalogue*, 2016).

[3] The OFS (Office for Students) is the independent regulator of higher education in England, responsible for ensuring that students receive high-quality education and outcomes.

[4] Sara Ahmed, 'A Useful Manifesto', Substack newsletter, *Feministkilljoys* (blog), 11 July 2025, https://feministkilljoys.substack.com/p/a-useful-manifesto.

[5] List of key conferences we shared at and gathered from: 'On Not Knowing: How Artists Teach', Glasgow School of Art (June 2023); 'CHEAD Leadership Seminar on Studio Cultures', online (October 2023); 'Midlands Conference for Critical Thought', Nottingham Trent University (April 2024); 'Essential Not Optional', University of Lincoln (June 2024); 'National Association for Fine Art Education', University of the Arts Canterbury (September 2024); 'A Manifesto for Art Education', Baltic Gateshead and Northumbria University (February 2025); 'AMPS Focus on Pedagogy', Czech University, Prague (June 2025).

[6] Additionally, deconlonication needs to be meaningfully embedded within the curriculum, as Syliva Theuri identifies, "A diverse student body brings with them ideas that require a decolonised educational space: a decentring of European norms is necessary in order to give equal room and weighting to nonEuropean knowledge systems and ways of being." Syliva Theuri (2020) https://creativelandtrust.org/wp-content/uploads/2022/02/CLT_Representation-of-women-artists-2020.pdf

[7] Shari Tishman, *Slow Looking: The Art and Practice of Learning through Observation* (New York, NY ; Abingdon, Oxon: Routledge, 2018).

[8] Abraham H. Maslow, 'A Theory of Human Motivation', *Psychological Review* 50, no. 4 (1943): 370–96; Saul Mcleod, 'Maslow's Hierarchy of Needs', Simply Psychology, 29 December 2020, https://www.simplypsychology.org/maslow.html.

[9] Basak Ertur, 'The Nomadic Hive Manifesto', Critical Legal Thinking, 11 December 2010, https://criticallegalthinking.com/2010/12/11/the-nomadic-hive-manifesto/.

[10] Nancy Kline, *Time to Think: Listening to Ignite the Human Mind*, Business Personal Development (London: Cassell Illustrated, 2014); Nancy Kline, *More Time to Think: A Way of Being in the World* (London: Cassell, 2015).

[11] NAFAE, 'Roundtable On Collaboration Between Mainstream and Alternative Art School: A Roundtable Discussion Between Members of The National Association of Fine Art Education', in *Co-Operative Education, Politics, and Art Creative, Critical, and Community Resistance to Corporate Higher Education*, ed. Richard Hudson-Miles and Jackie Goodman, Routledge Research in Arts Education (Abingdon, Oxon New York, NY: Routledge, 2025), 34, https://doi.org/10.4324/9781032655352.

[12] Juhani Pallasmaa, *The Thinking Hand: Existential and Embodied Wisdom in Architecture*, AD Primers (Chichester, U.K: Wiley, 2009), 143.

[13] Paulo Freire, *Pedagogy of the Oppressed*, trans. Myra Bergman Ramos, Published in Penguin Classics 2017, Penguin Modern Classics (New York London New Delhi Sydney: Penguin Books, 2017), 57.
[14] Michael Polanyi, *The Tacit Dimension*, Revised ed. edition (Chicago; London: University of Chicago Press, 2009); Michael Polanyi, *Personal Knowledge: Towards a Post-Critical Philosophy*, New edition (London: Routledge, 1998).
[15] Dom Heffer, 'Identifying Transferable Qualities from Studio Practice to Teaching: Inwards Looking, Outwards Facing', in *Co-Operative Education, Politics, and Art Creative, Critical, and Community Resistance to Corporate Higher Education*, ed. Richard Hudson-Miles and Jackie Goodman, Routledge Research in Arts Education (Abingdon, Oxon New York, NY: Routledge, 2025), 112–21, https://doi.org/10.4324/9781032655352.
[16] Jeroen Lutters, *No University: A Creative Turn in Higher Education* (Arnhem Netherlands: ArtEZ Press, 2021), 41.
[17] Mike Neary, 'Student as Producer: Research-Engaged Teaching Frames University- Wide Curriculum Development.', *The Council for Undergraduate Research Quarterly* 35, no. 2 (2014): 28–34; Mike Neary, *Student as Producer: How Do Revolutionary Teachers Teach?* (Winchester, UK: Zero Books, 2020).
[18] Susan Orr and Alison Shreeve, *Art and Design Pedagogy in Higher Education: Knowledge, Values and Ambiguity in the Creative Curriculum*, Routledge Research in Education (London; New York: Routledge, Taylor & Francis Group, 2018), 148.
[19] Andrew Middleton and Cilla Ross, 'Exploring Perceived Identities of Art Educators: Outsiders on the Inside and Alongside?', in *Co-Operative Education, Politics, and Art Creative, Critical, and Community Resistance to Corporate Higher Education*, ed. Richard Hudson-Miles and Jackie Goodman, Routledge Research in Arts Education (Abingdon, Oxon New York, NY: Routledge, 2025), 59–74, https://doi.org/10.4324/9781032655352.
[20] Martin Heidegger, *Basic Writings: Martin Heidegger*, Routledge Classics (London: Routledge, 2011), 120.
[21] Emily Ogden, *On Not Knowing: How to Love and Other Essays* (London: Peninsula Press, 2022), 4.
[22] Étienne Wenger, *Communities of Practice: Learning, Meaning, and Identity*, 18th printing, Learning in Doing Social, Cognitive, and Computational Perspectives (Cambridge: Cambridge University Press, 2008).
[23] Mark Graham and Clark Adam Goldsberry, eds., *Reimagining the Art Classroom: Field Notes and Methods in an Age of Disquiet*, New edition (Bristol: Intellect Books, 2023), 111.
[24] The task of teaching creative practice is designated a specific space, but the institutional focus is too often on that location as a quantifiable physical resource rather than a pedagogic method in itself for learning how to be creative. This confusion of resource and pedagogy causes problems. Specialist space is institutionally accounted for in timetables and footfall but learning 'to studio' is not something that can fit neatly into a module or timetable envelope. As students get confident in 'studio-ing' they understand that they need to negotiate their own working patterns and behaviours as creative practice. We see this take place at undergraduate level, and for some it may begin at school where the art room (or music or drama spaces) can be a place to hang out and work independently. School students in Sheffield have recently protested over the curricular changes that reduced their access to such creative opportunities. See Simon Thake, 'Sheffield: Parent and Pupil Backlash over Reduced Arts Teaching', BBC News, 13 May 2025, https://www.bbc.com/news/articles/clygjzke048o; N8 Research Partnership, 'Child of the North 2024/25 Campaign - Report 12', *N8 Research Partnership* (blog), accessed 13 May 2025, https://www.n8research.org.uk/research-focus/child-of-the-north/2024-campaign/arts-creativity/.

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FINE ARTS ALUMNI REFLECTIONS ON CURRICULUM AND COURSEWORK: A SOCIAL REALIST CASE STUDY

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INTRODUCTION

The challenge facing Fine Arts higher education today is how to maintain disciplinary depth while also preparing students for diverse, evolving creative careers in the various industries. This paper presents findings from a qualitative case study exploring Fine Arts alumni reflections on their undergraduate curriculum at the Michaelis School of Fine Art, University of Cape Town. The study interrogates whether the curriculum adequately prepares graduates for integration into the global arts industry. Drawing on the theoretical frameworks of Margaret Archer's Morphogenetic Approach and Karl Maton's Legitimation Code Theory (LCT), the research highlights gaps in the curriculum and advocates for pedagogical transformation. Key recommendations include the integration of arts entrepreneurship education, cross-disciplinary coursework, and contemporary creative technologies. These findings have relevance for global discussions on curriculum responsiveness and educational alignment with industry and student needs.

BACKGROUND AND RATIONALE

Fine Arts departments within research-intensive universities often have the autonomy and freedom to design and implement their own curricula. However, such freedom, when reflected on by stakeholder feedback such as alumni or industry engagement, can often lead to curricula that do not sufficiently prepare students for the complexities of creative industries. The reflections of an alumni group provide particularly valuable feedback not only because they have successfully completed the programme being examined but also because they have the advantage of viewing it from a 'real world' perspective.[1]

Alumni, having completed the degree programme and transitioned into the workforce, possess valuable insights into the real-world applicability of their education. These reflections provide a unique epistemological standpoint for evaluating curriculum relevance and effectiveness. Curriculum evaluation and development – alumni are in the unique position to evaluate the effectiveness of their study in their professional lives. They can indicate the shortcomings they experienced during their time at university.[2]

The Michaelis School of Fine Art is one of the most prestigious institutions for Fine Arts education on the African continent. Its curriculum is rooted in studio-based pedagogy, emphasising strong conceptual development, critical thinking, and rigorous art-making studiowork practices. However, as

alumni testimonies and global educational trends suggest, this model may need a certain level of recalibration. This study seeks to illuminate whether the curriculum that is offered facilitates successful career outcomes and responds effectively to the evolving global arts landscape.

Roughly fifty students graduate annually from the Michaelis School of Fine Art with their Bachelor's in Fine Art degree; however, the majority of graduates do not pursue a career in the Fine Arts, and many abandon any creative arts pursuits in light of other unrelated career pathways. It may be seen that a crucial requirement for the artist and arts educator is the need to consider what precisely is the place and/or role of the creative arts as a knowledge field in globalised economies and if there is room for its creativity, its public and institutional legitimation, its place to breathe and live - beyond that of serving the needs of the marketplace as a sole provider of value.[3]

There needs to be a shift to adopt a holistic view on curriculum offered and move from the traditional status quo that represents the structural and cultural history of many Fine Arts higher educational institutions to one closely aligned to the contemporary arts industry and its art practitioners and adjunct career roles. Unlike teachers in schools with a national curriculum, university academics have fairly extensive agency to design their curricula, albeit conditioned by various mechanisms. One significant mechanism that conditions such agency is the location of universities in society.[4]

Universities have the responsibility to formulate their curriculum around transferable skills that are relevant to not just institutional research successes, but also the external spaces that make up the creative arts industry. Students' experiences of their learning process are a key element to their success. We must offer the type of learning environment that facilitates students' engagement with their own learning to allow them to express their agency and contribute to the curriculum.[5]

Fine Arts curriculum and coursework are strongly determined by the cultural reproduction of the contemporary practice of artists situated both locally and abroad. The nature of the discipline is reliant on awareness and understanding of these practices, influences, and artistic output of peers within the arts field – practicing artists, curations, exhibitions, art auctions, art residencies, art competitions, and research publications.

THEORETICAL FRAMEWORK

This study is underpinned by Archer's Morphogenetic Approach and Maton's Legitimation Code Theory (LCT). Archer's Morphogenetic Approach, situated within a social realist ontology, provides a suitable framework for examining the interplay of structure, culture, and agency over time. It allows for an analysis of how institutional norms and academic traditions either enable or constrain curriculum transformation. The Morphogenetic cycle (T1-T4) identifies how structural and cultural conditioning influence social interaction and potential elaboration or morphostasis. Morphogenesis is the process of change within and across the three sets of emergent properties that make up the social world.[6]

From an educational perspective, Archer's Morphogenetic Approach suggests that educational interventions and reforms should consider both the structural aspects of the system and the agency of individuals. It acknowledges that educational practices and policies need to be responsive to societal contexts, while also promoting the development of agency among students and educators. This can involve creating learning environments that foster critical thinking, student autonomy, and empowerment, therefore allowing individuals to actively shape their educational experiences.

Maton's Legitimation Code Theory complements Archer's framework by offering a coding system to examine the epistemic and social dimensions of knowledge practices. LCT identifies different modalities of legitimation — knowledge-knower structures — that determine what counts as legitimate knowledge. In Fine Arts education, where tacit knowledge, subjective interpretation, and

creative intuition are valued, LCT helps decode the underlying biases in curriculum design that may marginalise professional practice or entrepreneurial knowledge. We think it is important for academics to be continually reflecting on and reviewing their own epistemologies of knowledge and to be assessing how their views interact with students' views of knowledge.[7]

METHODOLOGY

This study employed a qualitative case study approach to investigate alumni experiences and perspectives. Data were collected through online surveys and semi-structured interviews with graduates spanning a ten-year period.

For the purposes of this research, the defined cohort comprised 494 individuals who completed the undergraduate Fine Arts degree at the University of Cape Town between 2012 and 2022. This group constituted the unit of Fine Art alumni selected for inclusion in this qualitative case study.

As this research focuses on a decade-long period, all the curriculum and coursework that were offered in the undergraduate degree programme of Fine Arts were subject to analysis. 186 pages of alumni responses were captured and then analysed into themes. Secondary data included curriculum documentation and course descriptions. Thematic analysis was used to identify recurring patterns in the alumni responses, compared and analysed with institutional documents and curriculum handbooks to assess coherence between intended curriculum outcomes and alumni realities.

Figure 1. Word Cloud of alumni keyword responses (larger words illustrate increased frequency)

FINDINGS AND DISCUSSION

Three key themes emerged from the research data: 1) the absence of structured arts entrepreneurship education, 2) limited opportunities for cross-disciplinary learning, and 3) inadequate integration of digital and creative technologies.

1. Arts Entrepreneurship

Alumni respondents expressed a strong desire for curricular components that address the business aspects of artistic careers. Many reported difficulties in navigating the art market, establishing sustainable practices, and managing freelance work. The curriculum, they argued, romanticised the notion of the independent artist without equipping students with practical skills in marketing, finance, or legal matters. As one respondent noted, "I left with a portfolio but no idea how to invoice, negotiate contracts, or apply for funding."

Global arts curriculum trends support the need for arts entrepreneurship education. Beckman[8] and White[9] argue that creative graduates need contextual business and technology skills to navigate their careers in the modern creative arts industry. The inclusion of such content in Fine Arts curricula is no longer optional but essential.

2. Cross-Disciplinary Learning

Respondents highlighted a rigid disciplinary boundary within the Fine Arts programme that limited collaboration with other departments. While elective modules existed, they were not integrated into the core learning. Alumni described missed opportunities for collaborative learning with students from dance and drama, architecture, film and media studies, or computer science.

Cross-disciplinary education fosters innovation and reflects real-world practices where artists work across mediums and contexts. The global trend toward interdisciplinary learning in arts education aligns with calls by educators like Grierson,[10] who emphasise that artists must be adaptable and responsive to diverse knowledge domains.

3. Technology Integration

While the Michaelis curriculum includes New Media as a major, many alumni felt that digital literacy was insufficiently embedded across the programme. Software proficiency, digital portfolio development, social media strategy, and creative coding were areas identified as critical but underemphasised in the current curricula.

Technological fluency is indispensable in today's creative arts ecosystem. Graduates often compete in digital marketplaces, engage in online exhibitions, and participate in networked creative economies. Thus, technology integration should not be a disciplinary silo within New Media but mainstreamed across the full expanse of the curriculum offered.

Applying Archer's Morphogenetic Approach

Archer's Morphogenetic framework allows us to trace how the curriculum at the Michaelis School of Fine Art has evolved or resisted change over time. The institutional structures of a research-intensive university, along with its policies and long-standing faculty norms, have led to limitations in curriculum reform. The cultural conditioning of the Fine Arts department, with an emphasis on conceptual practice and fine arts tradition, has allowed stagnancy in the development of a curriculum focused on the commercialised arts industry. Alumni feedback has also indicated that the agentic properties of academia create morphostasis within the department.

T1: Structural and cultural conditions have favoured a traditional fine arts curriculum.

T2-T3: Alumni and student protests during the decolonisation of education movement began to create a space for interaction.

T4: Some structural elaboration occurred (as in the introduction of electives, the changes in some course structures and content), but much of the curriculum remained unchanged, signalling partial morphogenesis.

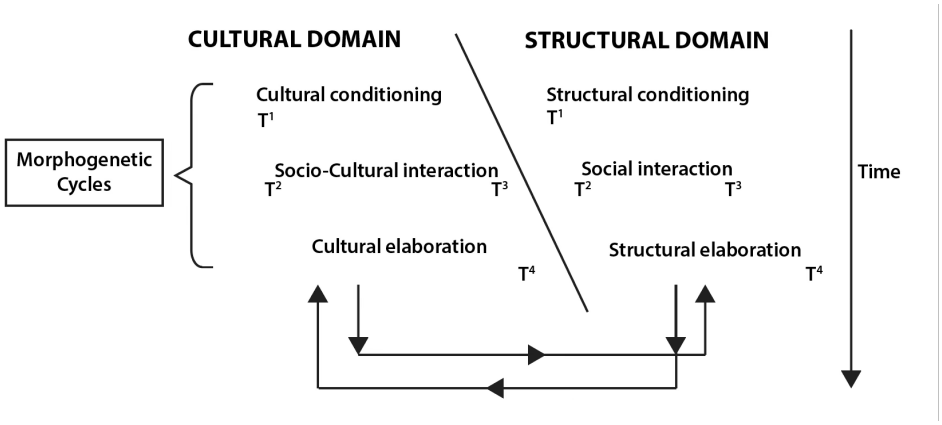

Figure 2. Archer's Morphogenetic Cycles - Cultural and Structural domains

Applying Maton's Legitimation Code Theory

Legitimation Code Theory reveals that the Michaelis curriculum privileges "knower codes," where legitimate performance is based on the student's cultivated gaze or disposition. This disadvantages students seeking "knowledge codes," which require explicit criteria, practical skills, and transferable competencies. For example, entrepreneurship and digital tools fall outside the dominant code and are thus marginalised in the curriculum that is offered in the four-year qualification.

A more balanced curriculum would embrace a "semantic wave," oscillating between theoretical abstraction and practical application.[11] Embedding arts management modules or digital workshops within studio courses would enact this balance. Curriculum transformation has to begin in the field of knowledge production. A transformed curriculum would draw on research that critically deconstructs the historical development of the disciplines.[12]

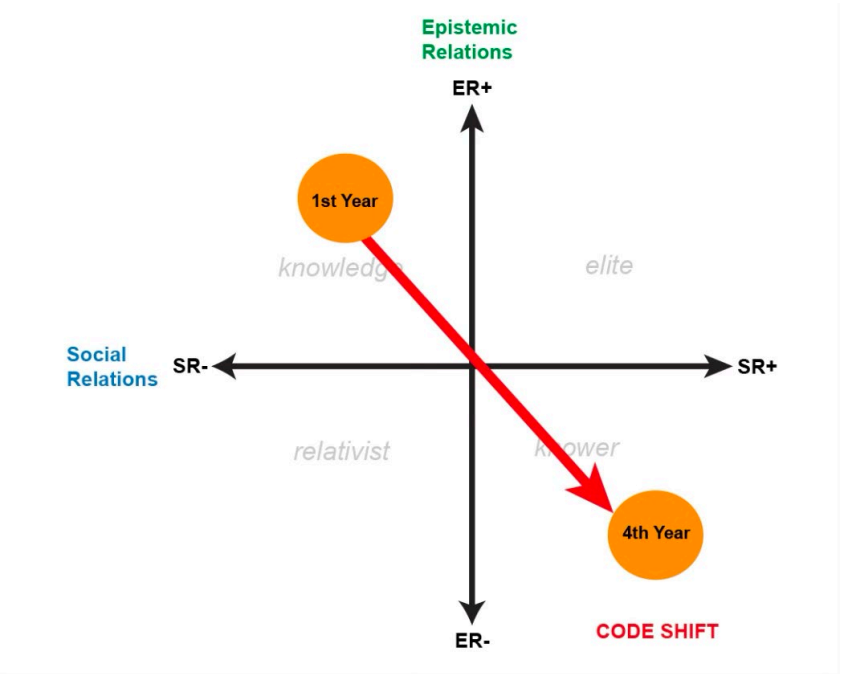

Figure 3. Legitimation Code Theory - Code Shift from Knowledge Code to Knower Code

Global context and Implications

The challenges identified at Michaelis resonate with global debates on the role of arts education in preparing students for twenty-first-century careers. Institutions such as the University of the Arts London and Parsons School of Design have responded by embedding entrepreneurship, interdisciplinary practice, and digital fluency into their core programmes.

Between 2015 and 2018, South Africa experienced a series of student protests, during which students demanded greater access to tertiary education, the decolonisation of the curriculum, and the removal of iconography from public universities and educational institutions that represented the apartheid and colonialist eras. These protests also surfaced many issues that black students faced in their plight to receive quality higher education. The University of Cape Town underwent a series of initiatives that aimed at decolonising the curriculum and dismantling the structures that inhibited equitable access to tertiary programmes, however, much of the curriculum changes remained the responsibility of the academic and departmental staff of the university. Changes imposed from outside the discipline onto curriculum and pedagogy can be fiercely resisted by these academics, and those outside the discipline may struggle to identify the basis of such resistance. There is also the reality that a hierarchy of status is evident between the three fields, resulting in research, undertaken in the field of production, being valued at the cost of teaching, in the field of reproduction.[13]

In South Africa, where economic challenges and high youth unemployment rates are prevalent, the need for career-aligned creative education is even more pressing. As Ngara argued, graduates must be prepared not only in their craft but also in their ability to navigate diverse professional landscapes.[14] Few would argue that curriculum should not change in some degree to meet the societal needs and demands of the day.[15]

RECOMMENDATIONS

Based on the findings, this research proposes three key recommendations for curriculum reform:

1. Introduce Core Modules in Arts Entrepreneurship

– Covering topics such as arts marketing, project funding, pricing, legal rights, and portfolio development.

– Delivered through workshops, industry partnerships, and experiential learning.

2. Facilitate Cross-Disciplinary Collaborations

– Establish joint modules with design, media, and technology departments.

– Encourage collaborative studio projects, exhibitions, and research outputs.

3. Mainstream Creative Technology Training

– Ensure all students, regardless of major, gain competency in relevant software, digital tools, and emerging media.

– Develop digital literacy modules that can be integrated within all studiowork courses.

CONCLUSION

Fine Arts education must evolve to reflect the realities of contemporary creative practice. This case study of alumni reflections reveals that while conceptual and studio training remain vital, it is no longer sufficient. Curricula must integrate business acumen, technological fluency, and interdisciplinary learning to equip graduates for sustainable careers.

Archer's and Maton's frameworks reveal the structural and cultural forces that shape curriculum and the possibilities for transformation. Alumni voices are not only valid but necessary for informing curriculum development. As higher educational institutions navigate global pressures and local responsibilities, engaging alumni as agents of change can help to bridge the gap between academic tradition and industry relevance.

What makes little sense is expecting that we can drive students through four or five or six years of a highly regimented curriculum that affords few choices and asks for little individual initiative, and then expect them to flourish in a world that rewards creativity, opportunism, experimentation, and distinctiveness more than anything else – in short, an entrepreneurial world.[16]

NOTES

[1] Shirley Carr, Frances Chua, and Hector Perera, *University Accounting Curricula: The Perceptions of an Alumni Group,* (2006), 359–376
[2] Gillian Saunders-Smits and Erik de Graaff, "Assessment of Curriculum Quality Through Alumni Research," (2012), 133–142.
[3] Elizabeth Grierson, *Art as a Matter of Learning and the Learning That Matters in Art*, (2011), 345.
[4] Chrissie Boughey and Sioux McKenna, *Understanding Higher Education: Alternative Perspectives* (2021), 94.
[5] University of Cape Town, *University of Cape Town Strategic Plan, UCT Vision 2030* (2021), https://www.uct.ac.za.
[6] Jo-ann Elizabeth Vorster, *Theoretical Perspectives: A Social Realist Approach,* (2010), 23.
[7] Alan Cliff and Rob Woodward, *How Do Academics Come to Know? The Structure and Contestation of Discipline-Specific Knowledge in a Design School*, (2004), 289.
[8] Gary Beckman, *Adventures in Entrepreneurship: The Art of Being an Artist*, Artivate, (2007), 10–24.
[9] Jason White, *Barriers to recognising Arts Entrepreneurship Education as Essential to Professional Arts Training,* (2022), 87–103.
[10] Elizabeth Grierson, *Art as a Matter of Learning and the Learning That Matters in Art*, (2011), 345.
[11] Karl Maton, *Knowledge and Knowers: Towards a Realist Sociology of Education* (2014), 19.
[12] Kathy Luckett, *Curriculum Contestation in a Post-Colonial Context*, (2016), 8.
[13] Chrissie Boughey and Sioux McKenna, *Understanding Higher Education: Alternative Perspectives* (2021), 107.
[14] Emmanuel Ngara, *Art and Ideology in the African Novel* (1985), 56.
[15] Jerry Logan and Janel Curry, *A Liberal Arts Education: Global Trends and Challenges,* (2015), 66–79.
[16] Douglas Dempster, *Some Inmodest Proposals (and Hunches) for Conservatory Education,* (2011), 250.

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HYPERTANGIBLE: THE MATERIALITY OF THE BOOK AS A SPACE FOR CREATIVE EXPERIMENTATION IN THE DIGITAL ERA

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INTRODUCTION

Today everything is hybrid. We inhabit analogue and digital dimensions simultaneously, moving indistinctly from one media to another. The physical and printed book is now a medium of choice among many others and therefore, in the twenty-first century all books and narratives are hybrid in every sense. Information now flows seamlessly from one form to another. Readers can nowadays read a text simultaneously on different platforms: one can start by reading a book in print, shift to the laptop screen, continue scrolling on a tablet, and finish reading on the constricted interface of smartphones and smartwatches. Hybridity has transformed fixed and printed narratives into documents that are fluid, changeable, and immaterial. Yet, this hybridity has also brought forward an interest in the material surface of the book, together with a focus on narratives that work exclusively within the printed medium but are aware of the digital influence.

As part of a research project that studies the possibilities for communication offered by the book as a physical object in the digital era, this article explains the development of a series of workshops designed to explore the importance of the materiality of the book in a contemporary creative context and its impact on the development of rich and engaging design processes. By challenging the conventions of reading and the book, the project seeks to create spaces for creative reflection and experimentation. The purpose is to foreground the importance of tangible and playful exploration as part of a design process, and how working with materiality and embodied creative techniques helps stimulate students and designers to question established ideas, challenge conventions, and strive to explore the limits of current design concepts.

BRINGING MATERIALITY TO THE FORE

A lack of connection between narrative and materiality

In 1917, referring to the experience of perceiving art objects, Russian formalist Viktor Shklovsky claimed that perception becomes automatic with habit.[1] Reading a book and turning the page are habits as well, and ones that are culturally ingrained. Reading is an act to which no attention is paid, neither to the turning of the page or the scrolling of a text. Both the materiality of the book and the digital device become a backdrop, a secondary aspect to the act of reading. As novelist Shelley Jackson[2] noted "turning the page […] has become an invisible action, because it has no meaning in

most texts, the little pause it provides is as unreflective as breathing."[3] This means that texts are not usually conceived specifically for the object in which they are going to be printed on; nor is the object taken into consideration during the writing process. What matters is the content, the immediate access to the text, and not how that access happens materially.

This can be illustrated with a simple example. Imagine a Dickens novel. *Hard times*, as Figure 1 (left) shows, can be considered an epitome of the nineteenth-century novel. If the text is removed from the pages and put into loose sheets of paper, the narrative would work in exactly the same way as it does within the bound pages of the book. Dickens' words, order and meaning remain unchanged. It would probably be a bit more uncomfortable to read because of the loose pages, but the reading of the narrative would be roughly the same. Besides, by removing the text from the pages, the book would become blank, as Figure 2 (right) shows. Similarly to what happened before with the text, the now blank object still works in the same way as it did when Dickens' words were printed on its pages: their order and structure remain unchanged, the same movement of the hands is required to hold the book and turn the pages, the reading sequence is identical. By separating the narrative from its physical container, it becomes obvious that both have been working together without either of the two being specifically conceived or designed for the other, mainly out of pure habit.

Figure 1. On the left, a typical spread from Hard Times *by Dickens (1854) in the 2017 Penguin Random House edition. On the right, a spread from a blank book (by the author). Images taken by the author.*

Fluidity and the material turn

In the twenty-first century, hybridity is generally understood as the convergence between analogue and digital technologies. In particular, in books and literature it refers to works that result from digital practices of writing and reading, combined with traditional publishing. Readers inhabit analogue and digital dimensions simultaneously, moving in a sort of continuum that embraces both technologies together. As Kienne Brillenburg Wurth suggests, both the material and the immaterial are part of the same continuum, and thus they cannot become opposites but points that create feedback loops between each other.[4] They influence each other as part of the convergence culture defined by David Thorburn and Henry Jenkins, characterised by a collaboration between media, and in which the functions of the previous analogue technology are reshaped by the more recent digital one.[5]

The shift from paper to digital format has disassembled the fixed primacy of the printed word and generated a lack of physical presence: immateriality is one of the experiences brought by digital technology.[6] Information, which until the second half of the twentieth century, was thoroughly associated with the physicality of print and paper, has lost its dependence on the material medium. It has become fluid and in constant flow. It follows the patterns of liquids and gases, to borrow the

metaphor from Zygmunt Bauman,[7] and its form is continuously subjected to changes, unable to keep the same shape for a long time. Immateriality has subordinated everything to the digital dimension. Books, films, music, etc., are now documents or files. As Alan Liu explains, texts are documents, and everyone nowadays just writes and reads documents, instead of books, stories or poems.[8] Information, and thus also literary works, have acquired a fluid dimension that can be shaped in any form and direction. Therefore, as the printed book co-exists with the influence of the digital, it becomes hybrid and liquid in every sense.

However, the fluidity and immateriality of the digital dimension have also brought a renewed interest in the object, in the physical book. The attention to the material aspect of books in the twenty-first century emerges from the "material turn" induced by digital technology. Archaeologist Colin Renfrew explains that the electronic impulse has replaced the material object that held a central position in the nineteenth and twentieth centuries (i.e., banknotes, newspapers, bus tickets), and that through a process of dematerialization, the physical material reality is disappearing.[9] In consequence, and as a reaction to this, emerges a "new materialism" that focuses on the increasing importance of material objects and their role in social life. This material turn aims to study the object in a concrete, material, and physical dimension, which also has its influence on literature and design: it opens new ways to rethink the materiality of texts and the act of reading.[10] According to Bruno Latour, who has studied the agency of objects in depth, materiality is fundamental when performing an action: the physical medium influences and defines the activity.[11] Therefore, books, as objects that were once invisible because of their essential functional role, become more perceivable. The book moves from the background into the foreground in a digital environment. Furthermore, the fact that books become visible means that they can offer a physical reading experience different to that of the digital.

Bookishness and embodied reading

The renewed interest in the physical book is connected to a trend that has developed since the start of the twenty-first century, and which Jessica Pressman defines as the "aesthetic of bookishness".[12] From a general perspective, "bookishness" refers to creative acts that use the physical dimension of the book within a digital environment.[13] Within this trend there exists a focus on bookbound novels that use their physical dimension as an essential part of their narratives: they include their embodied nature, that which the digital lacks, into the reading experience.

These narratives are characterised by highlighting print qualities through the use of digital strategies: they include characteristics of digital media to enhance the materiality of the printed object and also create an artefact with multimedia qualities (such as the readers' ability to decide what and how to read, the lack of a primary axis of organisation, combinatorial features, etc.). In these works, readers need to manipulate and interact with the printed object in order to complete the reader experience. Novels such as Mark Z. Danielewski's *House of Leaves* (2000), Steve Tomasula's *VAS: An Opera in Flatland* (2002), Salvador Plascencia's *The People of Paper* (2005), Graham Rawle's *Woman's World* (2005), Steven Hall's *The Raw Shark Texts* (2007), Jonathan Safran Foer's *Tree of Codes* (2010), or J.J. Abrams' *S.* (2013), aim to challenge and foreground the role materiality can play in their reading experience (Figure 2).

These novels use the materiality of the book to create embodied reading experiences that put the physical dimension of the object at the front of the narrative. Contrary to what happened with the Dickens novel exemplified above, in these examples the content cannot be separated from the container because both have been written and designed for each other. Also, they demand interaction from readers, creating an embodied reading experience.

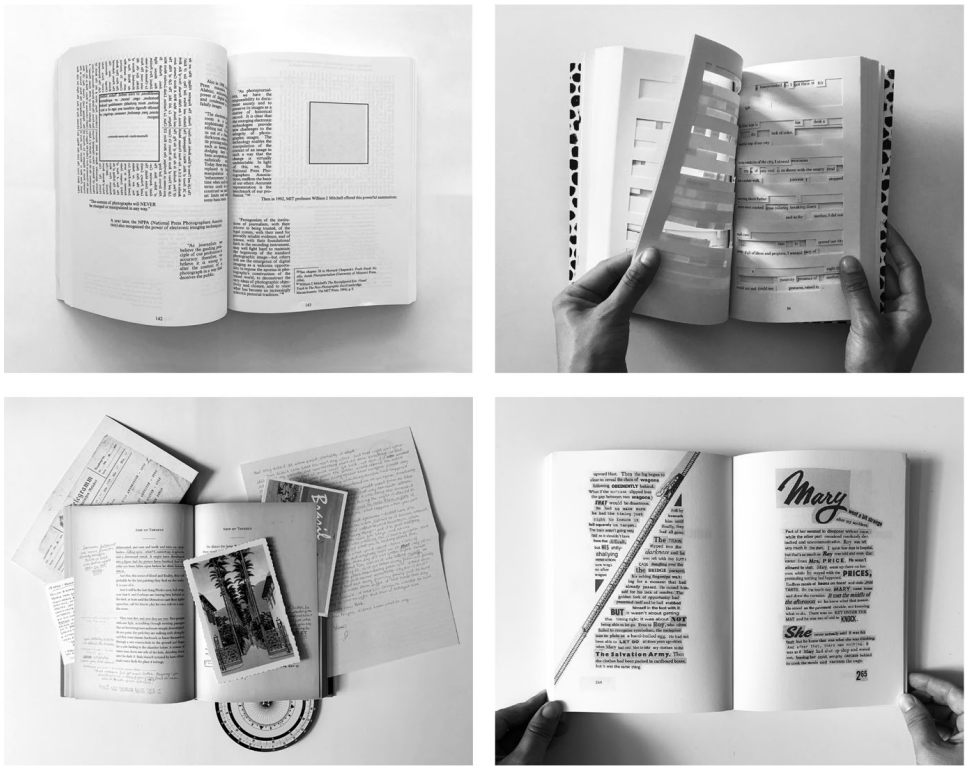

Figure 2. From top to bottom and left to right: House of Leaves *by Mark Z. Danielewski (2000);* Tree of Codes *by Jonathan Safran Foer (2010);* S. *by J.J. Abrams (2013); and* Woman's World *by Graham Rawle (2005). Images taken by the author.*

DEFINING HYPERTANGIBLE NARRATIVES

To subvert the automatic habit, Shklovsky proposed an act of "defamiliarization" through "an obvious display of the devices by which the familiar is made strange." [14] The more information becomes fluid and immaterial, the more obvious it is that printed books are material and have firm and visible limits. Books are enclosed artefacts that provide a stable and physical experience. These characteristics, which by the end of the previous century were still commonplace, have now become rare. Therefore, the digital medium has provoked a "defamiliarization" of the experience of physical reading, allowing us to look at the printed book from a new perspective, and opening up the door to challenge the potential of print.

As a result of the digital development, books are more susceptible to experimentation and exploration. This highlights the relevance that the physical medium can have for the narrative. As Tolva states, if the same word inscribed on paper and displayed on a computer screen means the same thing, then the only explanation is that we perceive a discrepancy, that the medium itself somehow affects how we think of the words.[15] Which means that the materiality of the book, its physical dimension, can have influence on the narrative.

Contrary to the new reading habits established by the digital and the fact that the new conventional reading ways happen across many platforms and media, narratives that react to the immateriality of the digital consider the physical dimension of the artefact as essential for narrative development. These works are built as an integral whole between narrative and material dimensions and work best in one medium: print. For this reason, these unconventional narratives could be labelled as "hypertangible". They are born under digital conditions, employing digital means, but are written and

designed to create embodied reading experiences that cannot be separated from their physical dimensions.
Therefore, a hypertangible narrative is one that foregrounds the material dimension and creates an embodied reading experience that works exclusively in print and resists being translated into an online environment. This does not mean a rejection of the digital world. On the contrary, hypertangible narratives constitute a reaction to the digital but at the same time re-evaluate the conventions of the printed book as such: they enhance print qualities and expand the possibilities offered by the material dimension of the book through the digital. In these cases, content and container cannot be separated without creating a different outcome from the original version.
Hypertangible narratives are a product of the digital and are born under its influence: written using digital software, designed with digital tools, produced and printed with digital technology, even expanded upon through digital networks. They not only constitute a response but also an acceptance of the new forms of reading, writing and communicating. These narratives tend to demand an attentive reading because they require an effort, as a counter-reaction to the speed at which information moves within the digital realm. They foster slowness and physical awareness, a thing that the digital world lacks.

HYPERTANGIBLE: A WORKSHOP

Taking these changes in media and communication habits into consideration, a series of workshops was created with the objective of experimenting with the materiality of the book and reflecting on these topics. According to Juhani Pallasmaa, the sense of touch is of great importance within the design process,[16] and this becomes even more relevant under the influence of the digital environment and the immateriality generated by it.
The main subject of the HYPERTANGIBLE workshop is to explore hypertangible narratives and open up a space to thinking by making. Thus, the workshop becomes a research and reflection method in itself, a strategy of questioning by making. The materiality of the book is used as a tool to question reality, expectations and conventions: it opens different creative processes to think through materiality and experimentation (Figure 3).
The workshop has a duration of 4 hours and is divided into two sections. The first part, of approximately 30 minutes, sets out the theoretical context and opens up the reflection on materiality through a brief history of the invisibility of the book, giving an overview of how the content of the book has been increasingly prioritised since the eighteenth century. This is followed by an explanation of hypertangible narratives and sharing numerous examples of relevant books. These references help participants to understand what kind of experimentation is expected from them, and also gives some initial ideas as to what they can do during the session.
The practical part is the core component of the workshop: participants are given a text, and they have to come up with a concept and create a proposal for a hypertangible publication. In other words, they are required to experiment with the physical form of the book to explore and develop the material dimension of the narrative. The purpose of the workshop is not to produce a finished editorial piece or publication, but rather a proposal of the reading experience that they have designed for the given text. By the end of the workshop, participants share with the group their physical outcome, their reflections and conclusions (Figure 4).

Figure 3. Image of the exploration process from a HYPERTANGIBLE workshop. Image taken by the author.

Figure 4. Physical outcomes from a HYPERTANGIBLE workshop. Image taken by the author.

According to Gregory Crane, the codex format has been so successful for many centuries not for literary but for utilitarian reasons.[17] Digital media displaced these utilitarian purposes, and therefore it seems natural that the printed book has gradually become more associated with the literary. When studying the novels that react to the digital dimension, Pressman concludes that literature has always

been more than just about information delivery, but about a form of experience.[18] This experience is what hypertangible novels in the twenty-first century aim to foreground by integrating the material dimension into the narrative. These approaches are also in line with Katherine Hayles' argument; that it has become essential to consider materiality at the centre of literary production in order to understand and deal with "how literature is changing under the impact of information technologies".[19] For this reason, in the workshop participants work with a short tale in order to create an embodied reading experience by integrating narrative and physical dimensions. Pieces by Jorge Luis Borges, Julio Cortázar or Italo Calvino are adequate for the workshop due to their thought-provoking and challenging qualities. These types of texts offer many different conceptual routes to explore and have proven very inspiring to motivate creativity during the sessions.

Even if the workshop uses the materiality of the book for creative experimentation, participants are not required to be designers or have any design knowledge. The workshop has been delivered in design and architecture schools (i.e. Polytechnic University of Valencia, ESDM Design School of Madrid or ESDA Zaragoza), but also in bookshops and cultural institutions open to the general public (i.e. Librería Bangarang Valencia). The main requirement is an interest in reading and in the book as object, with a willingness to reflect and challenge established ideas. However, when delivered in design schools, the workshop becomes a tool to foreground the importance of tangible and playful exploration as part of a design process (Figure 5).

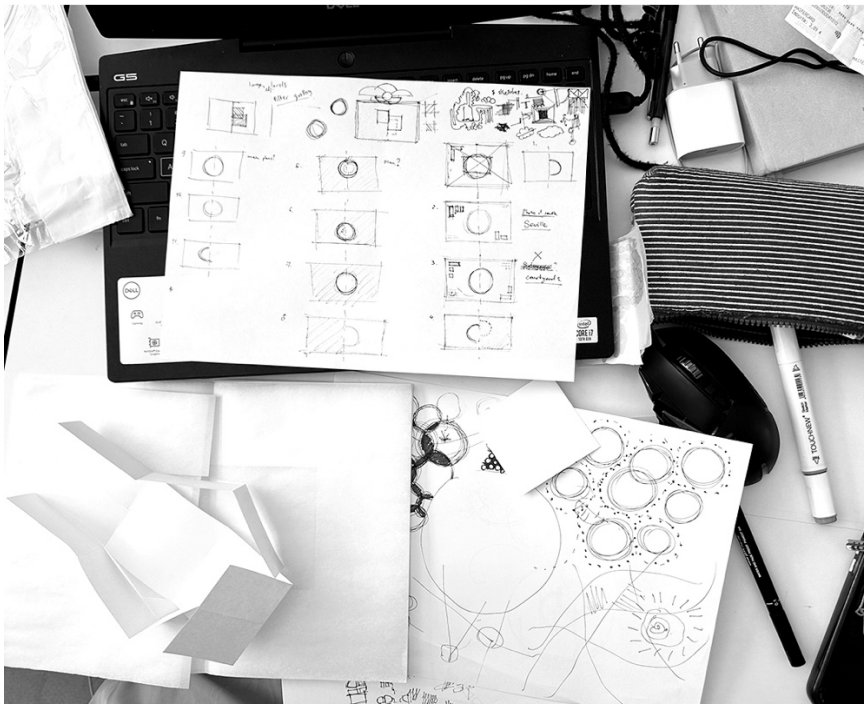

Figure 5. Sketches and material experiments from a HYPERTANGIBLE workshop. Image taken by the author.

The workshop has a component to speculative design, as it opens up ideas, concepts, and other ways of thinking about books, reading and the digital environment. In HYPERTANGIBLE, design is used as a tool to create not only things but ideas. [20] At the same time, as Marian Macken describes referring to books where materiality is present as a design strategy, the workshop foregrounds "thinking through the book as a form of spatial practice, one in which the book is cast as object, outcome, process and tool."[21]

The workshop considers how experimenting with the book reveals and facilitates certain aspects of the design process and opens up new creative journeys different to those of the digital. Working with materiality and embodied creative techniques helps to stimulate students and designers to question established ideas and processes, challenge conventions, and strive to explore the limits of our current design concepts.

CONCLUSION

Experimenting with the book contrasts with the current immaterial, immediate and fast-paced digital ways, and fosters a reflection on offline thinking methods, and slowed-paced and material creative processes. At the same time, it raises questions that reflect critically on the current status of the digital world and our relationship with it, and also on how communication and creative practices are changing day by day. HYPERTANGIBLE creates spaces for creative reflection and exploration. Experimenting with books communicates certain ideas about creative processes and thinking which offer new territories for reading and writing. Rather than the book being relegated to a secondary space, it can be reinstated as a critical practice in design, in reading and in writing.

NOTES

[1] Viktor Shklovsky, “Art as Technique”, in *Russian Formalist Criticism Four Essays*, eds. Lee T. Lemon and Marion J. Reis (Lincoln: University of Nebraska Press, 1965), 11.
[2] Shelley Jackson is mostly known for her interest in disembodiment and textual aggregation in her narratives. She is the author of *Patchwork Girl*, a hypertext written in Storyspace and published by Eastgate Systems in 1995.
[3] Shelley Jackson, “Stitch Bitch: The Patchwork Girl”, in *Rethinking Media Change: The Aesthetics of Transition*, eds. David Thorburn and Henry Jenkins (Cambridge: MIT Press, 2004), 251.
[4] Kiene Brillengburg Wurth, Kári Driscoll and Jessica Pressman, *Book Presence in a Digital Age* (New York: Bloomsbury Publishing, 2020).
[5] Henry Jenkins, *Convergence Culture: Where Old and New Media Collide* (New York: New York University Press, 2006).
[6] Several authors have reflected on the disembodiment provoked in society by digital media, such as John Tolva, “The Heresy of Hypertext: Fear and Anxiety in the Late Age of Print”, 1995, at: https://www.ascentstage.com/papers/heresy.html; Colin Renfrew, *Figuring It Out: What Are We? Where Do We Come From? The Parallel Visions of Artists and Archeologists* (London: Thames & Hudson, 2003), 186; Liedeke Plate, “Doing Things with Literature in a Digital Age: Italo Calvino’s *If on a Winter Night’s a Traveler* and the Material Turn in Literary Studies”, in *Book Presence in a Digital Age*, eds. Kiene Brillengburg Wurth, Kári Driscoll and Jessica Pressman (New York: Bloomsbury Publishing, 2020); George Landow, “Twenty minutes into the future, or how are we moving beyond the book?”, in *The Future of the Book*, ed. Geoffrey Nunberg (Berkeley: University of California Press, 1996), 209-237; Alan Liu, “The End of the End of the Book: Dead Books, Lively Margins, and Social Computing”, *Michigan Quarterly Review*, 48, no.4 (2009), http://hdl.handle.net/2027/spo.act2080.0048.404
[7] Zygmunt Bauman, *Liquid Modernity* (Cambridge: Polity Press, 2000).
[8] Alan Liu, “The End of the End of the Book: Dead Books, Lively Margins, and Social Computing”, *Michigan Quarterly Review*, 48, no.4 (2009), http://hdl.handle.net/2027/spo.act2080.0048.404
[9] Colin Renfrew, *Figuring It Out: What Are We? Where Do We Come From? The Parallel Visions of Artists and Archeologists* (London: Thames & Hudson, 2003), 186.
[10] Liedeke Plate, “Doing Things with Literature in a Digital Age: Italo Calvino’s *If on a Winter Night’s a Traveler* and the Material Turn in Literary Studies”, in *Book Presence in a Digital Age*, eds. Kiene Brillengburg Wurth, Kári Driscoll and Jessica Pressman (New York: Bloomsbury Publishing, 2020).
[11] Bruno Latour, *Reassembling the Social: an Introduction to Actor-Network Theory* (Oxford: Oxford University Press, 2005).
[12] Jessica Pressman, “The aesthetic of bookishness in Twenty-first century literature”, *Michigan Quarterly Review*, 48, no.4 (2009), http://hdl.handle.net/2027/spo.act2080.0048.402
[13] Jessica Pressman, *Bookishness: Loving Books in a Digital Age* (New York: Columbia University Press, 2020).
[14] Viktor Shklovsky, “Art as Technique”, in *Russian Formalist Criticism Four Essays*, eds. Lee T. Lemon and Marion J. Reis (Lincoln: University of Nebraska Press, 1965), 25.
[15] John Tolva, “The Heresy of Hypertext: Fear and Anxiety in the Late Age of Print”, 1995, at: https://www.ascentstage.com/papers/heresy.html
[16] Juhani Pallasmaa, *The Thinking Hand: Existential and Embodied Wisdom in Architecture* (New Jersey: Wiley, 2009).
[17] Gregory Crane, “Historical Perspectives on the Book and Information Technology”, in *Rethinking Media Change: The Aesthetics of Transition*, eds. David Thorburn and Henry Jenkins (Cambridge: MIT Press, 2004).
[18] Jessica Pressman, “The aesthetic of bookishness in Twenty-first century literature”, *Michigan Quarterly Review*, 48, no.4 (2009), http://hdl.handle.net/2027/spo.act2080.0048.402
[19] Katherine N. Hayles, *Writing Machines* (Cambridge: MIT Press, 2002), 19.
[20] Anthony Dunne and Fiona Raby, *Speculative Everything. Design, Fiction and Social Dreaming* (Cambridge: MIT Press, 2013).
[21] Marian Macken, *Binding Space: The Book as Spatial Practice* (New York: Routledge, 2018), 1.

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EXPLORING COLLABORATIVE LEARNING AND FAILING IN HIGHER EDUCATION

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INTRODUCTION

Contemporary higher education finds itself at a critical juncture, facing mounting pressure to demonstrate relevance and prepare students for an increasingly complex and rapidly changing world.[1] Traditional pedagogical models, predicated on the transmission of predetermined knowledge from instructor to student, appear increasingly inadequate for addressing the multifaceted challenges of the twenty-first century. The banking model of education, as Freire critically identified,[2] positions students as passive depositories for knowledge rather than active participants in learning processes, creating graduates who may possess information but may lack the capacity for critical analysis, creative problem-solving, and meaningful social engagement that contemporary society demands.[3] These issues can become particularly pronounced within liberal arts contexts, where the foundational commitment to developing critical thinking, civic engagement, and intellectual autonomy requires active learning approaches that connect academic inquiry to real-world application and social responsibility.[4]

This paper examines the "educational sandbox" model through a case study of the Collaborative Research Project (CRP) module in Leuphana University's liberal arts program. Offered to fifth-semester students as they near the thesis semester and completion of their three-year degree, CRP grants significant autonomy, reframing failure as a constructive element of learning and positioning students as active knowledge producers as students work in small, interdisciplinary teams to design, plan, and conduct an original research project that responds to a socially significant question, integrating perspectives from their diverse academic backgrounds. This collaborative structure fosters project management skills, negotiation of roles, and collective decision-making competencies essential in contemporary professional and civic life.

Central to this is the module's emphasis on diverse, creative dissemination formats that provide students with practical experience in public scholarship and community engagement. Rather than limiting research outcomes to traditional academic papers, CRP enables students to communicate their findings through exhibitions, infographics, podcasts, advocacy letters, documentaries, and social media initiatives and campaigns to name just a few possibilities. This multiplicity of output formats develops students' capacity for public communication across multiple media platforms while ensuring that research findings reach diverse audiences beyond academic circles, thereby maximizing social impact and community engagement. The practical experience gained through creating these diverse dissemination formats can also prepare students for professional environments where digital literacy, multimedia communication, and public engagement represent essential competencies.[5]

In an era when universities face mounting pressure to demonstrate relevance, sustain engagement, and prepare graduates for democratic citizenship, the sandbox approach offers a dynamic framework for aligning academic inquiry with social responsibility. This study analyzes CRP's theoretical foundations, implementation, and outcomes, showing how sandbox learning can fuse curiosity, academic inquiry, and public engagement while cultivating practical skills in knowledge dissemination.

Theoretical Framework and Pedagogical Foundations

The theoretical foundation of the course draws extensively from Lave and Wenger's seminal work on communities of practice, which fundamentally reconceptualizes learning as an inherently social process occurring through legitimate peripheral participation in meaningful, authentic activities.[6] Within the CRP framework, student research teams evolve into emergent communities of practice, developing shared research methodologies, disciplinary languages, and collaborative problem-solving approaches while simultaneously maintaining and celebrating individual contributions and diverse perspectives.

Just as significantly, CRP draws from critical pedagogy traditions, particularly Freire's alternative vision that transforms the traditional instructor-student relationship from one of hierarchical knowledge transmission to one of collaborative inquiry and mutual investigation. Along with lecturers, assigned supervisors, community partners, guest lecturers, technical support staff, and faculty members across campus and particularly from the methods center, students become critical co-investigators that engage actively through processes of questioning, analysis, and transformative action. Regular check-ins and project meetings are coordinated by students according to their needs and project timelines, fostering self-direction. Together, students and instructors work closely together in beginning to understand and approach a particular issue.

Reconceptualizing Failure as Pedagogical Resource

These pedagogical demands inevitably involve encounters with challenges, but rather than treating such encounters as shameful deviations from successful learning, the sandbox approach positions challenges as sites of ethical reflection, creative redirection, the development of humility, and perhaps most importantly, the courage to try something and the courage to possibly also fail. Throughout the 14 weeks in the semester, students encounter situations where established approaches prove inadequate, requiring creative problem-solving, adaptive thinking, and tolerance for ambiguity.

Student research teams, for example, might find that their carefully designed survey yielded only a very low response rate, rendering their quantitative findings statistically meaningless and/or potentially misleading. Both significant and minor setbacks require the research teams to make crucial decisions about whether to extend data collection efforts, fundamentally modify their methodological approach, or completely reconceptualize their research question and design. The challenge transforms into profound learning about research ethics, sampling bias, participant engagement strategies, and the general practical challenges of conducting social research. Through these obstacles, it is where both instructors and students grow and learn. It is where deeper understanding is fostered, where new hope can emerge for creative possibilities and innovative solutions.

Just as well, it is in these challenging spaces where students can develop and refine their interpersonal skills, including managing conflicts, facilitating difficult conversations, and building consensus across different viewpoints. These collaborative challenges prove essential for working effectively across disciplinary boundaries, cultural differences, and competing priorities.

REFLECTIVE DOCUMENTATION

Central to the pedagogical design of the CRP model is a structured system of reflective documentation that cultivates awareness through Donald Schön's concepts of "reflection-in-action" and "reflection-on-action."[7] Five sequential assignments, first submitted as ungraded works throughout the semester, serve as iterative spaces for sustained reflection on evolving research practices, collaborative dynamics, and individual learning development. As the instructor of the course, I aim to provide feedback and suggestions following each submission.

Assignment 1 establishes the groundwork for collaborative inquiry. Students identify group composition, organizational strategies, and individual roles while refining their research topic and initial questions. With this assignment, students are encouraged to anticipate organizational challenges, establish conflict-resolution frameworks, and conduct preliminary literature reviews to situate their topic within broader academic and social contexts.

Assignment 2 advances methodological awareness. Students define their information needs, justify data collection strategies, and explain how chosen methods will address their research questions. They must detail sampling, recruitment, and operationalization plans, engaging with methodological literature to defend their choices and consider alternatives.

The third assignment moves to implementation and ethics. Students produce comprehensive fieldwork plans, operationalize concepts, prepare research instruments, and address ethical obligations including informed consent, confidentiality, and data security.

Assignment 4 centers on analytical reflection. Students document and justify their analytic decisions, providing examples, tables, and graphs to illustrate their processes. They critically assess data quality, acknowledge limitations, and connect methodological decisions to research outcomes, transforming raw results into coherent findings.

The final ungraded assignment integrates findings with dissemination strategies. Students synthesize themes into working theses, identify unanswered questions, and select dissemination formats, ranging from formal reports to multimedia outputs. Groups are required to explain how each format could possibly serve specific audiences and enhance social impact.

Across all stages, students revisit and refine their work in response to feedback, producing documentation that reflects the iterative, non-linear reality of research rather than polished end products. As Dewey explains in *How We Think*, reflective thinking is "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends."[8] This framing positions challenges such as coordination issues, recruitment barriers, or methodological setbacks as deliberate learning opportunities rather than setbacks. The reflective documentation system strengthens self-assessment, peer evaluation, and adaptive problem-solving, enabling students to deepen their understanding of personal learning styles, collaborative strengths, and growth areas, while contributing to collective knowledge on effective research practices.

STUDENT RESEARCH DIVERSITY AND TRANSFORMATIONAL SOCIAL IMPACT

Students participating in CRP consistently choose research topics that reflect both their genuine intellectual curiosity and commitment to addressing pressing contemporary social challenges. Research projects have addressed university waste separation behaviors and environmental consciousness, student dropout rates and educational equity, violence during political demonstrations and democratic participation, distributive justice understanding among economics students, and representation of marginalized identities in children's literature.

One particularly compelling example involved a student research team that investigated non-binary representation in children's literature, conducting systematic analysis of a character from a popular children's book who challenges traditional gender binaries through both textual analysis. The significance of this research extends far beyond academic exercise, particularly within contemporary political contexts where numerous jurisdictions have enacted legislation restricting LGBTQ+ content in schools and libraries. The students' rigorous academic analysis can become a form of urgent advocacy for intellectual freedom and inclusive representation, demonstrating how scholarly inquiry can contribute directly to defending diverse oppressed voices and opening broader cultural conversations about identity, representation, and social justice.

Another exemplary case involved a student research team that investigated the relationship between academic choice overload and depression symptoms within the post-pandemic campus environment, positioning themselves simultaneously as researchers and research subjects in ways that generated both scholarly insights and personal understanding. Using validated instruments including the PHQ-9 depression screening tool alongside choice overload theory from behavioral economics, students developed sophisticated research design that addressed both individual and institutional dimensions of mental health challenges facing contemporary university students. The findings of this student research proved both surprising and institutionally significant. Rather than confirming hypotheses about academic choice overload as a primary predictor of depression symptoms, the research revealed that financial security and social stability functioned as much stronger predictors of student mental health outcomes on our campus. These findings became vital evidence that campus administrators desperately needed for developing more effective student support services and policy interventions. The research team created multiple formats for disseminating their findings, including formal presentations to administrative leaders and a podcast episode that could reach broader student audiences.

The transformational impact of this research extended beyond institutional policy to encompass students' understanding of their role as knowledge producers who can contribute meaningfully to addressing social challenges, especially ones so close to home. Students realized that their peers were struggling with mental health challenges and began asking critical questions about institutional responsibility and collective action: What do we need as a campus community? What interventions would be most effective? How can research contribute to positive change?

Alternative Output Formats and Public Knowledge Dissemination

This approach in CRP reconceptualizes the relationship between academic inquiry and public communication by encouraging diverse output formats that again help position students as knowledge producers contributing meaningfully and actively to broader social discourse. With the flexibility in formats, students can develop a sophisticated understanding of how different communication formats can serve different audiences and purposes.

Some students choose to create infographic series that transform complex research findings into visually compelling formats accessible to broader public audiences, requiring development of data visualization skills, design thinking, and clear communication strategies that bridge academic and popular communication styles.[9] This process can provide practical experience with graphic design software, data analysis tools, and visual storytelling techniques. Podcast production develops students' capacity for oral communication, storytelling, and audio editing while reaching diverse community audiences who might not otherwise encounter academic research findings. Students learn to conduct interviews, develop narrative structures, and utilize digital audio production tools, taking full advantage of the resources and labs on campus.

The creation of advocacy letters and policy recommendation reports can also position students as direct participants in institutional and political processes, requiring development of professional communication skills, policy analysis capabilities, and strategic thinking about effective advocacy approaches.[10] Just as well, short documentary production combines research findings with storytelling techniques, requiring students to develop video production skills, narrative construction, and visual communication strategies that make complex social issues accessible to general audiences.[11]This work provides practical experience with digital video editing, cinematography, and documentary filmmaking.

For those groups that may feel compelled to design an installation, exhibition design and curation offer students opportunities to transform research findings into three-dimensional, interactive experiences that engage visitors through multiple sensory modalities and participatory elements.[12] Students develop practical experience with spatial design, visitor experience planning, and public engagement strategies while learning to create educational materials, interpretive texts, and interactive displays that communicate complex research findings through physical installations.

Gamified simulations and interactive tools engage users directly with research findings through user-friendly interfaces that make abstract social science concepts concrete, entertaining, and personally relevant. Students may choose to develop practical experience with game design, user experience research, and interactive media development while learning to translate complex theoretical concepts into engaging, educational experiences. [13]

These diverse output formats enhance public engagement and accessibility while developing students' capacity for creative problem-solving, analysis, technological innovation, communication, and creative production. Just as valuable, students gain the confidence in their ability to contribute meaningfully to public discourse and social change efforts, even if on a very local level, and to tackle the upcoming thesis semester with the acquired and refined skills at hand.

CONCLUSION

The educational sandbox approach demonstrates significant potential to transform CRP students from passive recipients of information into active architects of their own learning. By reframing failure and setbacks as integral to the inquiry process, positioning students as knowledge producers, and linking academic work to socially meaningful action, the model addresses pressing questions about the purpose and practice of contemporary higher education. In doing so, it equips students with the intellectual agility, collaborative capacity, and civic orientation required for lives of engaged citizenship.

As this case study has shown, sustained work on socially relevant problems fosters advanced research competencies, critical and creative thinking, collaborative leadership, and a deepened sense of social responsibility. Students not only acquire the methodological and analytical skills necessary for rigorous scholarship but also learn to navigate ambiguity, manage diverse perspectives, and communicate effectively across multiple public platforms.

The implications extend well beyond CRP. At a time marked by urgent social, political, and environmental challenges, liberal arts education must continue to evolve toward models that integrate academic inquiry with public engagement, foster interdisciplinary collaboration, and prepare students to act thoughtfully and effectively in democratic societies. The educational sandbox in the case of CRP has not simply been a course design but a crucial foundational pedagogical orientation that aligns the transformative aims of higher education with the complex demands of the twenty-first century.

NOTES

[1] Amy L. Shaver, and Leah L. Cheung. “The Liminal State of Academic Freedom: Navigating Corporatization in Higher Education.” Discover Education, January 11, 2024. https://link.springer.com/article/10.1007/s44217-024-00086-x. For more on the need for for universities to structurally evolve to reflect societal complexity and maintain institutional resilience, see: George Lueddeke, “Unpacking Resilience in Higher Education: Investigating Twenty-First-Century Shifts in Universities’ Academic Cores.” Higher Education 86(2023): 971–991, https://link.springer.com/article/10.1007/s10734-023-01003-1. For more on the need for education systems to be more fit for future needs, see: Keri, Facer, “Higher Education and Skills for the Future(s) of Work,” in *Higher Education for the Future: Imagining and Designing the University for the 21st Century*, edited by Peter Scott, Jim Gallacher, and Gareth Parry, 153–170 (Cham: Springer, 2022), https://link.springer.com/chapter/10.1007/978-3-031-31494-0_8.

[2] Paulo Freire, *Pedagogy of the Oppressed* (New York: Continuum International Publishing Group, 1970), 71.

[3] For education as a stimulus for critical engagement and debates, see: Henry A. Giroux*, On Critical Pedagogy* (New York: Continuum, 2011).

[4] Teun J. Dekker, *Seven Democratic Virtues of Liberal Education: A Student-Inspired Agenda for Teaching Civic Virtue in European Universities* (London: Routledge, 2022).

[5] Bill Cope and Mary Kalantzis, “‘Multiliteracies’: New Literacies, New Learning,” *Pedagogies: An International Journal* 4, no. 3 (2009): 175.

[6] Jean Lave and Etienne Wenger, *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press, 1991, 29-43.

[7] Donald Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983), 62.

[8] John Dewey, *How We Think* (New York: D. C. Heath and Company, 1933), 118.

[9] Alberto Cairo, *The Functional Art: An Introduction to Information Graphics and Visualization*(Berkeley, CA: New Riders, 2013).

[10] John Saltmarsh and Matthew Hartley, "*To serve a larger purpose": Engagement for democracy and the transformation of higher education* (Philadelphia: Temple University Press, 2012) vii-xi.

[11] Bill Nichols, *Introduction to Documentary* (Bloomington and Indianapolis: Indiana University Press, 2001), xiv.

[12] Eilean Hooper-Greenhill, *Museums and the interpretation of visual culture* (London: Routledge, 2000), 4.

[13] Kurt Squire, *Video Games and Learning: Teaching and Participatory Culture in the Digital Age*. (New York: Teachers College Press, 2011), 203-207.

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BLOWING UP THE CANON: MESSAGES FROM THE MARGINALISED IN CONVERSATION WITH THE NATIONAL GALLERY, LONDON

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INTRODUCTION

Introducing the proceeding conversation with the National Gallery, London, England, illustrates the lack of representation of women, peoples of color, disabled and LGBTQI+. Shamefully, the marginalized are negated as the discourses of Eurocentrism and patriarchy dominate the Gallery's walls. To explore the struggles of the marginalized, I draw upon my experiences as an artist as educator, poet curator and art historian to challenge the curriculum and the canon. I began my journey into what Bhambra, Gebrial and Nişancıoğlu identify as the "subjects of Western scholarship [as] enduringly pale, male (and often stale)".[1] I take the reader on a tour of the newly curated rehang that "celebrates" two hundred years of the National Gallery. This tour consists of recognizing the marginalized through creative research methods, whilst in conversation with the canon. I begin with a short detour to contextualize my early canonical engagement.

As a child my mum said I was so clumsy I would trip over my own shadow, and she was right. During my doctorial study, I was diagnosed with dyslexia and dyspraxia, an implication of which is poor coordination and fine motor skills. Ironically, as I presented this paper at AMPS Conference June 2025, I was recovering from major surgery due to developmental coordination disorder. I caught my feet in the hem of my trousers, tripped over and broke my shoulder. Developmental coordination disorder became apparent when teaching A level Art History at my local adult education center. In 2002, adult education was challenging, as it was, and still is, increasingly underfunded. Accordingly, health and safety was not a requirement in the classroom. Every time I taught my class, I tripped over the lead to the slide projector; this part of the story, I will return to shortly. Like most adult education environments, they are under-resourced, but this is not a story of funding the adult education sector, instead my paper explores how "his-story" is all pervasive at the "expense" of herstory and the stories of those that are marginalized, othered and/or colonized in arts education and museums and galleries.

THE CONVERSATION IN CONTEXT

This indoctrination, into what I now know to be the canon, began at the start of my degree in Humanities with Art History; the set reading was Gombrich's *The Story of Art* written in 1950.[2] There were no women referenced in the whole text. Unsurprisingly, at the inception of this research, the book was on the homepage of the National Gallery's bookshop. Written in 1950, it was in much the

same vein as Vasari's *Lives*, written 400 years previously, but even Vasari mentions four female artists, Properzia de' Rossi, Sister Plautilla Nelli, Lucrezia Quistelli, and the ancient Greek painter Timarete.[3] He attributes their talent to being acquired and learnt, whereas men's talents were God-given. Still, these books are widely published and not only on sale at the National Gallery's online bookshop, but they have a highly visible position in the onsite shop.

This lack of representation was a prominent theme in the arts. After completing my degree and my teaching qualification, it brings me back to the opening of this story. Here I recounted my experiences of teaching the Art History evening class, when at the turn of the 21st century, still women were excluded. My shock was palpable when I opened the set book, written in 1984, *The World History of Art.*[4] It did not include any female artists, and the random inclusion of non-western art was bizarre. Again, to borrow from Bhambra, Gebrial and Nişancıoğlu "where people of color do appear, they are all too often tokenistically represented".[5]

Nevertheless, the book came in handy as I used it to cover the projector led on the floor – to try to prevent me from tripping over the cable. I could hardly miss this tome of old masters; it was huge. This became a joke in our class, as in the summer, it was used as a prop to open the door in the hot Victorian building in which the class was located with no air conditioning. Opening the door to a fresh perspective, diversity and choice, I "kicked the cannon to the curb". It was physically and metaphorically thrown upon the floor of the classroom, as I neither followed the curriculum, nor the rules of the canon. Instead, in the vein of Paulo Freire and bell hooks I taught and continue to teach in a pedagogy of horizontal and democratic learning. Hooks states in *Teaching to Transgress* "any radical pedagogy must insist that everyone's presence is acknowledged. That insistence cannot be simply stated. It must be demonstrated through pedagogical practices. To begin, the professor must genuinely value everyone's presence".[6]

Accordingly, in the ethos of democratic pedagogies, I asked the students to select the topics for their extended essay. Some of the topics included the fascinating lives and art of women, not found in the set books. We did a lot of collaborative research. I remember the work of Evelyn de Morgan, Leonora Carrington and Tamara de Lempicka, all of which are innovative and radical artists. De Lempicka said: "I live life in the margins of society, and the rules of normal society don't apply to those who live on the fringe".[7] The students selected topics within the Modern period, their choices, and, within the canon, this period was taken to be between 1850 to 1950. The students chose the galleries they wanted to visit during the summer. I arranged study trips to Paris and London: for London, the National Gallery was on their list. Then and indeed now, it is a problematic space but the National Gallery houses art from Impressionism and Post-Impressionism, which the students were excited to see. Interestingly, these movements shifted the canon and are an example of how exhibitions outside the official display and judgement at the Salon in Paris, can change the canon and widen the acceptance of new visual aesthetics and visual languages.

CONVERSING WITH THE CANON

Unfortunately, at the National Gallery, I did not locate the two painting, *Girl on a Divan* and *Summer's Day* by Berthe Morisot, the only female Impressionist painter; they were probably on loan.[8] Instead, I took them to see Élisabeth Vigée Le Brun's, *Self-Portrait with a Straw Hat*.[9] Often, it too is on loan; yet it is the image used for advertising and branding. This sparked my curiosity; I wondered just how many paintings the National Gallery housed, and the percentage painted and displayed by marginalized groups. With this being the rationale for this paper, I decided to conduct a review of the National Gallery's collection beginning with those painted by women. As I conducted the review, I wrote a poem to record the data that is not made available by the National Gallery:

200 years of the National Gallery: A conversation of celebration or condemnation?

Why do we, the people, trust you?
The trustees of the National Gallery.
To take care of the nation's art.
Held in stasis for 200 years.
200 years of sameness.
Where are the paintings by women
Only 21 or is it 27?
13 of which are on display.
Women make up over 50% of our nation
What is the nation celebrating?
Less than half a percent of women artists,
The taste makers' failure to diversify.
Where are the paintings by black and brown folks?
Agency missing,
only present in paintings
as servants, musicians and kings.
Not made by them for them
People of colour make up 18%
What is the nation celebrating
Eurocentric tokenism?
Where are the paintings by queer folks?
Present somewhere – no-where?
Queer folk make up 1.5% of our Nation
What is the Nation celebrating
negated acknowledgement?
Where are the paintings by dis-abled, neurodiverse folk?
Not recognized inside the gallery.
Are they not part of our Nation!
Sometimes displayed outside.
On the fourth plinth
So, what is celebrated?
Amassing and reproducing the self-sameness,
Over 2,400 images
2,400 images, by you,
males, stale and pale.
Wake up!
The masses, asleep to injustice. Wake up!
Demand equality! Representation!
Trust hes of the National Gallery,
Break the bonds of privilege.
Rehang. Replace. Reframe,
Not the same. Feel the shame
I trust the reorganization of the National Gallery
Will be a dramatic redisplay
A promise made to the people.

A gallery to represent the Nation,
But no - opportunities missed
Reorganization a token
No dramatic redisplay
A promise made to the Nation, broken

(Re)searching the voices of the marginalized

Using the National Gallery's website search facility, many combinations of terms were submitted to find the hidden marginalized artists, for example "women/woman artist/s", "women painters" etc.[10] However, in the overt marketization of the arts, the algorithm was set to display the Gallery's latest exhibition, Neo-Impressionism, 2025. Although the exhibits for this "blockbuster" exhibition are from Helene Kröller-Müller's collection, it is not made explicit that she is a female collector. Her name is absent, hidden beneath the next click. After, the Neo-Impressionism tile, there is a random selection of paintings, where the filter criteria, 'women' appears in the title of the paintings; first to confront the viewer is the *Rape of the Sabine Women*.[11] I had no success, when searching for artists of color, LGBTQIA+, disabled and neurodivergent communities; however, these searches are for another story.

In Conversation with the Women Problematizing the Canon

I continued with my re-search and created a database, Table 1. I discovered inaccuracies in the number of paintings by women in the collection. The Gallery's website states 27.[12] I believe this figure to be inflated by including: Artist in Residence, 1980-9, Maggi Hambling, June Redfern, Vivien Blackett, Madeleine Strindberg; Associate Artist Scheme 1990-2016, Paula Rego, Ana Maria Pacheco, Alison Watt; Contemporary Artist in Residence, Rosalind Nashashibi, Céline Condorelli, and Katrina Palmer; and one of two paintings on loan from the Tate, which is neither included in the glossary nor on display, Henriette Browne's *A Greek Captive*, but noted in an interview with the Gallery's curators.[13] These discrepancies might account for the inaccuracies.

Such information should be readily accessible and transparent, by bringing this dispersed information into one visible place and format. Rather it is for visitors to find the paintings online and onsite, but having neither a database, nor identifiable images on a map, the activity is challenging. Accordingly, I decided to search the National Gallery's glossary for women artists. The webpage was populated with information but sadly it was incomplete, missing were the details of: the newly acquired painting by Eva Gonzalès, *The Full-length Mirror*; the impressive mural created by Paula Rego, situated at the side of the silver service restaurant, with the caption missing; and the amazing monumental wall painting by Bridget Riley, entitled *Messages*, the name of which inspired this paper.[14] Accordingly, for readers of this paper and visitors to the Gallery, I mapped the location of the paintings, Figure 1. Had I created an annotated map for the first visit, I should not have spent over three hours locating the paintings, although I did have the database. On this first occasion, I asked at the information desk, but they were unable to advise, although they did offer to locate them on their desktop, should I have given them the names. The most frustrating search was for Rosa Bonheur's *The Horse Fair,* on display in room thirteen. There is no such room; it is a staircase, Figure 2.

Artist Glossary	Acquired	Display?	Genre	Title	No
1.Marie Blancour	1964	No	Still-life	Bowl of Flowers	1
2.Rosa Bonheur	1859	R13	Animals with Self-portrait	The Horse Fair	1
3.Artemisia Gentileschi	2018	R32	Self-Portrait	Self Portrait as Saint Catherine of Alexandria	1
4.Rosalba Carriera	1916	No R42	Self-Portrait Portrait	After Rosalba Carriera Portrait of a Man	2
5.Catharina van Hemessen	1934 1878	R54 No	Portrait Portrait	Portrait of a Woman Portrait of a Man	2
6.Judith Leyster	1943	R23	Genre	A Boy & Girl with Cat & Eel	1
7. Berthe Morisot	1968 1917	R41 R41	Portrait Everyday	Girl on a Divan Summer's Day	2
8. Rachel Ruysch	N/A N/A 1974	R28	Still-life	Flowers in Glass Vase with Tulip Flowers in a glass vase with insects upon a marble ledge Flowers in a Vase	3
9. Elisabeth LouiseVigée Le Brun	1948	R35 R15	Portrait Self-P	Alexandrine-Emilie Brongniart Self-P in a Straw Hat	2
					Sub-Total 15 (On display 12)
Artists found from onsite visits					
10. Paula Rego	1991	Locatelli's Restaurant	Portraits of saints, inspired by family, friends, Self-P with her daughter Cassie	Crivelli's Garden's	1
11. Bridget Riley	2019	Annenberg Court	Abstract	Messages	1
12. Eva Gonzalès	2024	R41	Self-P	The Full-length Mirror	1
					Sub-Total 18 (On display 15)
Artist found from scholarship: not on display					
13. Henriette Browne,		NOD	Portrait	A Greek Captive	1
					Sub-Total 19
Artists in residence (not including Paula Rego as she is listed above) 9					**Total 28 On display 15**

Table 1. Database of paintings and a pastel by women artists at the National Gallery

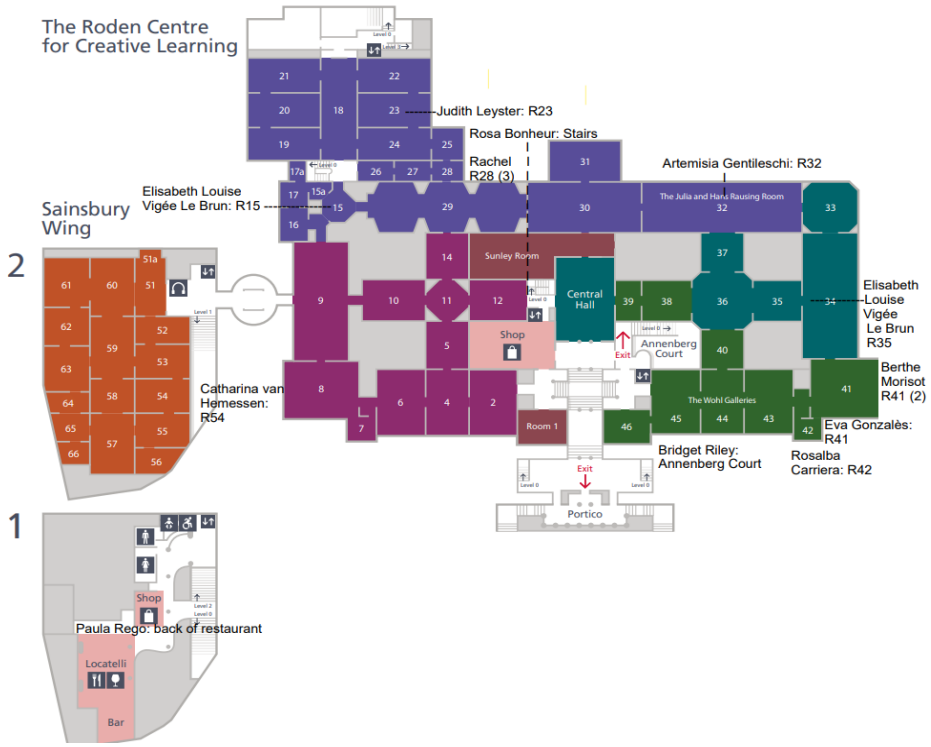

Figure 1. Annotated map of paintings and a pastel by women artists at the National Gallery

Figure 2. Rosa Bonheur, The Horse Fair, displayed on the staircase in situ by Dr Bev

The Canon in Conversation with Artemisia Gentileschi and Elizabeth Vigée Le Brun

Interestingly, on the day this paper was presented, Jonathan Conlin wrote an article, where he commented upon the rehang and how "The National Gallery has resisted the temptation to devote a gallery to women artists".[15] However, I argue that had the National Gallery given in to this "temptation", the visitor should have had a more pleasurable experience. Instead, the loose

chronology and strangely themed rooms make for a time consuming and frustrating search for the fifteen images by women artists. Conlin refers to Artemisia Gentileschi's *Self Portrait as Saint Catherine of Alexandria* (c. 1615-17), Figure 3, "situated in room three, not next to Elizabeth Vigée Le Brun's *Self Portrait in a Straw Hat* (1782) in room 15", Figure 4.[16] Connecting the two self-portraits implies that he considered a potential conversation between the paintings, but that lively dialogue was not to be had. Instead, the skills and talent of Gentileschi are lost, overlooked in a room crammed with Caravaggios. I observed many visitors as they entered room thirty-two, entitled: "Baroque Splendour: Italian Painting 1600–1700". All but two visitors ignored her *Self-Portrait,* as the photograph illustrates in Figure 3; viewers were enamored with the "master's" work. This was the outcome on every occasion I visited.

Figure 3. Artemisia Gentileschi's Self Portrait as Saint Catherine of Alexandria in situ by Bev Hayward

Gentileschi's splendid Baroque contribution embodied strength and resilience. Her *Self-Portrait* was a visualization of the words she wrote to her patron Ruffo: "I will show your Illustrious Lordship what a woman can do … You will find the spirit of Caesar in the soul of a woman."[17] In the painting, as well as her words, she makes clear that her work is on parr with, and often exceeds, that of her male peers.[18] The same point is made in Gentileschi's choice of Saint Catherine; in the saint's hagiography, she is pitted against the highest intellectual pagan orators and philosophers to defend her Christian beliefs. Catherine won the debate.

As I continued my many visits to the Gallery to make my observations, I understood the curatorial choices of where the paintings were situated in the rehang. Like Gentileschi, Le Brun's *Self-portrait* is quickly bypassed, for what might be a different reason. Room fifteen, a rotunda, seemed to function as a walkway, as visitors were eager to exit to the next room, indicated in the photograph of an almost empty visa.

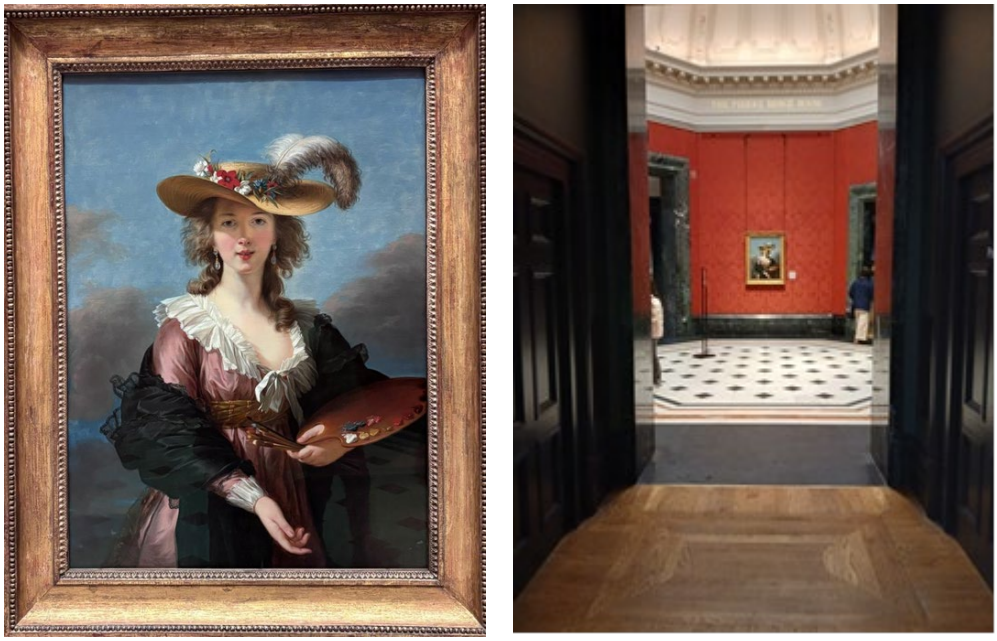

Figure 4. Elizabeth Vigée Le Brun's Self Portrait in a Straw Hat and in situ by Dr. Bev Hayward

In addition to Le Brun's *Self-portrait,* the Gallery displays the artist's *Alexandrine-Emilie Brongniart.* In a more sensitive display, it might have been situated in conversation with Henriette Browne's *A Greek Captive*. [19] However, Browne is neither mentioned in the glossary nor on display. It was only with extensive research that I found it at all. Both portray a young girl, where delicate brushwork draws the viewer into a gentle, tender psychosocial depiction of their subjects. How fortuitous it would be to see them in conversation – what messages might the viewer read in their juxtaposition?
The paintings were overshadowed by patriarchal privilege, as in the examples of the two great painters, Le Brun and Gentileschi. Then, as I researched further, I found work recorded but not displayed, still hidden in the stall were Marie Blancour's *Bowl of Flowers,* and one of two images by Catherina van Hemessmen, *Portrait of a Man*.[20] Furthermore, its pair, *Portrait of a Woman*, like Eva Gonzalès, *The Full-Length Mirror*, and Rosalba Carriera's *Portrait of a Man,* was obscured in a corner of a room, the others could be found at the exits and in the restaurant, walkways and overlooking the toilet (*Messages*).[21] Accordingly, like Gentileschi and Le Brun's paintings, they do not receive the attention they deserve. This is a theme that frequently features in the rehang.

CONCLUSION

The canon may not have blown up, but the "big guns", Gentileschi, Le Brun, Gonzalès, Rego, and the eleven other women exhibited at the Gallery, convey the "Messages" of a lack of representation, marginalization and bias curatorial practices, which invites different conversations. It is time for a change, and this paper goes some small way to affect that change by calling out these social injustices. To aid activism, and in an ethos of feminism and decolonial approaches to arts education and the art industry, they bring diversity and rich heritages. As an artist as educator, art historian and poet, I should like to open this discussion to you the reader - what "Messages" might you like to add to the conversation?

NOTES

[1] Gurminder K. Bhambra, Dalia Gebrial, and Kerem Nişancıoğlu, eds., Decolonising the University (London: Pluto Press, 2018) 6
[2] Ernst H. Gombrich, The Story of Art (London: Phaidon Press, 1950).
[3] Giorgio Vasari, The Lives of the Artists, trans. George Bull (London: Penguin Books, 1965).
[4] Hugh Honour and John Fleming, *A World History of Art* (London: Laurence King Publishing, (1984).
[5] Bhambra, Gebrial, and Nişancıoğlu, *Decolonising the University*
[6] bell hooks, Teaching to Transgress: Education as the Practice of Freedom (New York: Routledge, 1994).
[7] Tamara de Lempicka, (as quoted in) Kizette de Lempicka-Foxhall, *Passion by Design: The Art and Times of Tamara de Lempicka* (New York: Abbeville, 1987), 125.
[8] Berthe Morisot, *Girl on a Divan*, c. 1885, oil on canvas, 61 × 50.2 cm, on loan from Tate, National Gallery, London; Berthe Morisot, *Summer's Day*, c. 1879, oil on canvas, 45.7 × 75.2 cm, National Gallery, London.
[9] Élisabeth Vigée Le Brun, Self-Portrait in a Straw Hat, 1782, oil on canvas, 97.8 × 70.5 cm, National Gallery, London; photograph by author, June 2025.
[10] National Gallery. "Search Results for 'Women Artists.'" Accessed August 5, 2025. https://www.nationalgallery.org.uk/search?area=&q=women+artists.
[11] Peter Paul Rubens, *The Rape of the Sabine Women*, ca. 1635–40, oil on wood (oak), 169.9 × 236.2 cm, National Gallery, London.
[12] National Gallery. "Women in Our Collection." Accessed August 5, 2025. https://www.nationalgallery.org.uk/paintings/women-in-our-collection
[13] Henriette Browne, *A Greek Captive*, 1863, oil on canvas, 92.1 × 73 cm, National Gallery, London (on loan from Tate) (Henriette Browne was the pseudonym for Mme Jules de Saux, née Sophie de Bouteiller). Susanna Avery-Quash, Letizia Treves, and Francesca Whitlum-Cooper. "[In]Visible: Paintings by Women Artists in the National Gallery, London: An Interview with Letizia Treves and Francesca Whitlum-Cooper." 19: Interdisciplinary Studies in the Long Nineteenth Century 1 (2019). https://doi.org/10.16995/ntn.850
[14] Eva Gonzalès, *The Full-length Mirror (La Psyché)*, (40 × 27 cm; oil on canvas), National Gallery, London (c. 1869-70). Paula Rego, *Crivelli's Garden* (188.9 × 944.6 cm; acrylic on canvas), commissioned as mural for the Dining Room, Sainsbury Wing, National Gallery, London (1991). Bridget Riley, *Messengers* (c. 10 × 20 m; wall painting), Annenberg Court, National Gallery (2019).
[15] Jonathan Conlin, "The National Gallery at 200: is this rehang a bold relaunch or rinse and repeat?" *The Conversation*, June 10, 2025, accessed August 4, 2025, https://theconversation.com/the-national-gallery-at-200-is-this-rehang-a-bold-relaunch-or-rinse-and-repeat-258334.
[16] Artemisia Gentileschi, *Self Portrait as Saint Catherine of Alexandria*, c. 1615–1617, oil on canvas, 71.5 × 71 cm, National Gallery, London. Élisabeth Louise Vigée Le Brun, *Self Portrait in a Straw Hat*, 1782, oil on canvas, 97.8 × 70.5 cm, National Gallery, London. Jonathan Conlin, "The National Gallery at 200.
[17] Letizia Treves, "Artemisia in Her Own Words," *National Gallery*, London, accessed August 13, 2025, https://www.nationalgallery.org.uk/exhibitions/past/artemisia/artemisia-in-her-own-words.
[18] Institut de France – Musée Jacquemart-André. *Artemisia: Héroïne de l'art*. Exhibition leaflet, Paris, June 2025.
[19] Élisabeth Louise Vigée Le Brun, *Alexandrine-Emilie Brongniart*, 1788 or 1789, oil on wood, 65.1 × 53.3 cm, National Gallery, London. Henriette Browne, *A Greek Captive*.
[20] Marie Blancour's *Bowl of Flowers,1650s, oil on canvas, 65.5 × 51.4 cm, National Gallery, London.* Catharina van Hemessen, Portrait of a Man, 1552, oil on wood, 36.2 × 29.2 cm, National Gallery, London.
[21] Catharina van Hemessen, *Portrait of a Woman*, 1551, oil on wood, 22.8 × 17.6 cm, National Gallery, London Eva Gonzalès, *The Full-Length Mirror*. Rosalba Carriera's *Portrait of a Man,* Ca. 1720s. Pastel on paper, 57.8 × 47.6 cm. National Gallery, London. Bridget Riley, *Messengers.*

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PREPARING STUDENTS FOR LIFE AFTER DESIGN SCHOOL

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INTRODUCTION

As students approach the end of their academic careers, they have tunnel vision, they are only thinking "I just have to make it to graduation." But students very rarely give thought to what happens after school and do not ask themselves questions such as, where do I want to work and what do I want to design? For many of our graduates these questions inevitably lead them to Boston, and then the biggest question becomes, what do I need to do to live and work in Boston? Other questions begin to pile up, such as, where will they find a place to live, a space to make work, a place to hone and expand their skill set, as well as learn new skills. But most importantly where will they find their community? Looking back, the biggest loss I suffered was losing my studio community, a space that I shared with like-minded people whom I worked alongside and exchanged ideas with. This was something I gave no thought to, but when I left school, the loss of community was what hit me the hardest. After speaking with former classmates and alums of our program, all who have had the same experience as myself, I determined it is a problem that needs to be addressed.

Challenges

There are three main challenges that students encounter after design school to live and work in Boston. First, are their starting industrial design salaries and finding a place to rent in Boston that is within their budget. Two, is the loss of studio space, the studio community and the school shops and equipment. Three, is finding a place to practice and further refine their skills and or learn new ones.

Industrial Design Salaries and Rent in Boston

According to Indeed.com the average national industrial design salary is $82,582 and the average industrial design salary in Boston is $80,264.[1] These figures do not take into account rank, but we can assume that students just getting their first job out of school will be on the lower end. Wentworth Institute of Technology reports on their website that the starting salary for recent industrial design graduates is around $60,000.[2] CBS recently reported that for a single person to live comfortably in Boston they must be making $125,000, which makes for a sizable gap between recent graduate's salaries and the cost of living in Boston.[3] CBS got this figure from a report by SmartAsset, it looked at ninety-nine of America's largest cities. SmartAsset calculated this number by using the 50/30/20 budget. Fifty percent of your salary goes to housing, transportation, and groceries. Thirty percent for

vacation and dining out. Twenty percent for savings and paying off debt. To give the reader an idea of how pricy housing is in Boston, a studio apartment in Allston, considered a college student neighborhood, is $2,100 and in the posher locations such as the South End and the Seaport a studio apartment will run you $2,800 and $3,100 respectively.[4]

Studio Space, Community, Shops and Equipment

The second challenge for graduates is the loss of their studio space, studio community as well as access to the shops and equipment at school. As I mentioned I felt this myself when I left school and many of our program alums have spoken to me about this loss as well. The recent graduates don't know how to find spaces to work, where to meet a community of like-minded creative people or find shops and equipment to realize projects. For students graduating from our program that means the loss of designated space to work as well as a fully equipped plastics lab, woodshop, casting lab and metal shop.

Continuous Learning

The third challenge for graduates is finding organizations that offer classes, workshops and certificate programs where they can refine their skill sets and expand them. Beyond what their own school offers in continuing education, students typically do not know where or how to find continuous learning or adult education offerings.

OPPORTUNITIES TO SUPPORT STUDENTS AFTER DESIGN SCHOOL

This leaves many opportunities to support students after design school, to show students how to find live/workspaces, a space where you live and work simultaneously, work-only spaces as well as spaces that house shops and equipment. Additionally, we can support students by showing them how to apply for these spaces to live and work, how to prepare their application materials, as well as show students how and where to engage in lifelong learning to continue to hone skills or learn new ones. And most importantly in all these places students can find a creative community.

How to Find Live/work and Work-only Spaces

I will start with how to find live/workspaces. The City of Boston has a Department of Arts and Culture which is dedicated to "Developing and Preserving Artist Space in Boston. These dedicated artist spaces…offer live/workspaces or work-only spaces for rent and for purchase at a variety of prices."[5] The City of Boston is dedicated to having space for artists because it believes that "artists help make Boston a more livable city". The City of Boston is clearly invested in their artists, but you need to know where to look to find all the information about these spaces. The information has been made accessible by the city through a dedicated website that artists can visit to find live/work space and work-only spaces, how much they cost, some of the spaces are income dependent, and the website also gives you directions to apply for both types of spaces, making this a fabulous resource for students.[6]

How to Find Work-only Spaces

Students can also find work-only spaces through the City of Boston's Art and Culture Department's website. As an example of spaces that are available on the city's website, I will speak about Paula Ogier's studio space, located in the arts district, SoWA, in the South End of Boston. She wrote a blog about how she made the space her own after she secured it and documented the different studio set ups she uses for projects verses open studios and praises the space for being so versatile.[7]

Additionally, students can find work-only spaces through the Massachusetts Cultural Council's website. The Massachusetts Cultural Council "works to elevate our rich cultural life in Massachusetts… by amplifying creativity, providing resources, expanding relationships, and championing transformational changes that maintain and grow a thriving creative and cultural ecosystem."[8] The MCC posts jobs, grants, fellowships and has a dedicated space on their website for artist space classifieds. There are all sorts of offerings in and around the city, sublets, single rentals, and group space rentals. Students could potentially round up a group of friends and rent a space. Or meet new designers by renting part of a shared space.[9] New England Makes is "a site dedicated to celebrating the very best of New England's local artists, makers, and creators." But most importantly they have a directory of makerspaces, so students can locate makerspaces and read up on their amenities and offerings. Some of the spaces listed are Cambridge Hackspace, which houses equipment and space to work on projects and Lowell Makes which has space, equipment and a business incubator program.[10] Some of these makerspaces like Artisan's Asylum have studio spaces for rent, in addition to space to store materials and ongoing projects which is a cheaper alternative than renting a studio space. If you become a member of these spaces, you can use their facilities and equipment at any time. Some makerspaces like Artisan's Asylum, offer day passes or night and weekend passes, which are great options if the full monthly membership fee isn't in a student's budget.[11]

How to Engage in Lifelong Learning

Classes and Workshops

Again, there are various offerings around the city, but students need to know where to look for classes and workshops. The first organization I introduce them to is Cambridge Center for Adult Education, they offer various arts, crafts, woodworking, jewelry making, sewing, knitting, and needlepoint classes. They also offer open studio time in their woodshop and small metals shop so students can work on personal projects.[12] Arlington Community Education offers a variety of art and crafts classes.[13] Mudflat Studios is a space dedicated to ceramics, they offer classes, workshops, studio spaces and storage spaces for rent.[14] Massachusetts College of Art and Design offers a range of classes and workshops in a variety of disciplines. They have fully equipped wood, metal and printmaking studios.[15] Artisan's Asylum offers classes in fine art, woodworking, robotics, jewelry and metal work. The Artisan's Asylum is best suited for our students due to their fully equipped metal shop and woodshop where alums can do anything from weld bikes to turn wooden bowls on a lathe.[16]

Certificate Programs

Massachusetts College of Art and Design, through their adult education programing, offers Certificate Programs to "explore your creative interests, elevate your skills, or gain the tools you need to advance your career."[17] They offer these certificate classes to be taken in one year or at your own pace. I started during their inaugural run of a new certificate program and took one class the first semester, moving forward I took two classes per semester while teaching full-time. They offer certificates in Communication Design, Digital Media, Fashion Design, Interior Design, Studio Arts as well as Visual Storytelling and Comic Arts. All excellent options for our alums to flesh out current skill sets or learn new ones.

Residencies

Last, residencies are a great way for students to spend focused time on a personal project for weeks or months. Meaning they can use some vacation time for a residency or while they are applying for jobs or are in between jobs.

HOW TO APPLY FOR LIVE/WORK OR WORK-ONLY SPACES IN THE CITY OF BOSTON, EXHIBITIONS AND RESIDENCIES

Now I will pivot to how to apply for live/work or work-only spaces in the City of Boston, to do this a student will need a Boston Artist Housing Certificate. Students can obtain the certificate through the city of Boston's Art and Culture Department's website.

Applying for Live/work or Work-only Spaces

First, they must be working in at least one of the listed visual arts or literary disciplines. Second, they need an artistic resume or curriculum vitae that lists the dates and locations of exhibitions, publications, press about them or their work, artist residencies, any jobs held in arts disciplines or fields, in addition to any formal training they have had via school. Third, they need documentation of a recent body of work, done in the last three years, demonstrated by still images, videos and writing samples. Fourth, they need "one reference letter of support from a peer and/or professional in the arts who can confirm they have been active in their artistic practice over the past three years."[18]

Applying for Exhibitions and Residencies

If students want to exhibit their work or apply to residencies to build their curriculum vitae they will need an artist statement for the applications. I walk students through what an artist statement is, what it is used for, how to write an artist statement and show examples of various artists' work and their statements.

What is an Artist Statement

An artist statement is a piece of writing written in the first person by the artist that helps viewers understand their work. The artist statement is meant to represent the artist if they are not present to talk about their work or answer questions about it, the goal is to deepen the viewers understanding.[19]

When is an Artist Statement Used

An artist statement is used for multiple purposes such as when they exhibit their work, in online portfolios, personal websites, for grant, fellowship and teaching applications. Last is also used to apply for live/workspaces and work-only spaces for the City of Boston's Artist Housing Certification.[20]

What to Consider Before Writing Your Artist Statement

Next, I illustrate that this is different from design intent or process and that the students need to look at their body of work as a whole. I ask them to make connections between their projects done during their sophomore, junior and senior years. I have them do a quick in-class exercise where I ask them to list the themes within their work, which can include the goals, purposes, ideas and subject matter they are exploring. Building to writing an artist statement, the students are asked to give presentations on two designers, in the presentations they are asked to touch on cultural, historical, theoretical, art historical, personal and biographical influences on the designers' work. This helps the students prepare to make connections in their own work. Third I ask them to consider the form of their

projects, what are the materials used, what processes are used, do they follow a tradition of work, for example is everything made by hand, is everything made using computer aided machines or do they use a combination of both. Last, I ask the students to consider who the audience for their artist statement is. Is this for an exhibition open to the public or is this for a fellowship application, knowing this will help set the tone for the student's statement.[21]

What to Do if You Feel Stuck Before Beginning Your Artist Statement

Writing about yourself and your work can be tough, and I find with students it can be particularly difficult for them to get started. I give students a few tips via an exercise if they are stuck writing about themselves. To start this exercise, I break the class into several groups of four or five students. The group self-selects one student to start and rotates through the rest of the group. The first student is interviewed about their work by the other students to seek out patterns and connections regarding materials, processes, themes, and influences. The student who is being interviewed takes notes and can ask the other students follow up questions. I also suggest that students have people who don't know their work, people other than classmates, ask them questions about their projects. This can be parents, friends from other majors or roommates. This opens doors for students when explaining their work, illuminating what may not be obvious to the viewer.

When You Are Writing Your Artist Statement

I give the students a few rules of thumb, before they begin writing. First, artist statements are written in the first person and should not exceed one page. Two, your statement should be unique, so I encourage them to be discerning when speaking about experiences, influences and process. For example, they may find nature to be transcendent but so does everyone else in their artist statements that the reader had already read. Re-frame, why is nature transcendent for you? Three, just describing the process that you use to make your work or projects is not an artist statement, that does not give the reader insight into you or your work. Fourth, be careful with quotes, they should be used sparingly and only when they tie directly into your work. Last, this goes back to having an audience in mind, avoid art and design jargon or language that someone not in the art or design field may not be familiar with. Jargon can be off putting to the reader, and the goal is to have them want to know more about your work and continue to read your statement.[22] Finally, I remind students that when they are done with their artist statement, have friends and or a faculty member read their statement while looking at the students work. I stress that this is their final opportunity to answer questions, fix discrepancies and address grammar mistakes. To wrap up the artist statement assignment that we begin in class, I remind the students to continue to write. That they should always be taking notes during critique not only about their work but about classmates' and after critique they should write down reflections and observations. I encourage them to go to lectures, exhibitions and museums, to take notes while listening and looking at other artist's work. I emphasize that continuing to write will help develop their critical thinking skills, speaking about their work as well as making it which will help them develop as a designer.[23]

Expose Students to Examples of Artist Statements

As I said above students have a difficult time looking at the body of their work and thinking about it from an aerial perspective. To overcome this obstacle, I have developed an exercise where students look at a few works by an artist and try to identify connections. Once the connections are made, I then have them read through the artist's statement to compare and contrast the writing and the work. For this exercise I chose artist's whose pieces were either exhibited in Boston or are owned and displayed

in local institutions. I do this to give students the opportunity to see these works in person as well as reiterate that learning, looking and writing about art and design is a lifelong process.

Encourage Students to Start Exploring Their Options

Finally, I encourage students to see what is out there before they graduate so they can make informed decisions for themselves. They can do this by meeting artists and designers that live and work in all the spaces I just mentioned by going to open studio nights around the city. This is a great way for students to meet like-minded thinkers, see art and design, check out other people's studios and talk to them about their work.[24]

CONCLUSION

By giving students information, resources to find places to live and work in Boston, as well as showing them how to apply for these spaces, in addition to exercises to practice putting together application materials, means to find shops, equipment, and organizations where they can pursue continuous learning, we as educators can better prepare students to find their community and thrive after graduation.

NOTES

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INNOVATIVE PEDAGOGIES IN ART AND DESIGN: EXPLORING KALLITYPE PHOTOGRAPHIC PRINTING AS A CREATIVE PROBLEM-SOLVING TOOL THROUGH ǂKHOMANI SAN BUSHMEN PORTRAITS

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INTRODUCTION

In contemporary art and design education, there is a focus on slowness, materiality, and ethical storytelling in response to the acceleration of digital practice.[1] With digital workflows dominating photography education, students need to reconnect with processes and visual ethics. This study examines how analogue methods, specifically Kallitype printing, can teach ethical photographic practices through portraits of the ǂKhomani San Bushmen. The researcher employed Kallitype printing with the ǂKhomani San community, who are often misrepresented through colonial perspectives, utilising a consent-driven approach grounded in the ethics of visual anthropology.[2] Kallitype requires hand-coated paper and UV exposure, aligning with the desert environment and the community's oral traditions. Material experimentation served as an analogue metaphor for digital editing decisions. This research involved a teaching intervention in a Higher Certificate Photography programme in which students worked digitally. Students engaged with the Kallitype portrait project through exhibition visits, printing workshops, and discussions about editing as storytelling. These activities translated analogue thinking into digital reflection, viewing editing as a narrative and portfolio curation as a conceptual argument.[3] Using an art-based methodology, this research addresses the decolonisation of photography.[4] Experiential learning theory research addresses the same aspects of decolonisation and uses editing as a narrative argument.[5] The visual storytelling power dynamics in photography are examined, and this study advocates for material thinking in photography education to ground it in ethical awareness.[6]

Why is this research important?

Contemporary photography education faces a paradox: while digital tools enhance accessibility, they weaken students' engagement with material processes and ethical reflection. This study shows that reintroducing analogue techniques, such as Kallitype, can stimulate critical thinking about image creation and dissemination. This work connects historical processes with contemporary ethical discussions and offers photography teaching that is both technically and culturally informed. By

integrating ǂKhomani San narratives with post-digital pedagogy, the project shows how consent-driven approaches can develop responsible storytellers and demonstrates how art-based practices can function in research, curriculum development and ethical enquiry. In the era of instant visual production, this study advocates a pedagogy based on patience, collaboration, and contextual attention.

Why Kallitype? A Justification for Process Choice

The Kallitype process was selected for its aesthetic and conceptual alignment with the themes of heritage and material storytelling, particularly with respect to the ǂKhomani San Bushmen of Southern Kalahari. As an iron-silver printing method that requires sunlight, Kallitype embodies a contemplative approach that reflects oral traditions and environmental realities. The tonal range and textured finish of the process parallel the indigenous identity. The challenges of this method provide reflective opportunities in a digital workflow. Through this analogue technique, the researcher engaged with photographic materiality and narrative construction to emphasise ethical representation and innovation in photography education.

Based on the pedagogical need for critical engagement, material awareness, and ethical reflection in photographic education, the study explored the following research questions:

1. How can the Kallitype process serve as a tool for creative problem-solving in art and design education?
2. How does exposure to historical photographic techniques enhance the students' understanding of materiality and conceptual alignment?
3. How can Indigenous cultural narratives, such as those of the ǂKhomani San Bushmen, be ethically integrated into visual storytelling in education?
4. What are the pedagogical benefits of integrating practice-based research into photographic education?

Figure 1. Kallitype printing process and ǂKhomani San portrait. Witdraai R360, !Xaus Lodge, Kgalagadi Transfrontier Park, Northern Cape, South Africa. Photos taken by the author in 2016 and 2019.

AIMS AND OBJECTIVES

This study examined alternative photographic processes, particularly the 19th-century Kallitype printing method, to enhance students' engagement in critical thinking, material awareness, and conceptual storytelling in photography education. It addresses how the Kallitype process can catalyse critical engagement, material awareness, and conceptual development in photography students while considering ethical issues in visual storytelling involving Indigenous communities.

Objective 1: Foster Critical Engagement through Ethical Storytelling

The objective was to emphasise the ethics of representation in photography education by introducing students to the colonial visual heritage. Through Kallitype portraits of the ǂKhomani San community, historically subjected to romanticised narratives, students explored ethical storytelling through agency and consent.[7] This aligns with the Potential History framework for re-evaluating the imperial archives of photography.[8] Students assess how photographs can either tolerate or challenge dominant narratives.[9]

Objective 2: Cultivating Material Literacy through Analogue-Digital Translation

The second objective was to enhance students' material literacy through the tactile and unpredictable characteristics of the Kallitype printing. Students engaged in lectures, exhibition viewing, and workshops using a professional fine art printer, associating surface attributes with photographic intent. Materiality contributes to the creation of meaning.[10] When students revisited digital workflows, they linked digital and analogue adjustments, connecting their technical understanding to conceptual enquiry.[11]

Objective 3: Promoting Conceptual Development through Practice-Based Learning

The final objective emphasises conceptual development through art-based experiential learning. The Kallitype process, with its precise exposure times and hand coating, serves as a metaphor for creative problem-solving. By sharing failures and discoveries, the project fostered a discussion on artistic risk and resilience, which are fundamental aspects of experiential learning.[12] Image-making is a legitimate form of enquiry that connects form and content.[13]

Relevance to Photographic Education

This research responds to the growing demand for slower, more ethical, and reflective approaches to image-making in photographic education.[14] In the era of rapid screen-based production, alternative photographic techniques offer historical counterpoints and pedagogical opportunities. The Kallitype process, which emphasises care, time, and intentionality, challenges conventional practices and encourages students to reconsider the material, ethical, and aesthetic dimensions of their work, which are essential elements for developing thoughtful photographs.

THEORETICAL FRAMEWORK

Photography serves as both a mechanical representation and a conceptual medium for image-making. This duality has shaped its evolution as both art and documentation. Various researchers have explored this relationship, viewing photography as a site for image-making and memory. Photography's reproducibility altered the artwork's aura while democratising visual culture.[15] The affective dimensions of photographs can be distinguished across stages, cultural contexts, and emotional effects.[16] Photography can be positioned as a research process framed as a method that generates knowledge through material engagement and reflexivity.[17]

Physicality in photographic processes is crucial for creating meaning. Contemporary analogue techniques, such as Kallitype printing, require interactions with light-sensitive materials and chemical reactions to produce images. This engagement emphasises the photograph as an object, and not merely an image. Material engagement cultivates a deeper understanding.[18] In the Kallitype process, decisions regarding exposure time, paper quality, and chemical mixtures shape the narrative structure. By embracing photography's mechanical history and conceptual potential, educators can provide students with an understanding of image-making. This duality fosters critical practice in photographic education.

Research has shown that integrating analogue techniques into digital photography education fosters ethical contemplation.[19] The use of experiential processes enhances conceptual engagement.[20] In decolonising methodologies, the emphasis is on consent-based storytelling.[21] Visual ethnography shows that material processes promote critical analysis.[22] This project investigates how Kallitype printing, through an art-based inquiry, deepens students' understanding of ethics, materiality, and creativity through practice-based research.[23] Practice-based research produces shareable knowledge that withstands critical evaluation, requiring creative artefacts to be situated within academic discourse, with explanatory texts.[24] These artefacts serve as methodological evidence and contribute to the advancement of field knowledge.

METHODOLOGY

This study used a hybrid of fieldwork, studio-based research, and pedagogy, with visual ethnography as the primary method and qualitative research to investigate cultural meaning. Visual ethnography enables the analysis of images as cultural texts that are embedded in a narrative context.[25] This approach combines art-based strategies with reflective practice to foster critical enquiry. In the ǂKhomani San community of Southern Kalahari, visual ethnography explores the tensions between traditional photography and co-authored storytelling. Historically marginalised through colonial ethnography, the ǂKhomani San were often depicted as passive.[26] This study used a consent-driven collaborative procedure, while the Kallitype photographic method serves as both a symbolic and practical medium that mirrors oral traditions and the community environment.

Ethical storytelling is the foundation of this methodology. In *Potential History*, visual practices that break from imperialist structures by foregrounding subject autonomy and challenging representational hierarchies are emphasised.[27] Portraits are created through dialogue, consent, and contextual awareness. This research avoided romanticising subjects and pursued respectful engagement that acknowledged the complexities of identity and heritage. In classroom discussions, images address the visual exploitation history and photographers' responsibility in the narrative context. The methodology aligns with art-based research principles, in which photographic processes serve as enquiries.[28] Through visual ethnography, students critically engage in representation and the ethics of storytelling. The visual component functions as both a data and pedagogical tool, reinforcing the role of photography as a cultural document and conceptual act.

Art-Based Pedagogy

Art-based design pedagogy combines creative practice with critical thinking to find meaning in the material and conceptual aspects.[29] This teaching approach, grounded in experiential learning theories and reflective practice, employs artistic methods for exploration and problem-solving.[30] Creating art serves as a form of research that involves practical engagement.[31] The project included discussions on historical printing techniques, an analysis of ǂKhomani San Bushmen portraits, and a reflection on editing choices to examine materiality and ethics. Art-based pedagogy connects analogue and digital

applications in photography education. This study explored the integration of Kallitype printing into a digital photography curriculum, chosen for its physicality and complexity, requiring deliberate editing decisions. The researcher's exhibition served as a pedagogical tool for discussions on exposure, contrast, and conceptual editing in Lightroom© and Photoshop©.

Kallitype Printing Process

The Kallitype printing process uses iron salts and silver nitrate to produce contact prints on paper. Unlike digital printing, it involves sensitising paper with a light-sensitive solution, exposing negatives under UV light, and developing images using metal-based developers such as gold or platinum.[32] The prints feature rich tones, deep blacks, and subtle gradations. Kallitype's warm sepia tones and manual production offer visual beauty through paper, developer, and exposure choices. This process aligns with "slow photography", promoting material sensitivity.[33] Although it is more labour-intensive than digital photography, this complexity helps students understand processes and visual decision-making.

Figure 2. Witdraai R360, Northern Cape, South Africa. Photographs taken by the author in 2016.

FINDINGS AND ANALYSIS

Critical Engagement

Integrating the Kallitype printing process into art education fosters critical thinking by prompting students to reevaluate techniques, materials, and meanings. Students in this specific project learned about alternative printing through the lecturer's practice-based research and reflections after an exhibition visit. The painstaking Kallitype process, which involves chemical mixtures, paper textures, and exposure timing, leads students to view image-making as complex and layered.[34] Confronted with hand-printed ǂKhomani San portraits via Kallitype, the students reflected on the influence of tone, grain, and contrast on perception. The photographic image has an emotional poignancy exceeding representation, as was evident in discussions about the portraits' emotional resonance.[35] By analysing technical aspects and nuances, students refined their interpretive skills beyond surface assessments. This supports the view that learning emerges from meaningful experiences.[36] Through visual ethnography and alternative processing, students examined image creation and the communicative processes essential for critical engagement in photographic education.[37]

Material Awareness and Conceptual Development

Although the students did not physically participate in Kallitype printing, their exposure enhanced their sensitivity to the materiality of photographic narratives. Classroom discussions following the researcher's hand-printed ǂKhomani San portraits explored the distinctions between analogue and digital outputs. Material engagement fosters an embodied understanding of artistic practice, as evident in students' reflections on paper texture and tonal depth.[38] This awareness influences their creative decisions in post-production as they begin to understand Kallitype aesthetics, such as soft contrast and organic tones. The assertion is that image making is both a material and cognitive enquiry, where the process informs the ideas.[39] The constraints of Kallitype printing serve as metaphors for creative discipline. Students reported that understanding the analogue process led to more intentional digital portfolio planning. Material thinking creates a dialogue between hands and ideas, where limitations drive innovation and stimulate creative, problem-solving. Kallitype printing has emerged as a pedagogical tool to nurture material intelligence and conceptual maturity.

Figure 3. Students attending a print workshop and exhibition. Photographs taken by the author in 2022.

DISCUSSION

Pedagogical Implications

Integrating alternative photographic processes, such as Kallitype printing, into photographic education enhances students' understanding of materiality and critical engagement. As a historically rooted technique, Kallitype encourages students to engage in the tangible aspects of image creation and reconsider their photographic practices. These benefits align with art-based design pedagogy, which promotes exploration through material engagement.[40] Although the students did not directly participate in the Kallitype process, the researcher's presentation facilitated indirect experiential learning. Students drew parallels between Kallitype and digital tools in terms of editing decisions and portfolio curation. The problem-solving challenges in Kallitype printing enable students to appreciate critical thinking about aesthetic automation. However, the implementation of these approaches presents challenges, such as limited access to darkrooms, costs, and curriculum pressures, which can hinder student participation in analogue processes. Pedagogical scaffolding ensures inclusivity and translates material experimentation into a digital context.[41] Future implementations may include hybrid strategies that connect physical and digital output. This project demonstrates the need to integrate reflective and material-based learning into photographic education. Practice-based research enhances the insight of educators and students, and this study shows how indirect exposure to analogue methods can promote critical engagement.[42]

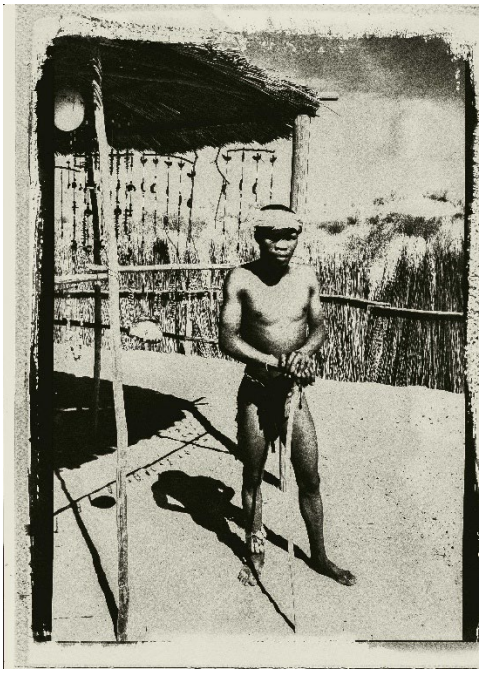

Figure 4. Kallitype printing process and ǂKhomani San portrait at Xaus Lodge, Kgalagadi, Northern Cape, South Africa. Photographs taken by the author in 2019.

Ethical Considerations in Visual Storytelling

Visual ethnography involving Indigenous communities, such as the ǂKhomani San Bushmen, prompts critical enquiry into power dynamics and representation. This study used a consent-driven methodology that emphasised visual storytelling that honoured subject agency. The adoption of Kallitype underscores this ethical stance. Photography should transcend documentation to enter the realm of "potential history", where images embody ethical responsibility.[43] Material processes such as Kallitype printing inherently decelerate image-making, allowing for reflection, which is often absent in digital capture. The tactile nature parallels ethnographic fieldwork, where presence and attention are fundamental.[44]

This intersection provides students with opportunities to consider the creation and representation of images. Through discussions, students examine the ethical dimensions of visual storytelling. The textural depth of Kallitype prints serves as a metaphor for this cultural complexity. Unlike digital perfection, the handmade nature of Kallitype highlights the subjectivity of each image, which is a crucial indicator of ethical awareness.[45] This study offers a model for cultivating ethical literacy through processes that expand the scope of responsible photography education.

Bridging Digital and Analogue Photography

This study contributes to reconciling analogue and digital photographic practices and shows how their integration enhances students' critical and creative capacities. The Kallitype process provides a framework for understanding paper, light, contrast, and chemistry in visual storytelling. These lessons apply to digital workflows, where editing tools reflect tactile adjustments, such as Kallitype printing.[46] Such comparisons help students view digital editing as an extension of their conceptual goals. When taught through material understanding, digital tools become sites for decision-making rather than automation, thereby contributing to visual literacy.[47] The future of photographic education lies in hybrid environments that foster a holistic understanding of image-making. This study affirms that

analogue-informed pedagogy deepens technical understanding and prepares students for the visual culture of the 21st century.

CONCLUSION

This study investigated the pedagogical potential of Kallitype printing as a creative problem-solving tool within an art-based design framework, focusing on students' conceptual, material, and ethical development. A key insight gained was the value of critical engagement. By introducing students to a slower, analogue-driven practice such as Kallitype printing, they became more intentional in their image-making. Discussions about the Kallitype workflow, including exposure time, chemistry, and paper texture, enabled students to draw parallels with digital editing tools such as contrast curves and tonal adjustments in Lightroom© and Photoshop©. These comparisons foster a deeper understanding of how aesthetic choices influence the narrative's intent.[48]

Students developed sensitivity to the significance of paper and print through material awareness. Through workshops with a professional printer, they gained an appreciation for the tactile value of photographic materials. This experiential perspective positions materials as integral to image-making, supported by an analysis of artistic practice.[49] The findings of this study contribute to the conceptual development of students, with the Kallitype process serving as a metaphor for decelerating creative ideas, counterbalancing the rapid pace of digital workflows, and encouraging aesthetic reflection. This aligns with the theory of experiential learning, which emphasises experience and reflection in the development of thinking. These findings demonstrate the study's contribution to art-based design pedagogy by showing how alternative processes foster critical and creative development in students.[50] This aligns with the assertion that practice-based research transforms both the educator's role and the students' learning experiences.[51]

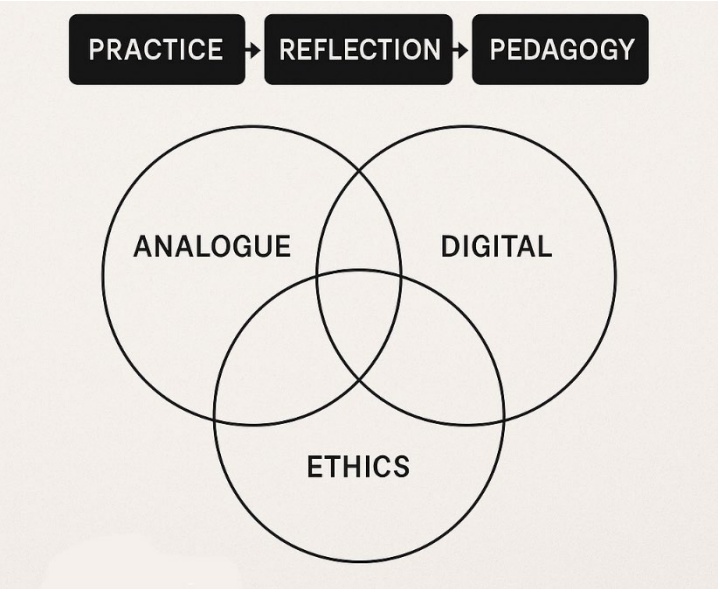

Figure 5. Contribution of knowledge through a unique and replicable model to integrate ethics, materiality, and creativity.

Implications for Future Research and Practice

The findings of this study present promising directions for research in photography education. While focusing on guided teaching through exhibitions and reflective discussions, it encourages hybrid pedagogies that combine practice and conceptual enquiry. Expanding access through simulations and workshops can democratise these experiences in art curricula. These methods have cross-disciplinary implications for other visual arts, such as printmaking and design. The pedagogical strategy of integrating research, ethical awareness, and material exploration resonates with creative education.[52] This study emphasises visual ethnography and responsible storytelling in education. By introducing indigenous narratives of the ǂKhomani San Bushmen, the project developed an ethical visual literacy.[53] Ethical image-making encompasses an understanding of social forces in visual culture, and Kallitype printing serves as a process and metaphor for deeper engagement, showing that visual storytelling must explore materials, cultural narratives, and ethical image-making.[54] Photography requires educators to connect disciplines and values, with historical processes that foster these competencies. Alternative processes serve as interventions for developing responsible practitioners. The findings suggest that analogue and digital methods coexist for deeper creative engagement.

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TEACHING AS LEARNING AS RESEARCH AS PRACTICE: OBSERVING SPACES LEARNING

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INTRODUCTION

Can spaces learn?
Can learning change space?
"Observing Spaces Learning" describes a project that evolved a way of teaching into a pedagogy of practice to incorporate continuous learning. The following paper reflects on the development of a way of listening and being through immersion in physical spaces to garner and distil awareness and processes of memory.
Beginning in a community[1] of research the project grew into an individual process to study and question spaces of learning. Observational drawing became the act and art of research, the act and practice of remembering, and the act and scholarship of learning and teaching. Spaces for learning and the individual processes of learning and remembering became the core of a project.
The process built the project. Listening, observing, drawing, and embracing the elasticity of memory all revealed the complex, layered narratives of learning. Evolving questions and paths towards pedagogy carry the arc of the project forward. Learning emerged, clearly, as a practice for teaching. Being, listening, and engaging in all roles in the settings, stages, and spaces of learning prompt possibilities for pedagogical thinking. In returning to learning, we re-gain and re-establish empathy in processes of listening and in our practices of becoming.

TOWARD A MAGIC IN THE REAL

In the beginning, I looked to the last question I had asked.
Inside and outside of academic walls, I had been noticing different presence, reaction, and response in acts of making. I collected work into "Toward a Magic in the Real",[2] pausing for a moment to listen to this attention to the senses, this attunement[3] to the world with and within the body, presence in space, reacting in time, and responding to the world. The work emphasized integrations of consciousness and subconsciousness, body and mind, and instinct and intellect.

Figure 1. Portrait for a recipe, Spring 2023, M. Hackett.

Simultaneously, increasing, mediated presences took the body as subject, object, and content (Figure 1). Authorship, scale, and context offered explicit and underlying rationale for these shifts as much as time, space, media, and circumstance. I observed these two - this magic in the real and the presence of the body – and uncovered questions:

- *What makes us human?*
- *What is human about space?*
- *What is human and spatial about learning?*

LISTENING

In the Spring, I listened.

I listened to stories. I listened to colleagues and their histories of learning, teaching, and the evolution of these in their lives. I listened to ways they learn now and how it has changed. I listened to memories of educators who made them love learning. I listened to students, administrators, former classmates, former professors. I listened to stories about drawing, teaching drawing, and observational drawing. I listened to stories about bodies in space, bodies in learning, and bodies in spaces for learning. I listened to a lot of memories, a lot of questions without answers, and a lot of joy.

People change space

Several moments in these months of listening established the initial framework for the project and, also, projected it forward. I attended a lecture titled “Edges” given by Emmanuel Admassu and Jen Wood of the interdisciplinary architecture practice, AD-WO. During the question-and-answer period,

a student in the audience asked about the firm's design process and specifically about their drawings, many of which include human figures, often people that they know personally from the places where they design their work. Admassu took a moment to consider the question and answered. "As designers, we often hear that space can change people. In our projects, we are interested in the ways people change space." [4]

Gathering

Fanny Krivoy, a professor in Communication Design at Pratt, presented ways she engages her students in both physical and digital activities and spaces during class meetings.[5] She discussed her practice of building the space of the classroom as a purposeful and meaningful "gathering" with qualities of inclusivity, respect, outcomes, and expectations for play.[6] Krivoy weaves physical and digital, games and interfaces, and consistent recognition of physical bodies integrating digital tools in each class.

Professor Krivoy recommended a book by Priya Parker titled *The Art of Gathering.* The book relates a series of tangible experiences and experiments in organizing and community, groups of people and sharing spaces. It inspired a key component of the project: physical presence. I knew the observations would be a primary source to understand, in Emmanuel Admassu's words, "how people change space."[7]

The slow burn

A phrase and an idea, now unforgettable to this project and in my mind, the slow burn, arrived in a conversation with Professor Birgit Rathsmann. Professor Rathsmann teaches courses in Foundation and the Interdisciplinary Area at Pratt. In speaking to her about observing their course, one that was of particular interest, because of her emphasis on developing ideas and working iteratively, specifically and only, during the time of the class each week, Professor Rathsmann expressed a truth that has been present throughout the process and has remained since.

"You need to come for the whole class, every week and take the class like a student. To understand it, you need to go through it. You will only understand through the slow burn."[8]

Her statement echoes. I am struck still in understanding time through presence and the clarity of their voice, in my mind as if no time has passed.

Drawing as thinking

I encountered Professor Brian Brooks, a professor in the Foundation year at Pratt Institute in the end of the Spring. Professor Brooks instructs a range of courses in topics of drawing, light, color, and design course sequences. Professor Brooks is a painter, and he draws. He understood, immediately, intentions in the project to study space and learning, and to use tools of observational drawing.

Within these experiences, I formed a plan for the Fall. I would observe people in spaces of learning. I would be physically present. I would observe through drawing. Observing and documenting would be the primary research. Finally, I hoped to find a slowness in listening and in the energy of immersion through the time and the magic in the real of observing and drawing.

Seeing drawing

In this project, drawing functions as a process of observing, understanding, and imagining.

In the process, observing, the making of and thinking through the drawings, as well as the reflective moments with the work following the observations themselves could best be described as

performance. I responded to the activity in the room as time passed. Less proof or evidence, the drawings registered listening, learning, and connecting mind and senses in time.
To understand the drawings as artifacts in themselves and to read them, it is important to understand them as a personal and evolving, process and practice. In this line of thinking, drawing may include methods of representing thinking and experience. It may include a range of media, diverse types of representations, shifting points of view, different measurable and unmeasurable mark-making and, often, legible and less legible writing. Drawings record experience, remembering, and learning. The artifact is not a photograph. It may approach a memory of seeing.
Drawing is personal. There is feedback in the process. This is unique to the individual creating the drawing as well as to the drawing itself. The drawing has the potential, in a moment, to generate the drawing, to speak back. It has its own information, its own language, and tells its own story.

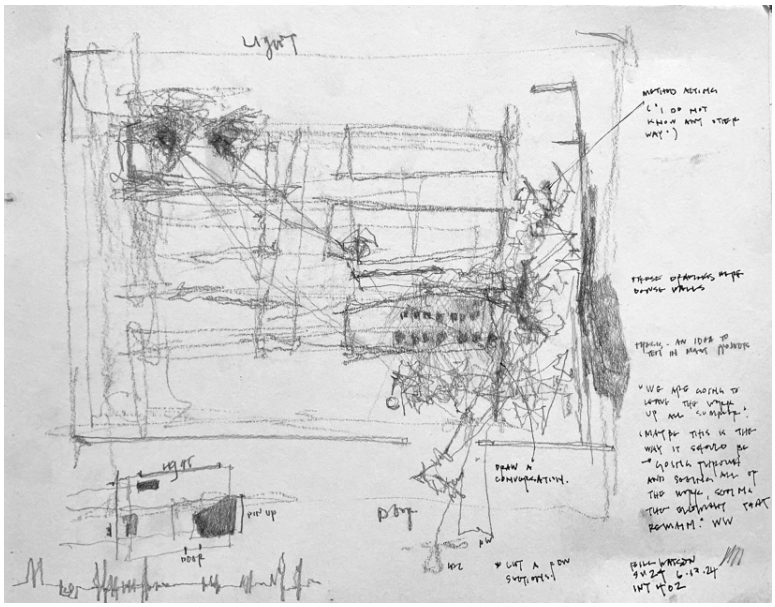

Figure 2. Memory drawing, 6.24.2024, C. Limbird.

In-between semesters, I had the opportunity to test and practice the observational drawing in the context of a design studio course (Figure 2). The experience provided ingredients, palette, and a framework to attend future courses. The parameters and requirements focused, essentially, on presence, observation, and transcribing this presence through drawing. I carried materials to draw, paper, and a room number. I planned to show-up, observe, see, and listen. I believed I understood the requirements of the singular, focused task of observational drawing. The experience also revealed realities of observation, clarity in the goals and potential outcomes of the experiences, and, in a way, what it means to be human, in a body, in space, and in time.

OBSERVING SPACES LEARNING

The project transitioned from the Spring to Fall, and the project of the fellowship shifted too. I conceptualized the class observations out of the organization and thinking of the initial conversations. I listened. In listening, I observed. I collected and drew perceptions of voices, details of space, qualities of atmospheres in time. I remembered learning. All of this involved being in physical spaces, being present, and paying attention to the ways spaces learn in response to activity, time or physical changes in the space itself.

Sense

In *A Natural History of the Senses*, Diane Ackerman describes the histories of smell, taste, touch, vision, and hearing, in several species of animals. Ackerman builds a case for the human being's contemporary ocularcentric experience of the world despite our origins in the ocean and evolution through a quadrupedal existence. Ackerman points to specific animals' evolution from quadrupedal to bipedal inhabitation of the world and how it has changed the experience, dependence on, and use of their senses.

As our experience evolved from one known through our skin, breath, and taste, the focus of our attention also shifted to the distance as opposed to the immediate and the world just beyond our body. The evolution of the human senses relates significantly, here to the project of observational drawing. To observe in order to draw experience, for me, required full presence and, in the words of Ackerman, "smelling in order to think." [9]

Observing

To begin, I observed a Foundation Drawing course. I began by drawing drawing. I drew movement and sounds. I drew light and shadow and other elements that appear now in the drawings themselves. As we drew, the drawing looked back at us as we looked out, drew, and balanced volumes and the space of the page (Figure 3).

Figure 3. Observational drawing, 8.8.24, C. Limbird.

In some observations, it took time to find the speed and materials to connect or synchronize with the space and the class. This might involve the students, the light, the work, or some combination of these integrated with my own atmospheres that I brought to the day. It could be a movement taking form in the conversation, becoming present in the drawing and in the shared consciousness of the group. It invited memory. Initially, I understood the project scientifically, almost mathematically. I focused on space, the bodies in it, time and the activities of the class – space, bodies, time, activity. These list the variables of the experiment. I was the control. In the context of a history course, I realized I had not recognized my own memory, a fundamental variable in this process.

Figure 4. Observational drawing, 9.14.2024, C. Limbird.

In this history class, the students and professor discussed Stonehenge, its origins, construction, materials, and weight. The experience itself approximated a cinema in its darkness and conical light of the carousel projector. Time expanded, the room opened, light reframed distance (Figure 4).

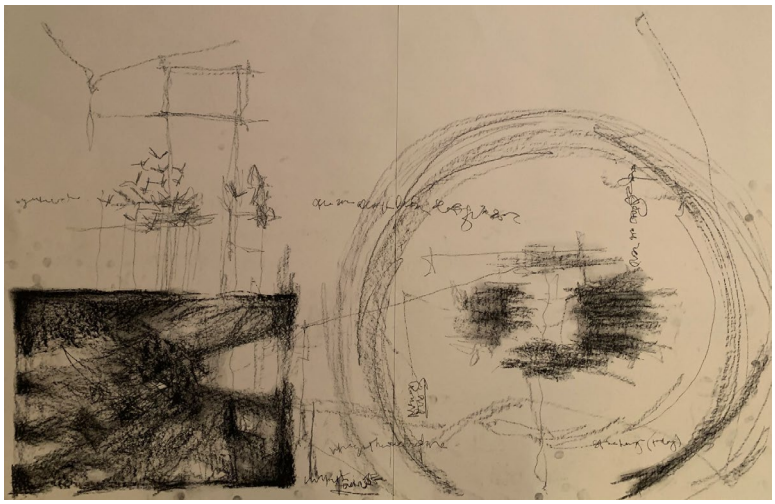

Figure 5. Memory drawing, 9.14-24.2024, C. Limbird.

These shadows stayed with me. I built them again (Figure 5).

Some observations shifted my point of view, others redefined my understanding of flexibility, tools and their integration with space and correlations with the body. In some classrooms, stillness consumed everything, heightening small sounds and reminders of one's own body in space through breath and heartbeats, rhythms and patterns of caverns of deep interiors. In others, projections delaminated films of remembering, reordering, and reconceiving time.

Each observation remains clear. I drew, most often, in the moment of observing. In others the image continues to form, reappearing, and echoing now, returning evolving narratives of space, words, histories, and lines. The project, its spaces, its voices, and its learning are not different than time. Its focus kept changing as the form, composition, and gravity of the drawings all corresponded to the experience and to a perspective and one individual's senses, all of which were mine.

CONCLUSION

When is a project finished?
When is a drawing complete?
If reflecting continues through a project, questions, tangents, and conversations, invite evolution, tangential explorations and the entry of unexpected voices, considerations, and circumstances in the process. In the potential of continuing this process of observing, remembering, and learning, I imagine drawing connections through time and space with content and in contexts beyond established spaces of academic learning and beyond a focus on individual perception and the human senses. We hold conscious and subconscious memories that layer our understandings, responses, and, in turn, our memories of each moment. Can this reveal something more of the way our senses attend to information, the ways we engage, listen, and learn? I imagine this analysis as a continuing act as opposed to a synthetic conclusion. This invites the material and means of observation, the body itself, and, therefore, the project to evolve. It allows the experiment to transform and, therefore, the variables and the control to move within the contemporary contexts of learning.
A question looms. What can a student learn from this process? How can we think about this in the way that we learn? An answer to this question has been somewhere in the work since it began, or it was there before it began. It is still here. To understand, I will recall some guiding principles from the project:

- *what makes us human,*
- *magic in the real*
- *seeing, observing, presence*
- *drawing as thinking, drawing as learning*
- *the slow burn*

How can we think about this project in the way that we learn? *What did I learn?*
During the observations, I realized a metaphor for their process. Each observation is a walk. This parallel has a deep correlation with a derive,[10] or the "drift", a type of walk practiced by the Situationists in the 1960s in Paris. As a mode of experimental drifting or wandering through an urban environment, it relied on sentient and psychological attractions to guide an unplanned experience. Psychogeographic maps, or the visual representations of these wanderings weighed heavily into experience and memory over measure or other traditional notations of cartography. In my project, each classroom I observed through listening, seeing, and following, in tune and in some rhythmic cadence with the people and space around me. We were of the same light, dust, air, and shadow. We were of the same breath, temperament, posture, and speed. We spoke in the same volumes. We listened in the same tones. The drawings held these layers as well. I sensed the body of the room, each movement, a gesture of energy, the breathing, and the seeing. I gravitated towards the notion of a dérive in the beginning observations because, like a dérive, I did not enter a space, knowing what would happen or what path I would take. I arrived knowing acts of observing, listening, trusting my senses, and drawing.
In the process of attending more classes, I sensed that I was perceiving and understanding more than the immediacy of what my senses were sensing. The moments in the class recognized and stretched to memories and other stories in my mind. In the instance of the art history course in dialogue about Stone Henge, we were in the dark room with the light of the projector, and we were in other places too. I watched myself watch a black and white film in the audience in the theatre of the Bauhaus. A small television was playing Bladerunner[11] in a large empty room. I listened and watched, a visual narrative of surfaces, the sea, color, and light carried me up to the roof of an apartment building in Barcelona. I listened, wrote, drew, learned how I remember, learned how I learn.

Here the metaphor of the dérive evolves to a kind of meditative walking or a journeying that invites the mind to wander. Michel de Certeau describes and questions this in *The Practice of Everyday Life*:
What does travel ultimately produce if it is not, by **a** sort of reversal, an exploration of the deserted places of my memory? […} What this walking exile produces is precisely the body of legends that is currently lacking in one's own vicinity; it is a fiction, which moreover has the double characteristic, like dreams or pedestrian rhetoric or being the effect of displacements and condensations. As a corollary, one can measure the importance of these signifying practices (to tell oneself legends) as practices that invent spaces.[12]
De Cereau questions travel and considers allowing the mind to wander. He questions whether physical travel allows the mind to mentally travel.
Slowing down, the presence in the drawing allowed my mind to wander, make connections, imagine disparate spaces, ideas, knowledge, and memories to collide and intersect. I imagined through the practice within the senses focused on those memories. In some instances, it was light of a projector to conjure a spontaneous theatre, the sound of a reel of film, shadows casting surfaces of future interiors, a familiar voice, light on a podium, the distance to a stage.
I will attempt, here, to draw a pause in the arc of this idea for the question:
Can we think about this in the way that we learn?
As humans, we are each unique. We exist in our individual, sentient body with its own history and memory. We each have the potential to find the way that we learn, listen, remember, and the ways that we absorb and process experience. As educators, we have an opportunity to provide space and time for understanding these unique ways of learning. And, perhaps, these everyday practices of listening and practicing learning will become palimpsests of our experiences, our dreams and our stories. Individually and collectively, these are the foundations of learning, of imagination, inspiration and creativity.

NOTES

[1] This paper describes research activities undertaken in the year 2024 as part of a Pratt Institute Teaching and Learning Fellowship. The Fellowship is organized by the Pratt Institute Provost office, the Pratt Institute Center for Teacher and Learning, in collaboration with the Schools across the Institute. The author of this paper was awarded the Fellowship for the School of Design for the year 2024. The Fellowship provides both financial support for a proposed research project as well as the collaborative support of the community of fellows throughout the year.

[2] Chelsea Limbird, "Toward a Magic in the Real", presentation, AMPS Conference Teaching Beyond the Curriculum, Wenzhou-Kean University, China, November 15-17, 2023.

[3] The word "attunement" here refers both to the colloquial use and idea of human connection layered and understood through multiple means but also refers to the exploration and ideas underlined in Alberto Perez-Gomez's book, *Attunement: Architectural Meaning After the* Crisis *of Modern Science* (MIT Press, 2016). Perez-Gomez looks to space, architecture and the experience of the built environment as instrumental to human health, well-being and shared cultural and communal understandings of self to foster compassion, empathy, and ethics.

[4] Emanuel Admassu and Jen Wood, AD-WO Architecture, "Edges", lecture, Cooper Union, New York City, April 9, 2024.

[5] Fanny Krivoy, "Conversations and Connection: Designing the Classroom Experience as a Gathering," presentation, Pratt Institute Center for Teaching and Learning, Faculty Spotlight Series, online, April 19, 2024.

[6] Priya Parker, *The Art of Gathering: How we meet and why it matters (*Riverhead Books: New York, 2018), ix.

[7] Admassu and Wood, 2024.

[8] Rathsmann, Birgit. Interviewed by Chelsea Limbird. Zoom interview. April 19, 2024.

[9] Diane Ackerman, *A Natural History of the Senses* (New York: Vintage Books, 1995) 30.

[10] Guy Debord, "Theory of the Dérive," The Anarchist Library, last modified July 8, 2021, https://theanarchistlibrary.org/library/guy-debord-theory-of-the-derive?v=1625751379.

[11] *Bladerunner*, directed by Ridley Scott (Sir Run Run Shaw, 1982), 1hr. 57min.

[12] Michel de Certeau, *The Practice of Everyday Life*, trans. Steven F. Rendall (Berkeley: University of California Press, 2002) 107.

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PROXIMITY: FROM THE CLASSROOM TO THE COMMUNITY SPACE – A CREATIVE EXPERIENCE IN DESIGN

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INTRODUCTION

This project was undertaken within the academic context of the *Graphic Design Project* course, part of the second-year curriculum of the undergraduate degree in Graphic Design at the School of Design, Polytechnic Institute of Cávado and Ave (IPCA), in Barcelos, Portugal. The course required students to develop conceptual and practical proposals for the visual and graphic identity of cultural institutions situated in the city of Barcelos. The institutional proximity and collaboration among the cultural sector, the Municipal Government, and the School of Design provided a pedagogical framework grounded in applied practice. This context enabled students to engage with design problems that closely emulate professional conditions, thereby enhancing the relevance and rigor of the learning experience. Furthermore, the project exemplifies a model of experiential learning that not only reinforces academic knowledge through real-world application but also contributes to the cultural and social development of the local community. Such initiatives underscore the reciprocal relationship between higher education institutions and their regional contexts, fostering mutually beneficial academic and civic engagement.

THEORETICAL AND PRACTICAL FRAMEWORK

The primary objective of this project is to apply the formal and theoretical principles of identity design, with a particular focus on the development of visual language as a strategic tool for communication. Grounded in the broader field of design theory, the project seeks to integrate both historical perspectives and contemporary paradigms in order to construct a coherent and contextually responsive visual identity.

The theoretical foundation draws upon key concepts from semiotics, visual rhetoric, and branding theory, recognizing the communicative power of visual systems in articulating institutional values and cultural positioning. In parallel, the project is informed by the evolution of graphic design as a discipline, acknowledging its shifting role within the contexts of media, technology, and socio-cultural transformation.

From a practical standpoint, the project engages with methodologies typical of professional design practice, including research, conceptual development, iterative prototyping, and critical evaluation. This dual emphasis on theory and practice enables a holistic approach to identity design—one that not

only addresses aesthetic and functional considerations but also reflects an understanding of the symbolic and strategic dimensions of visual communication.
Ultimately, the project aims to position identity design as a dynamic process of meaning-making, capable of shaping and reinforcing the narratives of cultural and institutional entities within their specific social and historical contexts.

Identity Design - practical and theoretical foundations

The project is grounded in the discipline of identity design and informed by semiotic, cultural, and spatial theories aimed at decoding and rearticulating the visual language of a local institution. It investigates the role of graphic design—through signs, symbols, and systemic visual elements—as a mediating force between institutions and the environments they occupy, both physical and communicative. This approach emphasizes the capacity of design to construct meaning and establish coherent visual narratives that reflect institutional identity and context.
Prior to the development of the project brief, students engaged with key theoretical frameworks and seminal authors in the fields of semiotics, visual identity, and communication design, including Paul Rand (1914-1996), Joan Costa (1926-2022), and Charles Sanders Peirce (1839-1914). These foundational readings provided critical insights into the communicative function of design and its role in shaping perception through structured visual systems.
The integration of these theoretical perspectives positioned graphic design within a broader strategic and cultural framework, highlighting its potential as a unifying medium that bridges visual communication and institutional values. Furthermore, this conceptual grounding enabled students to articulate communication objectives with greater clarity and intentionality, thereby reinforcing the relevance of design as a tool for both aesthetic expression and strategic alignment.

Elements of the identity of the city of Barcelos

The project adopts an approach grounded in addressing authentic institutional needs, proposing a design intervention that is both research-driven and developed through co-creative methodologies. These positions design not merely as an aesthetic exercise, but as a strategic and interpretive practice capable of mediating between institutional values and public perception. The project reflects critically on the ways in which historical heritage and local identity can be translated into contemporary, coherent, and adaptable visual systems. These systems are conceived to function effectively across both analogue and digital platforms, reinforcing institutional narratives while remaining responsive to diverse communicative contexts.
"*The municipality of Barcelos has built an undeniable heritage, historical and social value around its traditional crafts and folk art. It can be said that traditional arts and crafts are at the heart of the people of Barcelos and that creativity is the legacy that the noblest artists of this land have cultivated over the centuries and that they are currently one of the great cultural references of this municipality."*[1]
The *Galo de Barcelos* (Rooster of Barcelos) stands as the most widely recognised symbol of identity associated with the municipality of Barcelos. Deeply embedded in the region's cultural heritage, it is particularly prominent within the tradition of local craftsmanship—most notably in *Figurado barcelense*, the city's distinctive form of figurative pottery. Beyond its artisanal roots, the rooster occupies a central place in the city's iconography and collective historical narrative. Originating from a well-known folk legend that emphasizes themes of justice, faith, and miraculous intervention, the rooster has evolved from a handcrafted artefact into a powerful emblem of local identity. Today, it

functions not only as a visual marker of cultural continuity but also as a symbolic representation of Barcelos in both national and international contexts.
The presence of the *Galo de Barcelos* is widely disseminated across the municipality, functioning as a representative graphic symbol in a variety of contexts, including institutional materials, promotional campaigns, local product packaging, municipal infrastructure, public signage, and cultural events. This extensive institutional and symbolic appropriation of the rooster reinforces a cohesive regional identity and significantly contributes to Barcelos' national and international recognition as a reference point in Portuguese folk art and tradition. In this context, the *Galo de Barcelos* operates not merely as a decorative or graphic element, but as a cultural and communicative device imbued with historical, social, and affective significance. Its use encapsulates narratives of local heritage, collective memory, and regional pride, positioning it as a powerful tool in the construction and projection of municipal identity.

PROJECT OBJECTIVES

The overarching aim of this project is to respond to the concrete communication challenges faced by a local cultural institution through the development of a research-informed and design-led intervention. Grounded in a critical analysis of the institution's existing visual identity and communication strategies, the project seeks to formulate a comprehensive identity system that is coherent, contextually appropriate, and operationally viable. Emphasis is placed on aligning visual communication with institutional values, stakeholder needs, and public engagement objectives. The design process is structured around methodologies of applied research, user-centered inquiry, and co-creation, ensuring that the proposed solutions are both evidence-based and strategically grounded.
A key objective is to interrogate the role of visual identity within the broader dynamics of contemporary cultural communication, particularly considering ongoing technological transformation and media convergence. This includes an exploration of the implications of digital platforms, cross-channel branding, and the fluidity of identity representation in hybrid environments. Attention is also directed toward the symbolic, affective, and experiential dimensions of identity design, acknowledging its capacity to foster meaningful institutional narratives and sustained audience relationships within an increasingly networked and visually saturated society.

Involved institutions

For the purposes of this project, six local cultural institutions located in the city of Barcelos were selected: *Barcelos Turismo,*[2] *Biblioteca Municipal de Barcelos,*[3] *Galeria Municipal de Arte – GAL*[4], *Theatro Gil Vicente,*[5] *Museu de Olaria*[6] and *Torre Medieval.*[7] All these institutions are publicly managed, either by the municipality or the Portuguese state, and operate on a non-profit basis. Their inclusion in the project reflects a broader commitment to promoting public access to culture, safeguarding regional heritage, and encouraging civic engagement through design.

METHODOLOGY

The development of each project was carried out independently, with each student engaging in a distinct design process over the course of twenty-five class sessions, each lasting three hours. The work was situated within a project-based (atelier) learning framework, which combined structured studio time with periods of independent study, supported by continuous supervision and formative feedback from instructors. This pedagogical model encouraged iterative development, critical reflection, and peer engagement.

At the conclusion of each project phase, students presented their progress in structured critiques and participated in group discussions, fostering a collaborative and reflective learning environment. As outlined earlier, the project unfolded across three main phases:

Phase 1: each student was tasked with conducting a comprehensive research inquiry into the selected cultural institution. This investigation encompassed multiple dimensions, including the institution's historical background, organizational structure, corporate philosophy, positioning within the national cultural landscape, communication strategies, internal culture, public relations approach, and target audiences. The objective was to develop a holistic understanding of the institution's current identity and communicative ecosystem. Through critical analysis of these factors, the student-designer was able to identify key strengths, as well as areas in need of development or realignment. This analytical foundation was essential in informing a design proposal that was both contextually relevant and strategically grounded. To support the visual articulation of this emerging concept and to establish the intended tone and aesthetic, students developed mood boards. These boards served as curated collections of visual references—encompassing color palettes, typographic styles, textures, imagery, and compositional approaches—that guided the early stages of the design development process.

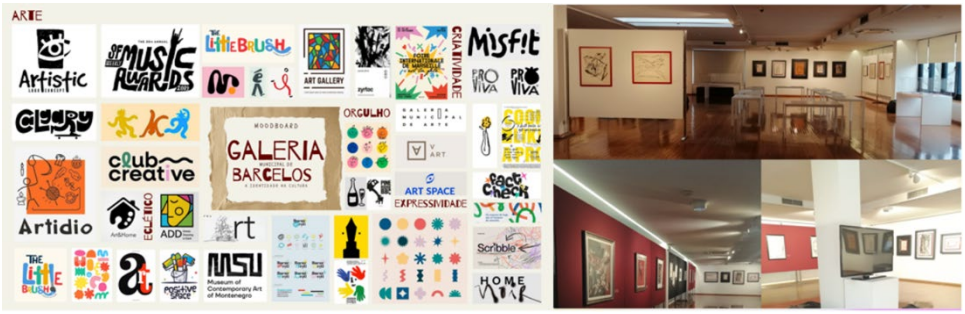

Figure 1. Students research and analysis (from left to right): Student Mood Board (Municipal Gallery); Survey and collection of images and spaces (Municipal Gallery); Survey of communication and publicity materials (Gil Vicente Theatre) © IPCA

Phase 2: Students were required to design a set of visual signs and apply them consistently across a wide range of graphic media. This stage followed the conceptual and formal groundwork established in the initial phase of the project.

Initially, and based on comprehensive research—encompassing historical, institutional, and visual analysis—a clear conceptual direction was defined to guide all formal and strategic decisions throughout the design process. The primary objective was to translate the institution's values, mission, and personality into a visual language that was clear, distinctive, and coherent. This involved the development of key identity elements, including the symbol and logotype, typographic and colour choices, and the design and articulation between the symbol and logotype.

The visual identity was constructed following principles of geometric structure, visual rhythm, and formal harmony. The relationship between the symbol and the logotype was explored through various configurations—horizontal, vertical, isolated, and integrated—to create a system with strong structural flexibility. This adaptability is essential to ensure consistent and effective implementation across multiple formats and platforms.

Figure 2. Student design process (sketches, digital drawings and final version), Pottery Museum. © IPCA

Subsequently, students moved into the development of applications, beginning with the design of basic stationery materials in both print and digital formats. These included business cards, letterheads, continuation sheets, envelopes, message cards, and email signatures.
In addition to these core elements, students were also encouraged to design other context-relevant applications, tailored to the institution's communication strategy and needs (posters, brochures, signage systems, social media templates, branded merchandise, and environmental graphics).

Figure 3. Student design process (proposals for applications), Pottery Museum. © IPCA

Phase 3: establish all the rules for applying the developed corporate/institutional design system. These guidelines were formalised in a Graphic Standards Manual (also known as a Brand Guidelines Manual). This manual should cover the core elements of the identity system and provide rules for the layout of all printed materials, stationery, publications, signage and audiovisual elements. It should also provide guidelines for applications on other surfaces, such as three-dimensional objects and architecture, as well as for environmental design and internal and external communication practices.

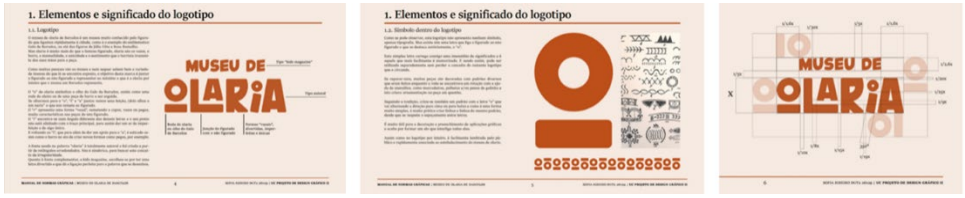

Figure 4. Details of the Graphic Standards Manual for Pottery Museum (student work). © IPCA

RESULTS AND FINAL CONSIDERATIONS

At the conclusion of the semester—following over ninety hours of research activities, including site visits, interviews with institutional leaders and staff, exploratory site walks, and photographic documentation—students were tasked with engaging in deep, critical reflection and developing innovative proposals for the visual identity of the respective institutions. Could there be symbolic elements, beyond the Rooster of Barcelos, capable of representing each of these entities visually? Is it possible to conceive a coordinated image that preserves the individuality and autonomy of each institution—institutions that play a significant role in the cultural and educational fabric of Barcelos? Could new communication and outreach strategies be developed and implemented, fostering greater

involvement of staff and leadership? How can design contribute to a deeper integration of the community in these spaces and their activities? And finally, is it possible to enhance the visibility of these institutions, which are housed in architectural settings of great historical and cultural value?

Figure 5. Proposal for the Municipal Library visual identity (student work). © IPCA

Figure 6. Proposal for the Medieval Tower visual identity (student work). © IPCA

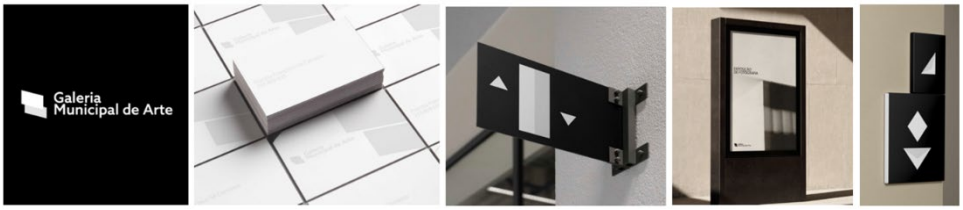

Figure 7. Proposal for the Municipal Art Gallery - GAL (student work). © IPCA

Figure 8. Proposal for the Barcelos Tourism (student work). © IPCA

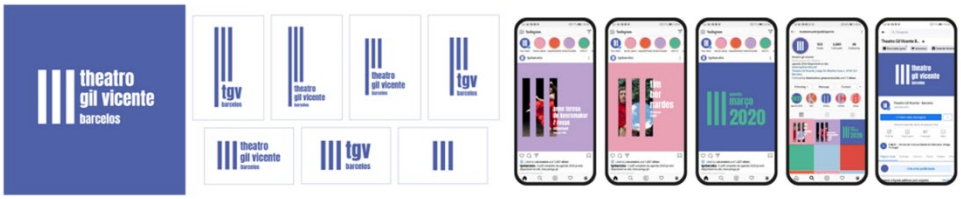

Figure 9. Proposal for the Gil Vicente Theatre (student work). © IPCA

Figure 10. Proposal for the Pottery Museum (student work). © IPCA

The majority of the proposals demonstrated a rich symbolic dimension—encompassing figurative, abstract, and typographic elements—rooted in the architecture of the spaces, the experiences and services provided, decorative motifs and details, as well as key cultural figures, heritage, and artisanal traditions such as the *Figurado de Barcelos*. Colour palettes were thoughtfully derived from the physical environment, local crafts, gardens, and heraldic symbols, while material selections for various applications were carefully considered to reinforce the institutions' diverse and multicultural identities.

As the project reached its conclusion, it became evident that students had achieved substantial development in both their technical vocabulary and their competencies related to the management and execution of corporate identity projects. This progression was fostered through sustained research, critical analysis, and the iterative process of public critique and discussion with the instructor.

Moreover, the collaboration between the municipality, its cultural institutions, and the academic community—particularly within the domain of design education—serves to strengthen the role of the designer in advancing inclusion, fostering community engagement, and driving innovation. This partnership also contributes meaningfully to the broader cultural development of the region.

ACKNOWLEDGMENTS

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NOTES

[1] Unofficial English Translation from "*O concelho de Barcelos construiu em torno da tradição artesanal e da arte popular um incontestável valor patrimonial, histórico e social. Pode-se afirmar que as artes e ofícios tradicionais são o âmago do povo barcelense e a criatividade o legado que os mais nobres artistas desta terra cultivaram ao longo dos séculos e constituem, presentemente, um dos grandes referenciais culturais deste concelho."* In Barcelos Cidade Criativa, 2025.
[2] *Barcelos Tourism Office*
[3] *Barcelos Municipal Library*
[4] *Municipal Art Gallery*
[5] *Gil Vicente Theatre*
[6] *Pottery Museum*
[7] *Medieval Tower*

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HAND MADE, HAND SEWING, HAND KNOWING. ON HOW ARTISTIC PRACTICE BASED APPROACH CAN IMPROVE FASHION DESIGNER'S KNOWLEDGE

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INTRODUCTION

This paper originates from the author's ongoing doctoral research at the University of Florence, which investigates textile waste in the pre-consumer phase of the fashion production process. The research specifically explores how textile offcuts generated during the cutting phase[1] can be reframed as a creative and expressive design space rather than eliminated as mere by-products. This work is part of *Re-Waste,*[2] a national research project funded by the Italian government under the NextGeneration EU programme. The project analyses strategic sectors of Made in Italy, such as textiles, to identify critical issues within the linear production model and promote a shift towards more sustainable and circular practices.[3]

The author's practice is grounded in pattern making and garment construction, drawing on technical knowledge acquired through hands-on engagement with fabrics and sewing techniques. Her research focuses on the "forgotten spaces" that emerge between the pattern pieces and the leftover fabric on the cutting table—spaces she defines as "negative spaces". The term refers to the offcuts—empty shapes and fragments—often discarded at the beginning of the production process. Inspired by both artistic and philosophical perspectives, the author considers these "negative spaces" not as waste, but as carriers of latent potential. As artist Marion Baruch describes, they are "remnants of something we no longer need," yet they still hold meaning, energy, and opportunity.[4]

Within this conceptual framework, the designer becomes a "transmuter": someone who transforms discarded materials into new material narratives. Through creativity and intentionality, the designer reclaims what was previously lost, opening up space for new ways of seeing and making.

Following previous investigations into production waste minimization[5] and the use of 3D simulation tools[6] the author had the opportunity to further explore this topic during a visiting research period at The Swedish School of Textiles, University of Borås, from September to December 2024.

This paper reflects on a practice-based design experience developed during that research stay. The project explored circular design strategies for textile waste generated in the garment-cutting phase, using an artistic and hands-on approach to examine the intersections between analogue and digital design processes. This experience became a pivotal moment, revealing the profound differences in knowledge acquisition through manual practice compared to digital methodologies.

A practice-based approach enables designers to develop knowledge through tactile engagement. Working directly with materials provides an understanding of aspects often overlooked or interpreted differently in digital environments: the physical properties of fabric, its weight and thickness, the relationship between fabric and body, the spatial dynamics around and within the garment, and the time required to engage with and resolve these elements through design.

The research wants to highlight the critical role of manual practice in developing knowledge that is unattainable through digital tools alone. It resonates with the concept of thinking hands or narrating hands—according to the theory of thinking through making as articulated by Groth and Nimkulrat—emphasizing how tactile interaction fosters embodied cognition.[7] As in medicine—where hands are essential to detect bodily anomalies—fashion design also relies on the hand's intelligence to shape, sense, and create through material engagement. By integrating analogue and digital approaches, this study underscores the importance of preserving manual skills in fashion education. It proposes a hybrid methodology that bridges craft-based knowledge with technological innovation, fostering a more holistic understanding of garment construction and sustainable design practices.

This contribution aligns with broader reflections on circularity and the idea of refashioning,[8] investigating how waste can be transformed into valuable resources. It focuses on the potential of zero-waste design practices that address the offcuts produced during cutting, repositioning them as "negative spaces"—or "containers," as Marion Baruch describes.[9] Instead of being discarded, these spaces are reimagined as inputs for new textile-based products in fashion or related sectors. In this context, the designer acts as a "transmuter" of waste—infusing discarded material with economic, social, cultural, and productive value by intervening in the design process. As Binotto and Payne suggest, waste can be perceived with a renewed sensitivity, enabling the identification of both visible and invisible components of the material world, and allowing us to revalue and reshape the remnants of things we no longer want or need.[10] Research developed in recent years around circular practices in fashion and the reduction and reuse of textile waste has contributed to defining a range of approaches that shape the theoretical framework of this study.[11] This project specifically aims to support eco-design by adopting practices that minimize textile waste through digital technologies—optimizing pattern development, placement, and cutting to reduce material consumption.[12] The study embraces the philosophy of upcycling, transforming waste into higher-value products, and applies the fashion hacking approach to subvert and redesign industrial processes.[13] By doing so, it proposes alternative design methods that reuse materials typically deemed unusable by fashion brands, activating their value in new ways.[14] These perspectives are grounded in a recognition of the value of textile materials and advocate for a rethinking of the design and production process. Within this frame, the author emphasizes the importance of investigating the role of design—and designers—in proposing circular alternatives at various stages of the supply chain.

RESEARCH AIM AND FOCUS

This research investigates textile waste generated during the garment cutting stage—a critical point of material loss in fashion production. In this context, offcuts are conceptualised as *negative spaces*—a term developed within this study to describe the voids and irregular shapes left behind after garment pieces are cut from the fabric roll. The project focuses on the pre-consumer phase of fashion production and explores the creative and material potential of these offcuts.

Adopting an artistic and practice-based approach, the research examines how hands-on, manual engagement can lead to new insights in circular fashion design. Initiated in 2023, this doctoral project is supported by a scholarship funded through the NextGeneration EU programme and forms part of *Re-Waste*, a national research project dedicated to the pre-consumer textile supply chain. The

scholarship includes a mandatory three-month international research period. After consulting with supervisors, the author chose to conduct this period in Sweden, at the Swedish School of Textiles in Borås—a city whose historical textile industry parallels that of Prato in Tuscany. Both cities are small yet significant textile districts, shaped by local rivers and characterised by their rich heritage and technical expertise in fabric production. As part of the international experience, the author conducted interviews with stakeholders from the Swedish textile and fashion supply chain to better understand their approaches, challenges, and circular strategies.

In the early phase of the research, the central questions became: (i) What kind of waste are we talking about? (ii) Where does it originate? (iii) And why is it generated? To address these questions, the author conducted interviews across different segments of the supply chain—including yarn and fabric manufacturers, garment producers, independent designers, small brands, start-ups working with waste, stockists, and resellers. Of approximately 50 contacts reached out to, 20 interviews were conducted.

The interviews revealed that while some stakeholders are actively recycling production waste into new yarns and fabrics, many manufacturers still discard offcuts as waste. A particularly critical point in the supply chain is the marking and cutting phase, where large volumes of offcuts are generated. Often, these scraps are mixed with paper and plastic supports, making them difficult to separate and recycle. Sorting requires manual labour, which many companies are reluctant to allocate due to time and cost constraints. As a result, these offcuts frequently become *invisible* within the production process, losing their value as textile material.

The concept of invisibility emerged as a key theme. In exploring this, the author encountered the work of Romanian textile artist Marion Baruch, who works with post-production scraps. Baruch emphasises the “invisible value” of textile remnants, describing them as *containers* of meaning and potential. Encountering her work was a pivotal moment for the author, offering a new way to perceive offcuts not merely as excess, but as meaningful material. While an individual offcut may seem insignificant, its impact multiplies when production is scaled. These offcuts represent the “negative space” of both the garment and the fabric. The term “negative” holds dual meaning here: practically, as waste excluded from the pattern; and artistically, as the complementary form that shapes the whole image, echoing the photographic or sculptural notion of a negative that reveals the positive. This raises key questions for design practice: - How can designers reframe the value of waste? How can they render it visible? - Designers, in this view, possess a unique ability to “make visible”—to assign new value to what has been overlooked or discarded.

The author proposes two strategies to address this issue. First, pattern-making techniques could be adapted toward zero-waste solutions, maintaining fit and aesthetics while eliminating offcuts. Second, when zero-waste design is not feasible, a consistent “marking system” could be developed to produce uniform offcuts that can be repurposed into new garments or accessories. Ultimately, the findings and approaches developed through this research may be disseminated through workshops with students and companies, fostering greater awareness and practical knowledge on how to work creatively and sustainably with textile waste.

METHODOLOGICAL APPROACH

This research, developed within the framework of the “Re-Waste. Circular Ecosystems in the Textile Chain” project, aims to identify design-driven strategies to recover post-industrial textile waste generated during the pre-consumer phase of the Italian fashion supply chain. The goal is to create new value through circular practices while reflecting on the social role of fashion designers in driving sustainable change. The goal is to create new value through circular practices while reflecting on the social role of fashion designers in driving sustainable change. Building on the work of Karell and

Niinimäki, the study investigates the tools, approaches, and methodologies designers can adopt to operate within a circular economy and to position fashion as a political instrument for social transformation.[15]

The investigation is structured around three main research questions:

- What is textile waste, and when, where, and why is it generated?
- How can designers influence the perception of textile waste and transform it through specific tools and methods?
- How can fashion design processes make textile waste visible and foster a shift from linear to circular supply chains?

A Practice-Based, Artistic Approach

Practice-based research involves learning through doing. In fashion design, this includes cutting, sewing, and draping—direct, tactile forms of engagement that serve as both investigative tools and modes of material thinking. Initial experimentation began with digital tools, as physical scraps were not yet available. The first step was selecting a garment pattern and preparing a layout for the cutting table. Due to the unavailability of industrial layouts, a basic women's shirt (size EU 38) from the CLO3D library was chosen. Since the garment's shape was not central at this stage, the focus was placed on optimizing fabric use. Traditional layering methods were compared to zero-waste design principles to analyze the emergence of different "negative spaces." These digital offcuts were then used within CLO3D to drape new shapes resembling garments (Fig. 1), offering a visual representation of their reuse potential. Subsequently, physical experimentation was carried out with the support of the Do-Tank Center at the Science Park, during a visiting research period at The Swedish School of Textiles, University of Borås. With guidance from researchers Anna Lidström and Jennifer Tengroth, second-hand 100% cotton bed sheets were used as material. After the cutting stage, the positive shapes were allocated to garment construction, while the remaining negative spaces were retained for the project.

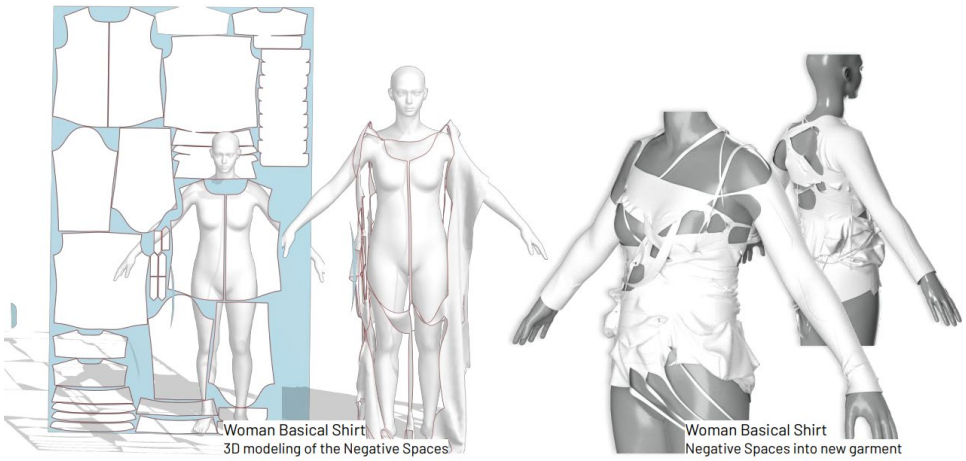

Figure 1. Digital offcuts in CLO3D to drape new shapes resembling garments. October 2024. Courtesy of the author.

Fabric Manipulation

Manual experimentation followed, involving hand-sewing and draping directly on the mannequin. This allowed for an embodied exploration of how fabric and body interact—insights that digital simulations cannot fully replicate.

Three different approaches were tested to transform the fabric offcuts into new garments (Fig. 2): 1. replicating the digital design process using the same layout and shapes; 2. draping based on a moodboard inspired by the fabric, with a clear design intention; 3. assembling the offcuts freely, allowing their shapes and lines to guide the composition.

This phase aimed to demonstrate that fabric scraps can be repurposed into new garments, thereby preserving their value. It supports the notion that designers can redefine our relationship with materials by transforming offcuts into expressive, meaningful products. Drawing from the insights of textile artist Marion Baruch, fabric scraps can be understood as "containers" of meaning. As Baruch states, “In these leftovers is contained all the industrial and social work from which they derive; they reveal the contradictions of this flow involving the social and cultural production of our society”.[16] Recognizing the intrinsic value of these materials requires re-educating consumers, workers, and companies to adopt a more conscious approach to fashion production. Just like hackers, fashion designers can subvert existing systems by developing new tools and methodologies that decode fashion and restructure its mechanisms. Through this approach, designers act as agents of transformation, attributing new identities and functions to pre- and post-consumer waste within a circular design paradigm.

Figure 2. The three different approaches to transform fabric offcuts into a new garment, October 2024. Courtesy of the author.

EMBODIED KNOWLEDGE

Digital vs Physical Draping – A Comparative Reflection

A comparative analysis between 3D digital draping (using CLO3D) and physical draping on a dress form highlights two distinct modes of knowledge acquisition in fashion design—each with specific implications. In the digital environment, designers can instantly visualize the garment, quickly modify patterns, and simulate outcomes with precision. However, this mode often omits key material realities: there is no real sense of fabric weight, tension, or tactile feedback. Edges are treated as clean lines, and seam allowances are not inherently considered unless manually added. While digital tools offer efficiency and flexibility, they lack the bodily negotiation that occurs when working directly

with fabric. By contrast, dress form draping requires manual manipulation of fabric scraps and demands close attention to material behavior, balance, and fit. It is not always easy to visualize the final garment immediately, and the process is slower. Yet, it reveals crucial design challenges: how to refine raw edges, how to assemble complex shapes, and how seam allowances affect construction and manipulation. These tasks foster deeper engagement with form, space, and structure.

This comparison (Fig. 3) underscores that digital and physical modelling do not generate the same kind of knowledge. Digital tools excel in visualization and speed, but they risk abstraction. Physical draping, by contrast, supports an embodied, sensory understanding of the design process. For fashion education, this implies the need for hybrid approaches that teach not only how to visualize garments on a screen, but also how to feel, manipulate, and construct them in space.

Aspect	3D Digital Draping (CLO3D)	Dress Form Draping
Visualization	Immediate garment visualization	Not immediate to visualize
Sewing/Assembly	Must simulate sewing every small piece	Not easy to sew small pieces physically
Pattern Management	Easy to edit or redesign patterns	Requires physical adjustments and experimentation
Material Behavior	Absent or limited (fabric is abstracted)	Directly experienced (weight, resistance, behavior)
Edges and Seam Allowances	Often overlooked; no seam allowance required	Must refine edges; seam allowances needed for assembly
Fabric-Piece Relationships	Controlled placement; cutting is virtual	Must manage distance between pieces during cutting
Construction Logic	Predefined by software	Requires figuring out how to assemble the pieces
Learning Mode	Visual, efficient, abstract	Tactile, slow, embodied

Figure 3. Digital vs Physical Draping

What the Hands Reveal

Hands-on making revealed insights often flattened in digital environments—such as the fabric's weight, resistance, and interaction with the body. These experiences activated a form of embodied knowledge, where understanding emerges through touch, slowness, and attentive engagement with materials. This resonates with the concept of thinking hands or narrating hands, where cognition is grounded in physical interaction. Just as medical professionals use their hands to detect signs within the body, fashion designers rely on their tactile engagement to understand fabric behavior, garment shape, and fit. A tailor's knowledge develops through the act of making and through haptic exploration—revealing how form and material co-evolve during the creative process. These insights hold significant implications for fashion education. An exclusive reliance on digital tools risks severing the designer's connection to the material world. Manual skills are not obsolete; rather, they are fundamental to understanding sustainability, the dynamics of design processes, and the materiality of garments. What is needed is a hybrid methodology—one that integrates craft-based practices and technological innovation, fostering a more holistic and sustainable approach to fashion.

CONCLUSIONS: BRIDGING CRAFT AND TECHNOLOGY

In conclusion, hand-making is more than a technique—it is a way of knowing. It fosters sensitivity, awareness, and care. Preserving manual skills alongside digital innovation allows future designers to engage with fashion in its full complexity: materially, physically, and ecologically. This contribution

aligns with broader reflections on sustainability and the concept of refashioning[17]—examining how waste can be transformed into valuable resources through design. It underscores the urgent need to reimagine garment production and to explore innovative methodologies that reduce or eliminate waste—particularly during the cutting stage. By adopting a dual approach—merging digital experimentation with physical prototyping—this research highlights the complementary nature of technology and craftsmanship. While digital tools offer creative potential and powerful simulation capacities, they cannot replace the tactile knowledge acquired through manual manipulation of fabric. Without this embodied understanding, digital design may overlook critical factors such as seam positioning, edge preservation, and compatibility with industrial cutting systems. The integration of digital innovation and manual expertise not only enriches the design process but also ensures that new methodologies are aligned with the functional and operational realities of the fashion system. By bridging these two dimensions, the study contributes to a more sustainable and responsive mode of fashion production—one that reduces waste while maintaining the aesthetic and technical standards required by the industry.

Finally, the concept of negative spaces—defined as the voids left by textile offcuts—emerges not only as a physical remnant but as a metaphorical and creative site. These spaces invite designers to engage in new narratives of value, transformation, and circularity within twenty-first-century fashion. This ongoing research, part of the author's PhD at the University of Florence, will continue to investigate how digital tools can further enhance design methodologies, especially in relation to the cutting phase, with the aim of integrating sustainability into the heart of fashion practice.

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TEACHING TECHNO-EMPATHY: A POST GROWTH PEDAGOGY FOR REFLECTIVE DESIGN EDUCATION

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INTRODUCTION

We live with a profound ambivalence toward technology. It delights and disorients in equal measure: promising frictionless lives while extracting data, attention, and planetary resources. Designers sit in the engine room of this dynamic. For decades, design has been coupled to growth, fuelling cycles of "innovation" that expand markets, accelerate extraction, and externalise costs—material, social, and psychological. The climate crisis makes this coupling untenable. If design helped build the problem, it must help reimagine the response.

This article proposes a post-growth pedagogy for design that "hacks" the field's growth-first paradigm from the inside. It draws on critical, speculative, and mindful design to cultivate techno-empathy: a reflexive capacity to sense how technologies reorganise relations between humans, non-humans, and environments—and to act with care within those relations. Rather than treating technology as neutral tools for efficiency or novelty, we frame it as a cultural force to be questioned, redirected, and, where necessary, refused. In Jason W. Moore's terms, capitalism should be read as a world-ecology—an entanglement of economic and ecological processes—so our design choices are never merely technical; they are ecological and political choices, too.[1]

Our point of departure is simple: if technology has contributed to a destructive trajectory of growth, how might we mitigate its harms and redirect its capacities towards constructive creation? And what is the designer's role in that transformation, given design's historical service to growth? We explore these questions through the Mindful Design Studio (MDS) at the Wroclaw Academy, a teaching-research studio that complements mainstream curricula often thin on critical and philosophical foundations. In place of market imperatives, we prioritize cultural and intellectual value; in place of uncritical "problem-solving," we foreground discursive inquiry, alternative presents, and preferable futures. This stance resonates with the literature on speculative and critical design, which seeks to expand design's horizon from making things thatfit the world "as it is" to asking what kinds of worlds we ought to make.[2]

METHODOLOGY: EVOLVING STUDIO PRAXIS

The Mindful Design Studio operates as a flexible, evolving praxis rather than a fixed program. Its core team—designers, artists, makers, architects, and programmers—is complemented each year by doctoral researchers from various fields, whose expertise enriches the studio with a multidimensional

pedagogical perspective. Instead of enforcing a single method, research trajectories emerge from guiding questions—What if? What else? Where did this 'problem' come from? Who benefits? Who is harmed?—and from context and urgency. Continuity is provided by a stable teaching group; plurality is cultivated through informal collaborations with external experts such as psychologists, composers and botanists, and with social care institutions including the Wrocław Hospice for Children. Collaborative critique structures the work: projects are reviewed by an interdisciplinary team and opened to peer feedback, while students are encouraged to consult external specialists to deepen relevance and rigour.

This praxis is supported by cross-disciplinary workshops (e.g., sonic interaction, speculative gastronomy, climate science, glaciology) that expose students to unfamiliar tools and epistemologies and reinforce the studio's relational, speculative ethos. Within this dynamic, non-hierarchical setting, a distinct design culture has evolved—one that prioritizes attentiveness, relationality and slow, mindful engagement.[3] Rather than following rigid frameworks, students undertake open-ended processes that emphasize reflective practice, encounters with diverse knowledges and ethical awareness. These processes are often catalyzed by artefacts conceived as carriers of cultural meaning. In practice we favour simple interactive mechanisms that invite emotional engagement with everyday objects, creating *situational collisions* that prompt more conscious interaction and public discourse—techniques consistent with discursive and speculative design aims.

We complement this with speculative fabulation to stage possible worlds and provoke public reasoning—an antidote to the crisis of imagination that, as Amitav Ghosh argues, lies at the heart of our collective failure to address the climate emergency (Table 1).[4] In parallel, our hybrid toolkit integrates mainstream methods (design thinking, user-centred research, modelling, prototyping, technical documentation) with open-ended approaches (scenario building, material storytelling, visionary community mapping) inspired by Roberto Verganti's interpretative communities and by Klaus Krippendorff's semantic turn in design.[5]

Principle	What it emphasises	How MDS implements it
Ask generative questions	Reframe briefs; surface origins and power relations behind 'problems'.	Kick-off 'What if/else' clinics; root-cause and consequence mapping; controversy mapping in seminars.
Build perceptual bridges	Connect present realities with proposed design narratives so futures can be 'felt'.	Reflective tools and performative demos; public walkthroughs of scenarios; exhibition-as-seminar.
Speculative fabulation	Discursive probing of possible worlds to overcome the imagination gap.	Design fictions, scripts, and critical artefacts that invite public reasoning.
Hybrid toolkit	Balance rigour and openness across mainstream and alternative methods.	Design thinking + user research + prototyping alongside scenario building, material storytelling and community mapping.
Techno-empathetic making	Use simple tech to animate objects as carriers of cultural value.	DIY/open-source electronics; hand-built prototypes; low-budget interactive mechanisms used in public settings.
Post-growth & decolonising narratives	Prioritise sufficiency, justice and relational care over accumulation.	Reading seminars (Moore; degrowth); partnerships beyond markets; projects addressing human and more-than-human wellbeing.
Pedagogy before technology	Technology serves learning—never the reverse.	Studio rituals, mindful exercises, critique protocols; evaluation on reflection and consequences, not novelty alone.

Table 1. The summary of the key elements that structure the MDS approach and how they are enacted in practice.

As George Couros observes: "Technology will never replace great teachers, but technology in the hands of great teachers is transformational."[6] This maxim guides how we integrate tools: they follow learning aims, support reflective practice and widen participation.

FEAR, FASCINATION, AND THE COSTS OF FRICTIONLESS TECH

Contemporary life is mediated by technologies that promise frictionless convenience while exacting cognitive, social and ecological costs. The allure is real; so are the trade-offs. Sherry Turkle has shown how networked technologies recast intimacy and attention, leaving us 'alone together' even as we remain perpetually connected.[7]

Frictionlessness also has a political economy. Platforms operationalise behavioural surplus and optimise for time-on-task, reshaping public life around metrics of extraction. These logics couple neatly to growth and to the wider world-ecology of capitalism already discussed above. To teach design responsibly, we must therefore confront attention capture, datafication and the externalities of speed as design problems in their own right—before we talk about 'solutions'.[8]

A post-growth stance reframes innovation away from volume and towards sufficiency, repair and care. Degrowth scholarship argues for re-specifying prosperity beyond throughput, while the classic image of *creative destruction* is recast here as creative construction: the deliberate making of relations, meanings and infrastructures that sustain life.[9]

We integrate three teaching diagrams from the course to scaffold this reframing (Figure 1,2,3):

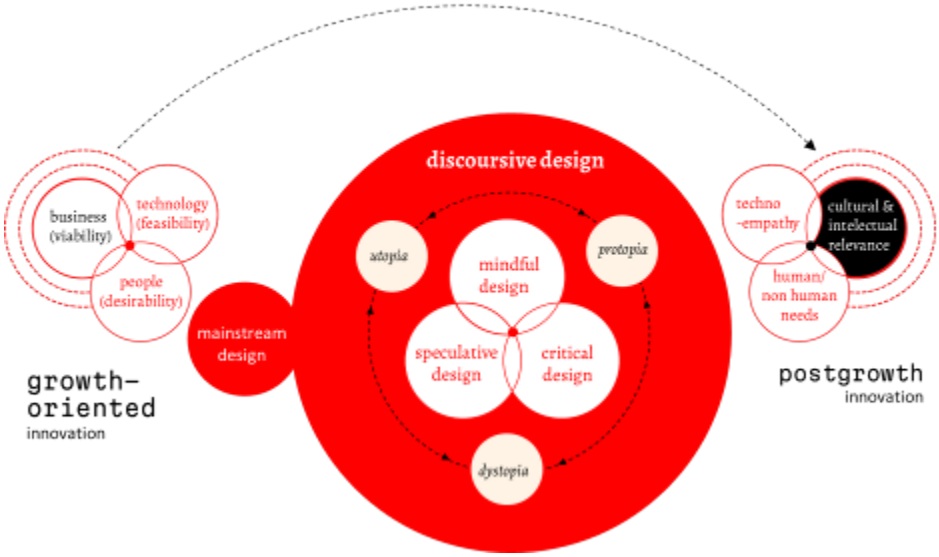

Figure 1. Contrasting approaches in design education: from market-centred mainstream to discursive practices and techno-empathy.

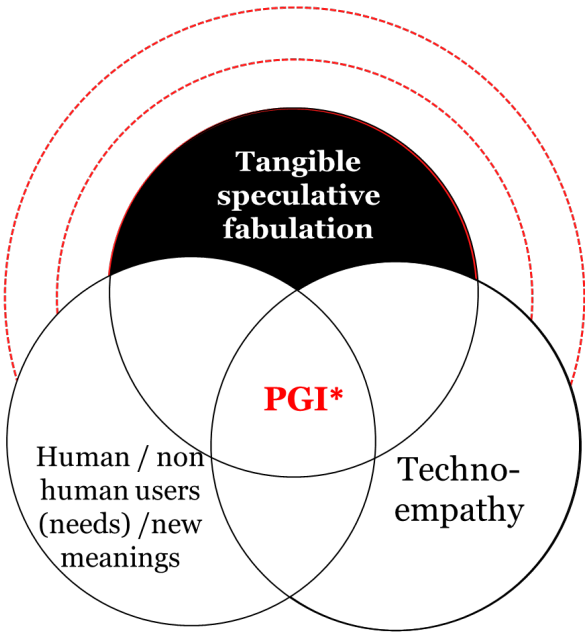

Figure 2. Value Shift Model: from market imperatives toward cultural and intellectual relevance, grounded in human and more-than-human needs (PGI).

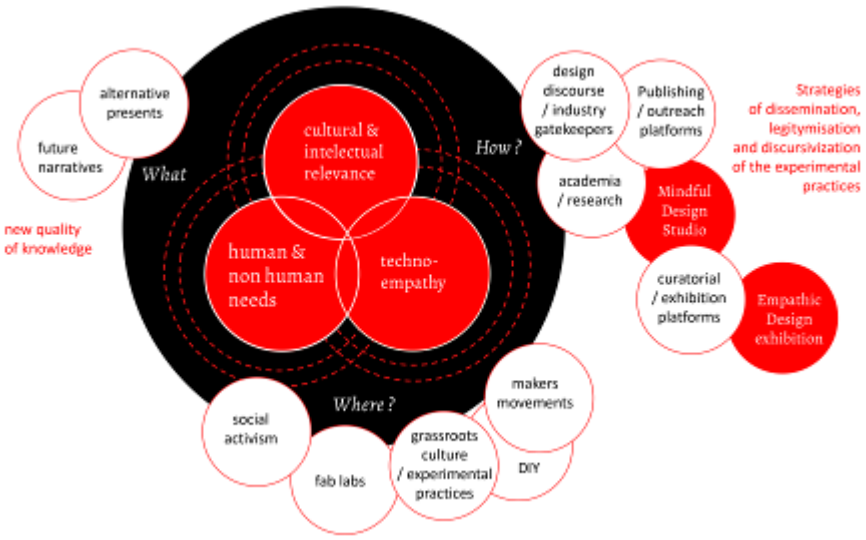

Figure 3. Where / What / How: venues of practice, values promoted and modes of dissemination for post-growth design.

Taken together, the three diagrams articulate the shift that underpins our pedagogy. Instead of following market imperatives—optimising desirability, feasibility and viability for growth (Figure 1, left)— we foreground interpretive and conceptual value situated in human and more-than-human relations and articulated through techno-empathy. (Figures 1–2, right). In this post-growth framing, technology is treated as a medium for creating empathetic contexts and meanings, not as a race for technological dominance.

Figure 3 locates this stance within concrete venues of practice (Where), the values it promotes (What), and modes of sharing and legitimation (How). It highlights the role of small, non-commercial initiatives—studios, exhibitions and grass-roots collaborations—where reflection and experimentation matter more than market performance.[10] This is the space in which the Mindful Design Studio operates. Our processes alternate between speculation, critique and mindfulness, producing tangible *reflective tools* that invite public reasoning.

The approach complements and corrects mainstream design education, which too often lacks critical and philosophical foundations and thus fosters a naïve belief that every project is inherently beneficial. A post-growth lens accepts that design can improve lives but insists it cannot do so when practiced unreflectively or solely in the service of commercial goals. In what follows, we turn to curated prototypes and material elements that put this vision into practice.

CASE STUDIES: WHAT COUNTS AS A CASE HERE

In this paper, *case studies* are not market-ready products, but research-through-design prototypes developed in the MDS by interdisciplinary teams (designers, artists, makers, programmers, architects). They are built with low-budget, open tools (e.g., Raspberry Pi/Arduino, simple sensors, hand-made enclosures), iterated in studio critiques, and then field-tested in classrooms, exhibitions and public events. We call them reflective tools: tangible prompts that stage questions and rehearse alternative relations with technology—personal, social and planetary—rather than "solve problems" in a conventional, growth-oriented sense.

Behind the Screen — from letters to emoticons, from feeling to display

This project traces how we express emotion across media—from typewritten letters to emoji-driven feeds—and asks what gets lost in the shift (Figure 4, top image). A vintage manual typewriter is retrofitted with five emoji buttons and a Raspberry Pi that controls a small display. Pressing an icon triggers one of two short videos: an actor performs the *same* emotion either as genuinely felt or as staged for the feed. Visitors are invited to guess which is which.

By fusing slow, verbose writing with today's pictorial shorthand, the installation makes a simple experience unmissable: online we often perform feelings we do not fully inhabit. The piece therefore becomes a lesson in techno-empathy. It does not blame users; it helps them *feel the script*—how platform metrics and interface conventions coax us from presence to performance, from expressing to displaying.[11]

InMirror — practising presence without comparison

At first glance, InMirror appears as a three-dimensional object whose form echoes the visual language of social media interfaces: a square with rounded corners, enlarged and materialised as a mirror (Figure 4, bottom image). As the viewer moves closer, the expected interface dissolves: the recognisable iconography disappears and is replaced by a quiet affirmation — *you are beautiful just as you are*. Rather than invitin g comparison, evaluation, or performance, the mirror interrupts the visual language of platforms such as Instagram and suspends their normative aesthetics. There is nothing to win here, no metrics to follow and no ideal to pursue. Instead, InMirror proposes a counter-posture to social media culture, encouraging self-acceptance outside the logics of visibility, validation, and algorithmic judgement.[12]

Figure 4. Two reflective tools developed at the Mindful Design Studio: Behind the Screen, prototype by Elizaveta Razmyhsliaeva, 2021 (top); and InMirror, prototype by Magdalena Matysiak, 2022 (bottom).

Flowave — listening with the skin

Flowave extends this exploration of sensory presence from sight to touch (Figure 5, top image). Here, somatic listening replaces visual reflection: a soft, wall-mounted panel converts audio into a wave of low-frequency vibration. Designed by Dominika Ziomek, this immersive, upholstered wall-mounted object invites mindful engagement through bodily contact, subtly recalling the comforting familiarity of a massage cushion while transforming acoustic phenomena into tactile experiences. Users lean in, often closing their eyes, and discover that attention lengthens as the body "hears". Through wireless connection, each person can choose their own piece of music and then, by resting against the panel, quite literally test it 'on their own skin'. With headphones, haptic and auditory channels synchronise; without them, the tactile stream anchors drifting awareness.[13]

The project seeks connections between the abstract perception of sound, its sonic representation, and its translation into corporeal sensation — creating conditions that invite being here and now. Ideologically, it aligns with the mindfulness practice of body scanning, a form of psycho-physical regeneration aimed at calming the nervous system and deepening awareness of bodily states and emotions.

Both works experiment with minimal technological intervention to shift habitual patterns — *InMirro*r by softening the urge to self-evaluate, *Flowave* by slowing attention through embodied sound. In this sense, *Flowave* functions as a post-growth era 'innovation-antidote' to overstimulation and the stress of a life paced by the time is money ethos attributed to Benjamin Franklin[14]— offering instead a small meditative tool for calming, soothing, and granting a moment's respite from the endless race toward the lures of economic growth.

In each case, the goal is small-scale and practical: micro-rituals that help regulate arousal in overstimulating environments while rebalancing the relationship between sensation and pace.

These works also point toward a broader design trajectory — one that prioritises gentleness, presence, and emotional regulation over acceleration and constant novelty. It is within this trajectory that the following set of experiments takes shape, conceived as calming and reflective tools for an overstimulated young generation.

Oaza and Purr. Calming Reflective Tools for an Overstimulated Young Generation

Oaza offers a compact nook for moments of overwhelm: a seat with quilted wings and soft, reactive cues that support self-soothing without stigma (Figure 5, bottom image). Conceived as a hybrid of furniture, therapeutic device, and interactive object, it addresses the growing challenge of emotional hyperarousal in children. Its multifunctional panels combine calming stimuli with elements that channel movement, allowing children to release excess energy while working toward sensory integration. This dual action — soothing and active — supports healthy psycho-physical development and helps children explore and express emotions in safe, constructive ways. Its geometry shelters vision and sound just enough to lower stimulation while remaining part of the room—useful in classrooms, libraries or waiting areas. The therapeutic value lies in attentively tuned thresholds of light, sound, and tactility, guiding the body from agitation toward steadiness without isolating the user from their surroundings. Rather than "fixing" behaviour, the piece offers a dignified, stigma-free space for self-regulation and sensory balance.[15]

Purr takes an even lighter touch: a pouffe that hums with a cat-like vibration profile when somebody sits down. Intended for early school-aged children with heightened emotional sensitivity, it transforms a familiar domestic form into an interactive relaxation tool. When the user's weight activates the mechanism, a gentle feline purr begins to resonate. The sound and vibration can be adjusted or turned off via embroidered buttons placed discreetly along the side of the pouffe, offering both agency and comfort. Domestic and playful, it invites down-regulation without instruction—users discover their own ways of lingering, breathing and settling. Tactile fabrics encourage stroking, reinforcing the calming effect, while integrated blankets allow for partial or full covering, deepening the sense of security. The result is a multisensory cocoon that draws on the universally soothing associations of a cat's purr, providing a low-threshold, stigma-free means of restoring emotional balance.[16] As with *Oaza*, the craft lies in what not to optimise: keeping feedback subtle, avoiding gamification, and designing for dignity and care.

Figure 5. Two calming reflective tools developed at the Mindful Design Studio: Flowave, prototype by Dominika Ziomek, 2024 (top); and Purr, prototype by Weronika Przybyłek, 2023 (bottom).

Generaction — listening across generations

A conversation-game table designed to build bonds between younger and older generations and to loosen harmful stereotypes (Figure 6.). Play begins by drawing a prompt card from categories such as family values, formative memories, social change or cultural difference. Players take turns sharing their stories and may ask follow-up questions to keep the exchange flowing.

After each round, the table invites an emotional debrief. A strip of backlit emoticons can be activated using small integrated blocks; each participant registers how the conversation felt. The system records this feedback and, when the central button is pressed, it displays the dominant emotion for the session. The aim is not consensus but practised listening and emotional literacy: learning to recognise one's own states and to read those of others. By coupling gentle game mechanics with an expressive visualisation of mood, *Generaction* turns dialogue into a shared craft—where understanding becomes as tangible as the table itself. [17]

Figure 6. Genera©tion, prototype made by Magda Paszkowska, MDS, 2024

Together, *InMirror*, *Flowave*, *Oaza*, *Purr*, and *Generaction* form a constellation of calming, reflective, and connective tools designed for an overstimulated young generation—and for those who interact with them. Each work uses minimal technological intervention to foster micro-rituals of presence and emotional literacy: *InMirror* softens the reflex to self-evaluate, *Flowave* slows attention through embodied sound, *Oaza* offers a dignified nook for sensory regulation, *Purr* provides the instinctive comfort of a cat's vibration, and *Generaction* opens a space for listening across generations. While their forms differ—mirrors, haptic panels, upholstered refuges, playful pouffes, and conversational tables—they share a commitment to designing for dignity, care, and emotional agency. Rather than competing for attention, these designs create spaces—physical, sensory, and relational—that grant permission to pause, rebalance, and reconnect in a world driven by acceleration.

Reflective Tools for Social Participation — the *Deplastification* series (Dominika Sobolewska)

The Deplastification series frames design not as the delivery of finished objects, but as a situated, collective practice unfolding in public space. Rather than presenting products, it offers reflective tools understood as shared situations—portable, low-tech artefacts and rituals that invite people to pause, participate, and think together through embodied action. Emerging from beach clean-ups, meditative walks, community workshops, and exhibition encounters, these tools translate environmental engagement into lived, relational experience. Built from salvaged materials, simple sensors, and hand-made components, they turn ecological concern into something that can be felt in the hand, sensed in the body, and negotiated in conversation.

These works resist didacticism. Instead of instructing, they attune. Each prototype transforms waste into a medium of dialogue: plastic is not merely displayed, but signalled, archived, or materially embodied, allowing participants to reflect without being overwhelmed by abstraction or guilt. Conceived for deployment in museums, eco-centres, libraries, and outdoor contexts, the series foregrounds democratised technology, DIY culture, and techno-empathy aligned with post-growth values—small-scale, care-oriented, and collectively sustained practices.

Light It Up is an interactive lamp conceived as a reflective tool emerging from participatory actions and collaborative processes rather than as a standalone object. Its form and materiality are shaped by preceding collective practices—beach clean-ups, workshops, and shared acts of gathering waste—through which the project takes shape. Built from plywood offcuts, wooden elements, and test tubes filled with mesoplastics collected during beach clean-ups, the object embeds pollution directly into its material body rather than concealing it.

When someone comes close, a simple distance sensor activates the lamp; its head flashes "YOU" in Morse code—a restrained, lighthouse-like signal poised between warning and invitation. Minimal yet affectively charged, the gesture marks both implication and agency, pointing to our entanglement in marine degradation while insisting that the capacity for change remains collective.

By inviting participants to move closer rather than step back, Light It Up stages a small ritual of responsibility. [18]

The Beautiful Hazard invites reflection through looking and making (Figure 7, bottom image). Conceived as a DIY kaleidoscope, the object is designed to be filled by participants—often children and families—with micro- and mesoplastic fragments collected during clean-up activities. Looking inside, one encounters shifting patterns of colour and symmetry—visual effects that emerge only as a result of prior ecological action.

The kaleidoscope functions as an educational tool that links environmental engagement with sensory reward. Plastic once scattered in the landscape becomes visually seductive yet physically contained, encouraging contemplation of its dual nature: beautiful in appearance, yet hazardous in consequence. By drawing attention to the appeal of plastic—its colours and textures—the work reframes attraction as something that must be carefully captured and confined.

Designed for museums, ecological foundations, and educational contexts, *The Beautiful Hazard* supports hands-on learning through making. Filling the kaleidoscope becomes a form of reward for collecting waste, reinforcing the idea that plastic belongs enclosed and observed—not dispersed across ecosystems.[19]

Drink Me (Carefully) brings environmental contamination into the most intimate of gestures: drinking. The work consists of double-walled glasses and carafes filled with micro- and mesoplastics collected during meditative beach walks. The plastic is suspended between two layers of glass—clearly visible, yet physically unreachable.

This deliberate separation produces a quiet tension. The familiar act of drinking becomes haunted by a contained threat, reframing the Alice in Wonderland motif as a call for caution rather than fantasy. As a performative educational object, *Drink Me (Carefully)* is suited to exhibitions, guided workshops, and public talks on water, health, and environmental care, revealing that what appears clear and transparent may conceal invisible contamination, where reflection emerges through embodied dissonance rather than instruction.[20]

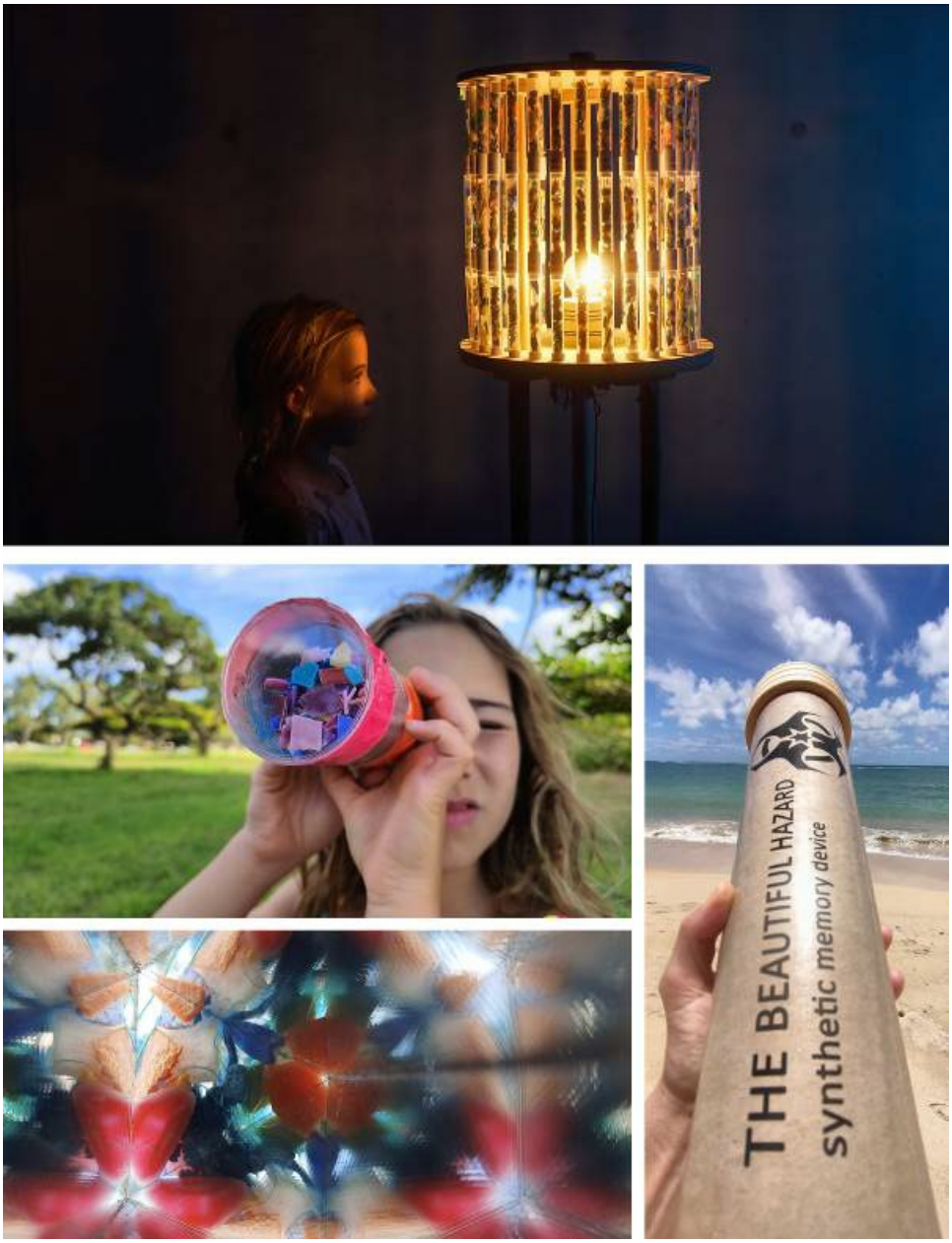

Figure 7. Two participatory reflective tools developed at the Mindful Design Studio: Light It Up, prototype by Dominika Sobolewska in collaboration with Sebastian Sobótka, 2021 (top); and The Beautiful Hazard, prototype by Dominika Sobolewska, 2025 (bottom).

Plastsupper — dining with the Anthropocene

Plastsupper unfolds as a communal dinner conceived as a performative reflective tool, situated between shared ritual and gentle provocation. Dishes prepared from wholesome ingredients mimic the forms and colours of macroplastics, while the table is set with cleaned plastic gathered during beach clean-ups—objects that visually merge with the meal and blur familiar distinctions. The resulting confusion is intentional: is this plastic, or food—and, by extension, are we consuming plastic, or slowly becoming entangled with it?

Around the table, eating becomes a moment of collective hesitation. Ethics are folded into appetite, and the line between the synthetic and the organic is repeatedly drawn and undone. Rather than

addressing petro-materials through abstract data or moral instruction, Plastsupper engages taste, conversation, and shared presence, inviting participants to confront environmental contamination as an embodied, relational experience. [21]

CONCLUSION: FROM CREATIVE DESTRUCTION TO CREATIVE CONSTRUCTION

This paper has argued for a value shift in design education: from market imperatives to forms of relevance grounded in human and more-than-human needs, enacted through the design of situations, actions, and reflective encounters. In our studio the power of design is exercised less as optimisation and more as hosting, tending, and teaching. Design is understood here not primarily as the deployment of technology, but as the careful staging of contexts in which objects invite attention, participation, and meaning-making. The prototypes we showed—mirrors that refuse comparison, objects that slow attention, furniture that supports regulation, tables that choreograph listening, and reflective tools that turn plastic grief into situated action—are modest on purpose. Their novelty lies not in technical prowess, but in how they recode relations with self, others and planet.We understand this work as speculative, cultural innovation—a form of R&D that happens in public and in culture before it reaches the lab. From the Whole Earth Catalog to Omni, hybrid spaces where science meets fiction, philosophy and design have long incubated tomorrow's commonplaces.[22] And, as film famously shows—think Kubrick's *2001: A Space Odyssey* prefiguring tablets, video calls and conversational interfaces—imagination often leads engineering by decades.[23] In Amitav Ghosh's terms, the climate crisis is also a crisis of imagination; our task as educators is to keep that imagination alive and pointed otherwise.[24]

In practice this means hacking the growth script: replacing creative destruction with creative construction. Instead of designing for frictionless scale, we design for attunement, prototyping of values, and distributed stewardship. Our objects are small, but they travel—into classrooms, exhibitions and local initiatives—where they seed new conversations, invite different habits of attention, and help students rehearse futures in which technology is a medium of care. Often unnoticed today, such cultural innovations may one day crystallise into infrastructures and policies. The future frequently begins in culture; our job is to make that beginning tangible.

NOTES

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[6] George Couros, *The Innovator's Mindset: Empower Learning, Unleash Talent, and Lead a Culture of Creativity* (San Diego, CA: Dave Burgess Consulting, 2015).
[7] Sherry Turkle, *Alone Together: Why We Expect More from Technology and Less from Each Other* (New York: Basic Books, 2011).
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INTEGRATING CODE, MATERIALITY, AND HERITAGE IN CONTEMPORARY ART AND DESIGN

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INTRODUCTION

Documenting, cataloguing, and archiving cultural heritage for future generations has been a concern for many creatives and intellectuals to preserve their legacy. Despite its value, this strategy risks detaching heritage from the living and evolving processes. Intangible cultural practices, like Palestinian cross stitch (Tatreez), are dynamic systems of knowledge passed over the generations and reinterpreted through assembling the motifs uniquely rather than applying them in static artifacts.[1] The rules, repetitions, and embodied acts of production are the pattern's structural logic that gives it cultural life. The fear loses its essence when the tatreez patterns are converted to digital picture collections or archive data.

This paper presents an alternative approach to preserving heritage in our era: one that views it as a dynamic, adaptive process rather than a passive archive. It advocates for a generative vision of inheritance based on computing and materiality. A strategy that employs algorithmic design and material experimentation to maintain and regenerate cultural forms. By doing so, heritage is transformed from a static archive to a dynamic system that encourages involvement, variety, and renewal.

This study is based on two interdisciplinary projects: Tatreez in Python, which encodes Palestinian embroidery motifs into generative algorithms, and *The Frogs in the Pond*, a kinetic installation that uses magnetic fields and material behavior to recreate memory as an emergent, dynamic phenomenon. Together, these initiatives investigate how technology might interact with cultural heritage in two simultaneous dimensions: computational and material. They further ask:

1. How can computational systems preserve the symbolic integrity of cultural forms as they encode and expand them?
2. How does material conduct influence memory in modern heritage-centered art?
3. How might digital and material methods support participative and pedagogical frameworks for cultural transmission?

By combining the Tatreez principles, computational design, and material experimentation, the goal is to demonstrate how technology can become a site of cultural continuity rather than displacement. It positions algorithms as cultural grammars, materials as memory aid agents, and artistic practice as a bridge between tradition and innovation.

Cultural and Historical Context of Tatreez

Palestinian Tatreez is both a decorative and geographical practice. Every motif is an ornament and a type of stored knowledge, transferring social, geographic, and symbolic meaning onto fabric. For example, the cypress tree (sarū) signifies constancy and toughness, while star designs (najmeh) represent celestial guidance. Regional pattern variances have historically indicated a wearer's place of origin.[2]

Diana Baird N'Diaye says that such crafts are examples of "cultural coding", in which the creation carries both social and symbolic information.[3] Embroidery evolved into an ancestral archive, a medium through which women recorded histories, interpersonal structures, and political realities in thread. Tatreez's political and instructional roles have expanded in diasporic contexts. Additionally, Tanya Habjouqa observes that stitching has become "an act of remembering and resisting", linking memories into material form even during relocation.[4]

In 2021, UNESCO included Palestinian cross-stitch on its Representative List of Intangible Cultural Heritage.[5] However, this awareness offers a common contradiction: institutional preservation risks freezing live practices, turning them into museum artifacts rather than adaptive cultural processes. While digitalization projects, such as the Palestinian Museum's digital archive, chronicle thousands of cross-stitch motifs, they are sometimes presented as static pictures that lack formal logic or context. This study argues that heritage preservation should go beyond static documentation and reconnect with the live, iterative mechanisms that underpin these activities. Moreover, material installations that provoke cultural memory may elevate heritage from an object of observation to a participatory experience.

Literature Review and Theoretical Framework

Generative systems offer an effective lens for integrating computing and heritage. According to Philip Galanter, generative art is "a system that operates with autonomy, following rules to produce variation",[6] which aligns with the craft process. Tatreez and other traditional crafts rely on modular, grid-based logics in which cultural information is encoded via repetition and gradual modification. This methodology is supported by Yasir and Herng's work on algorithmic heritage modeling in architecture, which demonstrates how parametric tools may encode cultural rules while allowing for adaptive modification.[7]

Malcolm McCullough's notion of the "practiced digital hand" reframes programming as a craft, implicit skills gained through iterative engagement with techniques and tools.[8] When Tatreez motifs come to life as Python functions, code transforms from a technical language to a cultural medium that connects computational logic with the embodied rhythms of craft. This viewpoint calls into question the distinction between digital systems and traditional activities, presenting programming as an extension of legacy rather than an abstraction or replacement.

Materiality strengthens this relationship. Petra Lange-Berndt believes that materials "participate in meaning", influencing both form and cultural interpretation, whereas Jane Bennett's "vibrant matter" theory stresses materials' agency in aesthetic and cultural processes.[9] Magnetism, motorization, and iron spheres become active components in *The Frogs in the Pond*, creating emergent behaviors that symbolically reflect memory's fluid and unpredictable dynamics.

Furthermore, heritage evolves spatially. Henri Lefebvre's concept of socially generated space and Gernot Böhme's atmosphere theory shed light on how heritage is constructed and perceived.[10] In *The Frogs in the Pond*, memory is met through motion and spatial interaction, whereas *Tatreez in Python* produces computational "spaces" where cultural logics become evident and controllable. These

frameworks show cultural heritage motifs in terms of procedure, atmosphere, and intellectual and experiential aspects.

Though technology has hazards, Roopika Risam warns against "digital universalism", which involves incorporating local knowledge into homogenized global systems.[11] This study resists flattening by integrating Tatreez in generative frameworks, utilizing computing to accentuate cultural distinctiveness and locate technology inside heritage-based contexts.

Methodology

This study also uses a practice-based technique that combines archival research, computational development, material experimentation, and participatory pedagogy. Rather than seeing heritage as a static object of study, it is viewed as a dynamic process transformed into computational and material systems.

Archival research established the cultural groundwork for the endeavor. Motifs are documented in Wafa Ghnaim's Tatreez & Tea and the Palestinian Museum's digital archive, which includes extensive collections of needlework designs.[12] Each pattern was examined for geometry, symbolic significance, and historical context, yielding a classification of design primitives appropriate for algorithmic encoding. The first study aimed to use Python programs using Tatreez themes, reimagining computing as a form of cultural involvement. Heritage became a process of reactivation, rather than static preservation.

The second study uses material experiments to give this computing system a physical shape. Magnetic field behavior in *The Frogs in the Pond* was a neodymium magnetic board, while linear actuators controlled by an Arduino Mega with L298N drivers shifted the magnetic board placements. Initial testing with iron filings resulted in clumping, leading to the transition to 9 mm iron spheres. To increase magnetic response, acrylic was replaced with aluminum sheets. Materials were viewed as collaborators rather than passive transmitters of form.

Lastly, the reflective analysis followed Linda Candy and Ernest Edmonds' practice-based research framework, which emphasizes the generation of knowledge through the creation of artistic or design works.[13] This approach ensured that each iteration was critically evaluated for its technical precision, cultural resonance, and conceptual clarity.

Case Study 1: *Tatreez in Python*: Generative Code as Cultural Preservation

Tatreez in Python is a computational design project that explores how generative systems can act as a medium for cultural continuity, reinterpreting Palestinian embroidery as a dynamic and evolving practice. The project argues for code to be not just an archive of cultural heritage but a site of memory that can produce living and reconfigurable expressions of heritage.

Figure 1. Cypress trees in Python using turtle graphics

Instead of using preset ornamental patterns, this project reimagines traditional Palestinian Tatreez motifs as generative rule-based systems. Using publicly available resources like *Tatreez & Tea* by Wafa Ghnaim and the Palestinian Museum's digital archive, [14] motifs were broken down into

geometric primitives and re-coded with Python's Turtle graphics. This approach highlights the algorithmic nature of embroidery, where grids, repetition, and modular logic closely parallel programming. The project offers a conceptual link between generative design and cultural heritage by redefining Tatreez as a dynamic structure accessible to recombination through the creation of computational functions with modifiable parameters.

Tatreez generated a range of digital outputs in Python. Some were static, featuring randomized grids of code-drawn motifs based on seeded variables. In contrast, others were animated, showing pattern transitions over time, mimicking stitch-by-stitch progression and the evolving nature of tradition itself. Most importantly, the produced motifs could be physically sewn because they were exported as grid-based templates. Code and craft developed a mutually reinforcing connection due to this re-materialization; computing-fueled making, which in turn influenced more code development.

The project sets itself up against cultural preservation methods that are solely archival. Roopika Risam points out that empowerment and preservation are not necessarily the same thing. Instead of reviving cultural complexity, static digital archives have the potential to flatten it.[15] By emphasizing processual knowledge, change, and active engagement, *Tatreez in Python* is more in line with decolonial digital practices.

Figure 2, binary code

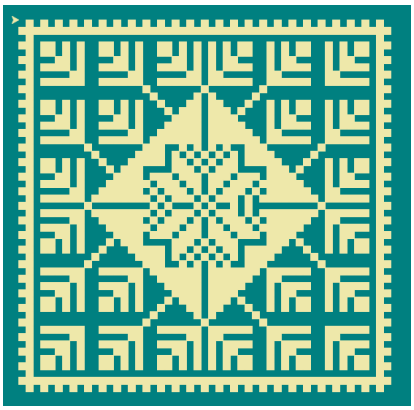


Figure 3, Cow's eye MOTIF in Python using turtle graphics

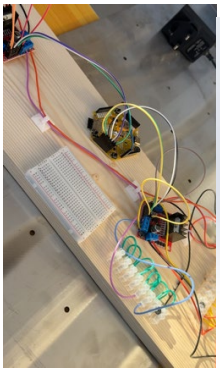
Also, as explained by McCormack, Bown, and Riddell, the project makes links to generative art and creative coding approaches.[16] The piece highlights the profound similarities between traditional handmade and digital design by using straightforward computational frameworks to create intricate visual results. This intersection suggests that both craft and code may be vehicles of cultural transmission, challenging the Western modernist separation between the two.

Ultimately, *Tatreez in Python* does not aim to recreate the heritage. Instead, it envisions legacy as dynamic, sensitive, adaptable, and computational. It suggests that digital tools may revive traditions in ways that go beyond aesthetics and creative activity when applied with cultural awareness.

Case Study 2: *The Frogs in the Pond*: Material Memory and Magnetic Behavior

Traditional Palestinian visual elements are reimagined as emerging, time-based occurrences in the kinetic work *The Frogs in the Pond* (2024). Developed in 2024, the installation examines the dynamic interactions of material agency, cultural memory, and machine logic. It offers a metaphor for both environmental and physiological memory, constantly present but never completely fixed, by enacting

a system in which motifs are continuously produced and unformed rather than statically showing embroidery patterns.



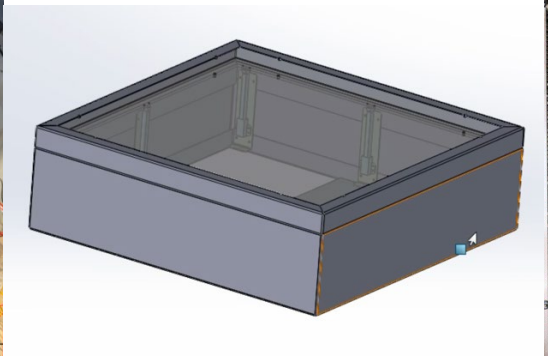


Figure 4, inside the installation image
Figure 5 & 6, The Frogs in the Pond, 2024 (installation and pattern)

The physical structure is constructed of a mechanically movable tray that holds 9mm iron spheres on a stainless steel-framed base. The array of neodymium magnets placed in a laser-cut MDF panel beneath this tray is arranged according to simplified Tatreez designs. The surface above is a 3mm anodized aluminum plate that allows the magnetic fields to act directly on the spheres without visual interference. Six linear actuators raise and lower the tray in sequential order under the direction of an Arduino Mega microcontroller, forming localized magnetic zones where patterns display for a limited time before disappearing.

The system was created using a lot of iterative prototyping. Early tests showed that conventional materials had limits. Magnetic transmission was hindered by acrylic, and iron filings clumped excessively. The second adjustment was switching to aluminum, allowing more accurate interactions between the iron spheres and magnetic fields, enhancing control and visibility. Programming refinements introduced phased actuator timing and dwell periods, creating rhythms that mirror expansion, contraction, and dispersal movements.

This choreography's conceptual inspiration is the idea of frogs emerging in a pond, then vanishing and resurfacing in silent, erratic cycles. These motions reflect the episodic nature of diasporic memory, which resurfaces in fragments, never entirely but always preserved by repetition and emotion.

The Frogs in the Pond embraces ambiguity and emergence in contrast to conventional display systems that aim for readability and clarity. A fresh configuration is created with each cycle. No pattern is permanent or steady. The fragile status of many cultural practices in displacement is reflected in this instability. These survive by improvisation, adaptation, and reinvention rather than documentation.

Although it defies instrumentalism, the composition technically interacts with the language of physical computing. According to Matt Ratto, critical making emphasizes the reflective engagement tools provide more than how effective they are.[17] Here, the machine takes on the role of a collaborator rather than a controller, forming patterns via interactions with tangible circumstances rather than exact directives. Additionally, the installation places itself into digital art and speculation discourse. As Christiane Paul states, digital media art may actualize intricate systems, stories, and ways of knowing beyond simple depiction.[18] By seeing cultural form as a system of relations, not just between magnets

and spheres, but also between tradition, code, motion, and the unpredictable nature of memory. *The Frogs in the Pond* is consistent with this possibility.
Overall, the piece respects history while avoiding nostalgia. Tradition is shown as a process rather than a final result, and memory as action rather than an image. The project creates room for interpretation, instability, and becoming by referencing Palestinian visual language without attempting to imitate it. This results in a dynamic system that is both cultural and computational.

DISCUSSION

The two projects covered in this paper, *The Frogs in the Pond* and Tatreez in Python, redefine heritage as a generative and live system instead of a static archive. These initiatives suggest ways to reactivate cultural themes through material behavior and computer logic rather than maintaining them in a fixed form. In doing so, they are consistent with Diana Taylor's idea of repertoire, which recognizes tangible display as a key site of cultural transmission, and Jan Assmann's conception of cultural memory as a dynamic process rooted in social practice.[19]
The projects demonstrate how computational systems can serve as a medium for engaging with cultural heritage. Through personal experimentation, the case studies reveal how traditional symbols and materials can be reinterpreted using algorithmic processes and physical dynamics.
In *The Frogs in the Pond*, the installation provided an interactive experience. As viewers observed the shifting behavior of the iron spheres, their attention was guided by the sensory atmosphere of the system. This resonates with Gernot Böhme’s theory of atmosphere as a condition that shapes perception and emotional response.[20]
Both the conceptual meaning and the visual results of *The Frogs in the Pond* were greatly influenced by the material dynamics. Iron spheres and magnetic fields' unpredictable behavior gave the system a sense of autonomy. This is in line with Jane Bennett's theory of vibrant matter, which holds that materials are not only passive carriers of form but actively participate in constructing meaning.[21] Within this perspective, heritage is not a static symbol kept by replication but a performative event that arises through interactions between code, material, and observer.[22]
These trials propose several further experiments. Machine learning models trained on digital archives may facilitate the creation of culturally sensitive patterns that mirror the logic of regional embroidery techniques. Thanks to sensor-based technologies, Installations may react in real time to audience behavior or environmental input. Open-source frameworks for cultural algorithms may make it easier for diasporic groups to share information and collaborate on code. Additionally, multisensory adaptations may make more inclusive and embodied ways of interacting with cultural memory possible.
These developments demonstrate that heritage preservation is a dynamic process. It involves constant rearticulation and adaptation through media, instruments, and individual interaction. Such reinterpretations are made possible by computational technologies, giving heritage a more dynamic and responsive quality.

CONCLUSION

Tatreez in Python and *The Frogs in the Pond* provide a framework for viewing legacy as a dynamic and interactive process by integrating code and material. Both projects move away from static representations of tradition and instead view cultural knowledge as evolving via usage, interaction, and reinterpretation.
Tatreez in Python converts traditional embroidery logic into programmable forms that produce new motifs using repeated principles. Similarly, *The Frogs in the Pond* uses motion and interaction to

translate memories into a sensual and material experience. These ideas show how technology may act as a link between historical knowledge and modern expression. Instead of abstracting cultural meaning, computational technologies facilitate its expansion and reinterpretation.

The algorithms are not just design tools, but processes for transferring and modifying memories. Materials contribute to the narrative by actively participating in form-making, whereas users co-create meaning with engagement and interpretation. Heritage becomes a dynamic negotiation of past and present, shape and behavior, memory and embodiment.

The work questions intuitive differences between tradition, innovation, craft, and technology. It promotes a deeper perspective in which cultural activities are viewed as procedural, reflective, and situated in the present. As Linda Candy and Ernest Edmonds propose in their study on practice-based research, new knowledge is created via cycles of producing and reflecting.[23] In this environment, legacy emerges as a dynamic system formed by iteration, community, and creative action, rather than a static inheritance.

NOTES

[1] Hanan Karaman Munayyer, *Traditional Palestinian Costume: Origins and Evolution* (Northampton, MA: Interlink Books, 2011), 74–81.
[2] Tanya Habjouqa, "Material Memory: Stitching Resistance in Palestinian Embroidery", *Textile: The Journal of Cloth and Culture* 15, no. 2 (2017): 144–161.
[3] Diana Baird N'Diaye, "Cultural Coding", *Smithsonian Folklife Journal* 12 (2018): 33–42.
[4] Tanya Habjouqa, "Material Memory: Stitching Resistance in Palestinian Embroidery", *Textile: The Journal of Cloth and Culture* 15, no. 2 (2017): 150.
[5] UNESCO, "The Art of Embroidery in Palestine", Intangible Cultural Heritage Listing, 2021.
[6] Philip Galanter, "What Is Generative Art? Complexity Theory as a Context for Art Theory" (paper presented at the 6th Generative Art Conference, Milan, 2003).
[7] Yasir Al-Hajjar and Herng-Herng Herng, "Algorithmic Heritage Modeling in Architectural Design", *Journal of Cultural Heritage Computing* 4, no. 2 (2022): 115–132.
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[9] Petra Lange-Berndt, *Materiality* (London: Whitechapel Gallery and MIT Press, 2015); Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham: Duke University Press, 2010).
[10] Henri Lefebvre, *The Production of Space* (Oxford: Blackwell, 1991); Gernot Böhme, "*Atmosphere as the Fundamental Concept of a New Aesthetics*", Thesis Eleven 36 (1993): 113–126.
[11] Roopika Risam, *New Digital Worlds: Postcolonial Digital Humanities in Theory, Praxis, and Pedagogy* (Evanston, IL: Northwestern University Press, 2018).
[12] Wafa Ghnaim, *Tatreez & Tea: Embroidery and Storytelling in the Palestinian Diaspora* (Portland: Tatreez & Tea, 2018); UNESCO, *"The Art of Embroidery in Palestine", 2020,* https://ich.unesco.org/en/RL/the-art-of-embroidery-in-palestine-practices-skills-knowledge-and-rituals-01722.
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[15] Roopika Risam, *New Digital Worlds: Postcolonial Digital Humanities in Theory, Praxis, and Pedagogy* (Evanston, IL: Northwestern University Press, 2018).
[16] Jon McCormack, Oliver Bown, and Anna Riddell, "Generative Design and Creative Autonomy," *Design Studies* 56 (2018): 11–36, https://doi.org/10.1016/j.destud.2018.02.002.
[17] Matt Ratto, "Critical Making: Conceptual and Material Studies in Technology and Social Life", *The Information Society* 27, no. 4 (2011): 252-260, https://doi.org/10.1080/01972243.2011.583819.
[18] Christiane Paul, *Digital Art*, 3rd ed. (London: Thames & Hudson, 2015).
[19] Diana Taylor, *The Archive and the Repertoire* (Durham: Duke University Press, 2003); Jan Assmann, *Cultural Memory and Early Civilization* (Cambridge: Cambridge University Press, 2011).
[20] Gernot Böhme, "Atmosphere as the Fundamental Concept of a New Aesthetics," *Thesis Eleven* 36 (1993): 113–126.
[21] Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham: Duke University Press, 2010).
[22] Glenn Adamson, *The Invention of Craft* (London: Bloomsbury, 2013).
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OUTCOMES FROM TEACHING DATA STORYTELLING FOR DESIGN STUDENTS: INFORMATION THEORY, BIG DATA, AND THE ART OF PERSUASION

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INTRODUCTION

In an age increasingly defined by datafication and algorithmic influence, the role of the graphic designer has evolved from aesthetic communicator to systemic interpreter and persuasive storyteller. As Artificial Intelligence (AI), Machine Learning (ML), and the Internet of Everything (IoE) reshape our digital ecosystems, design education must respond with urgency and innovation. Data is no longer an abstract numerical entity—it is a social, cultural, and political artifact. It tells stories, drives decisions, predicts behavior, and, crucially, can mislead as much as it can inform.[1]

This paper explores the pedagogical and epistemological foundations of a course designed to prepare design students for this complex landscape. Visualizing Data Narratives, a studio-based, interdisciplinary course offered at Central Connecticut State University, reimagines the relationship between design, information theory, and Big Data. Drawing from the fundamental communication models of Claude Shannon and Warren Weaver, the philosophical reflections of Gilbert Simondon on individuation and technics, and the critical media theories of Bernard Stiegler and Henri Bergson, the course prompts students to consider not only how data is visualized but also how it conveys meaning.[2]

The course pushes design students beyond dashboards, pie charts, and bar graphs into the richer territory of human-centered data storytelling. Through creative formats such as zines, games, data sculptures, animations, and participatory media, students engage with datasets sourced from public, civic, and environmental domains. Their goal is to create data artifacts that persuade, inform, and provoke, particularly around climate change, sustainability, and social injustice.[3] These creative outputs emerge directly from a series of structured assignments that challenge students to analyze real-world data critically, experiment with alternative visual forms, and design projects that connect data to lived human experience. This work is framed by the evolving landscape of the Internet of Everything (IoE), where data collection has shifted from broad demographic categories to the precise tracking of individuals as unique data nodes. As businesses, governments, and platforms increasingly predict behavior at the individual level, students are called not only to innovate visually but also to confront the ethical stakes of designing within these emerging data ecosystems.

This paper offers a reflective analysis of this pedagogical model, drawing on student work, feedback surveys, and interdisciplinary scholarship. It argues that when information theory is paired with ethical design practice and interdisciplinary storytelling, design students become empowered to transform raw data into catalysts for civic engagement and social change.[4]

REVIEW OF LITERATURE

This course in data storytelling for design students draws upon foundational works in information theory, critical media philosophy, and design education reform to scaffold a pedagogical framework that merges technical proficiency with ethical and persuasive communication

Information Theory and Systems of Communication

Claude Shannon and Warren Weaver's *Mathematical Theory of Communication* provides a critical theoretical basis for understanding data transmission, emphasizing concepts like entropy, noise, and redundancy.[5] Though initially grounded in electrical engineering and linguistics, their framework remains vital in today's context of data analytics and machine learning, where understanding "signal-to-noise" ratios can inform visual clarity and precision in communication design.[6]

Gilbert Simondon's theory of individuation extends Shannon and Weaver's transmission model by emphasizing the relational, processual nature of information. Simondon suggests that information is not merely transmitted—it is co-constituted within its milieu, shaping and being shaped by its environment.[7] His theory of technicity argues that technical objects evolve through continuous interaction with humans and systems, a concept that resonates with the design student's challenge of visualizing algorithmic processes or AI datasets.[8]

Temporal and Ethical Dimensions of Technics

Henri Bergson's concept of *durée*—a non-linear, qualitative experience of time—challenges mechanistic conceptions of temporality in data systems.[9] In the classroom context, this encourages students to reflect on how audiences interact with data narratives over time, and how the timing and unfolding of stories can influence emotional impact.[10] Bernard Stiegler, meanwhile, deepens the ethical imperative by arguing that technics mediate human memory and cognition.[11] For him, design is a pharmacological force—capable of both healing and harm—requiring pedagogical models that train students in ethical discernment and responsibility.[12]

Big Data, Design Thinking, and the "5 Vs"

Understanding the ontology of Big Data is central to this course. As students work with open-source datasets, they are asked to engage critically with the "5 Vs" of data: Volume, Velocity, Variety, Veracity, and Value.[13] These categories structure classroom explorations into how data is gathered, shaped by algorithms, and visualized through various software tools.[14] A key part of this inquiry is helping students identify and correct biases that arise when datasets are incomplete, misleading, or "cleaned" without transparency.[15]

As the results of a student survey show, students came into the course with little experience in these concepts:

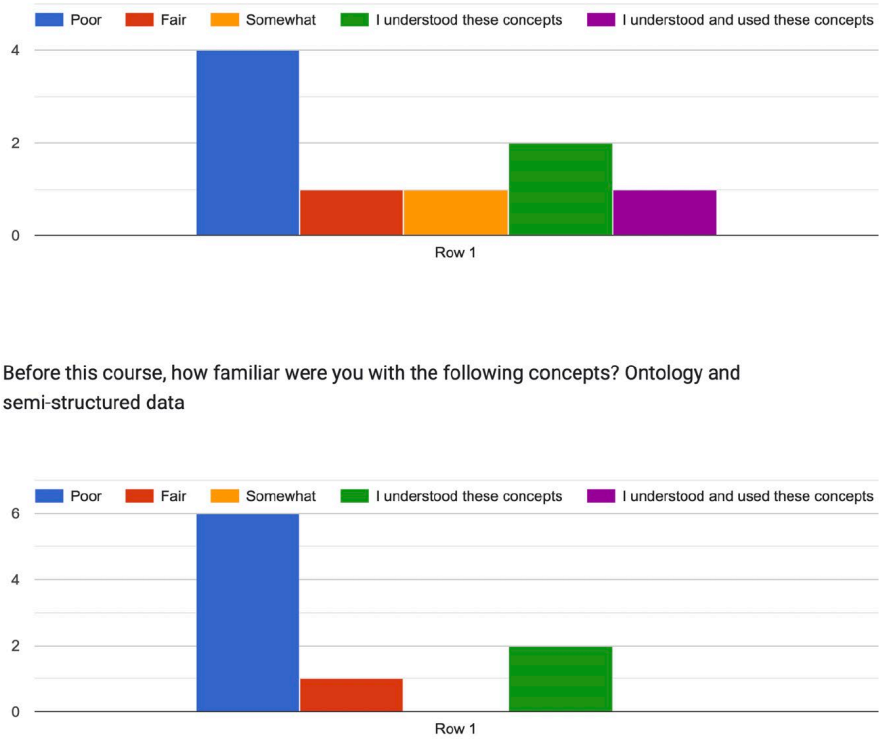

Figure 1. Student responses about prior knowledge of big data concepts

Data Relationships and Multidimensional Analysis

In addition to understanding the scale and structure of Big Data through the "5 Vs," students in the course are introduced to the critical role of relationships within and between datasets. Data relationships—whether structural connections across tables in a database or analytic patterns discovered through statistical methods—are foundational to extracting meaningful insights.[16] Analytical techniques such as correlation analysis, regression modeling, cluster analysis, and network analysis are introduced to help students uncover hidden patterns, predict trends, and draw connections between disparate data points.[17] These exercises emphasize that datasets are not static collections of facts but dynamic webs of association that require careful interpretation.[18] Understanding data relationships not only enhances predictive power and analytical depth but also fosters ethical decision-making, as students learn to recognize how oversights in relational data structures can lead to biased or incomplete narratives.[19] Students felt that they left the course better equipped in understanding these areas, and that they started the class with little experience in these topics.

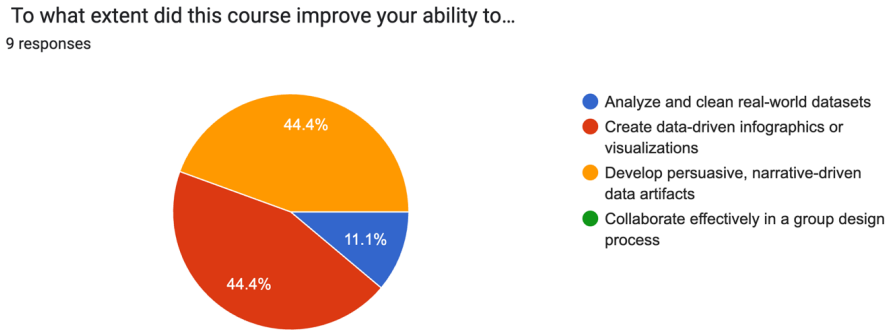

Figure 2. Students' evaluation of increased knowledge about datasets and infographics.

Human-Centered and Persuasive Data Design

Informed by rhetorical theory (ethos, pathos, logos), the course builds on the work of Edward Tufte, Brent Dykes, and others to challenge conventional data visualization.[20] Tufte's critique of "chartjunk" and his emphasis on clarity and multidimensional representation are echoed in the course's use of sparklines, zines, and data sculptures.[21] Dykes' concept of "data storytelling" further bridges quantitative analysis with narrative persuasion—essential for socially-engaged design education.[22] The AIGA's *Designer 2025* report provides institutional support for these pedagogical goals by promoting interdisciplinary collaboration, systems thinking, and the integration of emerging technologies.[23] As the author notes, today's designers must be both critically literate and technically agile, able to use design as a mode of social inquiry and ethical engagement.[24]

METHODOLOGY

The methodological framework for this data storytelling course is grounded in a studio-based, constructivist approach to design education. Recognizing that many design students enter with visual skills but limited experience in data analysis or technical systems, the curriculum was scaffolded in these areas of knowledge:

- complement creative project work, lectures with visual aids and clear examples now accompany each unit launch. These lectures cover core topics including:
- Ontology and data classification (drawing from Simondon, Bowker & Star)
- The "5 Vs" of Big Data
- Ethical storytelling with data (including Tufte's principles and Bergson's durée)
- Visual metaphors vs. statistical accuracy
- Constructing persuasive narratives with ethos, pathos, logos

Students engage in iterative, project-based learning where theory and practice coalesce in a cycle of experimentation, reflection, and critique. Drawing from interdisciplinary design thinking and data literacy models, the course encourages students to explore how visual narratives can shape ethical awareness and civic engagement.[25]

These technical concepts are demystified through worked examples, student case studies, and collaborative exercises using simplified datasets before progressing to open-source public data.

Weekly visual schedules are now presented in class and on Blackboard to provide continuity and prevent confusion between overlapping projects. Each major assignment is introduced with a "starter kit" that includes:

- A lecture slide deck with visuals
- A summary of learning goals
- Annotated student examples
- Rubrics and timelines
- Optional datasets for those who prefer not to define their own topics
- A master timeline that outlines the due dates for the blog, units and final project milestones provided for students.

This structured pedagogical approach responds directly to comments such as: “I felt like I was thrown to the wolves,” and “A lecture with visuals is better than just a post on Blackboard.”

CURRICULAR DESIGN AND PEDAGOGICAL STRATEGY

The course unfolds over four key thematic units: (1) the ontology of Big Data, (2) persuasive infographics, (3) human-centered problem-solving, and (4) interactive data participation. Each unit builds upon the last to progressively deepen students’ technical proficiency and critical fluency.[26] Students work with open-source datasets sourced from platforms such as Datawrapper, Google’s Journalist Studio, and GitHub repositories like Awesome Public Datasets.[27]

Figure 3. Student Jessica Nappi’s knowledge map

Assignments include creating knowledge graphs, infographics, interactive quizzes, participatory games, and kinetic data sculptures.[28] These are scaffolded through lectures, workshops, peer critiques, and blog-based reflective writing. Throughout the course, students are encouraged to explore diverse media—including Illustrator, Figma, hand-drawn zines, and audiovisual formats—to test how data can be made “experiential” rather than abstract.[29]

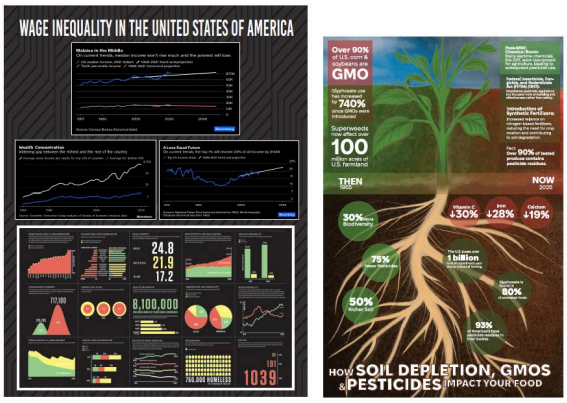

Figure 4. Students Jason Monckton's Khrystyna Protsanin's infographics

Informed by constructivist learning theory, the course emphasizes collaboration through group projects and class critiques. These assignments simulate professional scenarios and mirror real-world design workflows that include stakeholder negotiation and feedback integration.[30]

ASSESSMENT TOOLS AND EVALUATIVE METRICS

Student performance is evaluated using a combination of formative and summative assessments. Formative tools include blog posts that document project development, self-evaluations, peer feedback, and class presentations that share and critique work in progress. Summative evaluations comprise project presentations and final data stories, including methodology reflections, design choices, and audience feedback.[31]

In-class critiques also play a central role in evaluation, with peer assessments focusing on clarity, emotional impact, and ethical considerations in the communication of data narratives.

In Unit 3, students were tasked with developing campaign strategies grounded in data and research on a topic of their choice. The objective was to create a call to action designed to engage specific demographic audiences through diverse media formats—including printed visuals, social media posts, and podcasts. These campaigns were presented in a low-stakes, workshop-style format: students uploaded their mock-ups to a shared OneDrive folder and presented from the classroom teaching station, minimizing technical interruptions. This relaxed presentation structure created space for meaningful feedback, allowing students to refine their media formats, strengthen their messaging, and more precisely define their target audiences.

Here are several comments on this experience from students:

"My partner and I used Figma and Word Docs to collaborate and work at the same time while talking over the phone. We did a lot of research on our topic as well as zines, putting links, reference pictures, and notes into our word doc, and then created our designs from there. When presenting our progress to the class, we were informed that the way we created our designs would be more effective in a larger format using Illustrator, and instead of a zine to make them as individual 11"x17" posters bound in a flip book together. We took that advice and did exactly that. I believe this has made our project much more successful, engaging, and impactful. I'm very pleased with how it turned out in the end and glad we took the advice of our peers and mentors."— Student, Courtney Malanga

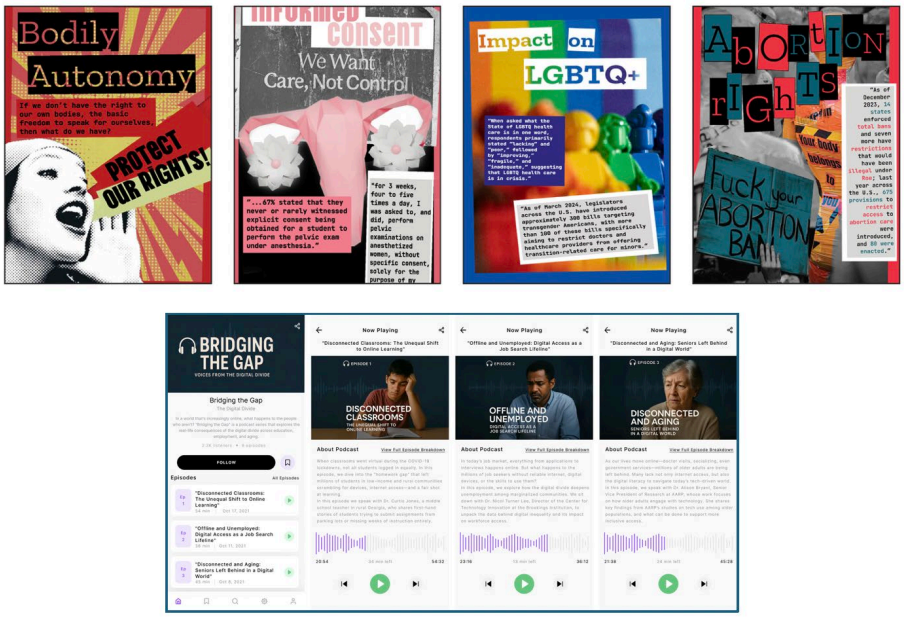

Figure 5. Students Courtney Malanga and Ja'Kyah Williams, "Bodily Autonomy," and Aidan L'Heureux and Matthew Marenco, "Bridging the Gap"

"For our project *Bridging the Gap*, we were pleased with the feedback we received. Viewers clearly understood our mission: to shed light on the challenges faced by individuals who are left behind due to lack of access to the internet or digital technologies. One key suggestion we received after presenting was to revise the portraits used in our thumbnail images. The feedback noted that while our topic addresses a serious issue, our visual presentation should reflect the *solution* rather than solely the *problem*. As a result, we were encouraged to shift the tone of our imagery from gloomy or somber to more hopeful or neutral, better aligning with our message of empowerment and connectivity. We also developed a 'summary page' that highlights the key points discussed in the podcast. This addition allows viewers or listeners to quickly grasp the main takeaways without needing to engage with the full episode. These refinements have made our project stronger and more cohesive, resulting in a more polished and effective communication of our message." — Student, Aidan L'Heureux

STUDENT EVALUATIONS OF THE COURSE

Qualitative methods such as semi-structured interviews and post-presentation surveys are employed to gauge the impact of student projects on intended audiences. Students collect viewer responses about comprehension, emotional impact, and perceived credibility.[32] These feedback mechanisms inform final revisions and are analyzed to assess whether students successfully applied the principles of ethos, pathos, and logos in their storytelling.[33]

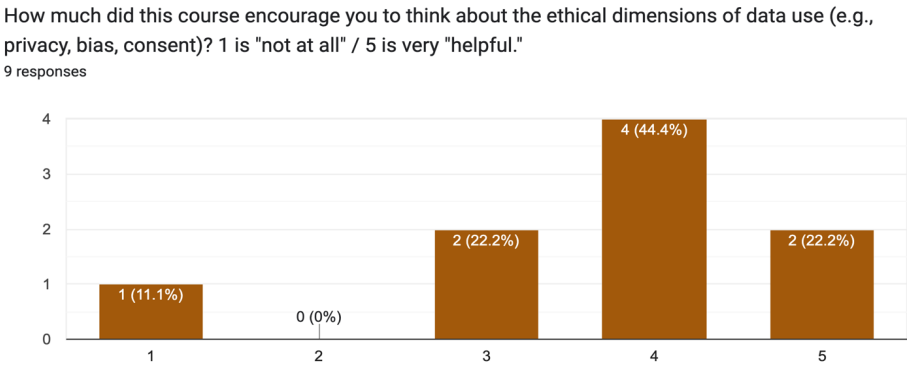

Figure 6. It is encouraging that most students thought about the ethical use of data and data representation in the course.

Course Outcomes and Learning Reflections

The course *Visualizing Data Narratives* was designed to equip design students with foundational competencies in data literacy, visual communication, and ethical storytelling. Posted in the Blackboard course shell, the formal learning outcomes established clear goals:

- Learn techniques for identifying a story in datasets
- Communicate a point of view to persuade demographic audiences
- Build a basic set of data analysis skills
- Tell data-driven narratives with digital and non-digital tools
- Connect data to social issues
- Measure the effectiveness of data-driven narratives through presentation and critiques

Student feedback and post-course reflections confirm that these objectives were met in meaningful and diverse ways. Several students cited their increased ability to "turn complex information into clear, meaningful, and visually engaging stories" as the most valuable outcome of the class. Others emphasized learning to analyze real-world datasets and transforming them into accessible visuals—highlighting the integration of both analytical and aesthetic skills.

Two survey charts further support these claims. The first chart shows the contrast between students' self-reported confidence at the beginning and end of the course across key areas such as "identifying a story in a dataset" and "creating visuals from real-world data." The second chart reflects perceived growth in technical skill, including increased familiarity with Adobe tools and greater confidence using Figma to design data-driven visuals. Students reported significant growth in using programs such as Illustrator and InDesign, as well as digital platforms like Figma. The incorporation of non-digital formats—such as zines, flipbooks, and hand-drawn graphics—also provided students with opportunities to explore multimodal expression and embodied forms of storytelling.

Importantly, students not only developed project-specific competencies but also internalized broader methodologies. They noted learning "to present data I've found on the internet," "to better read data sets," and "to create complete, extensive projects that utilize many learned concepts and skills." These reflections suggest that students left the course with not only technical skills but also conceptual frameworks for inquiry, synthesis, and critique. This outcome aligns with the course's core aim to transform students into ethical, strategic communicators who can engage with data as a medium and a message.

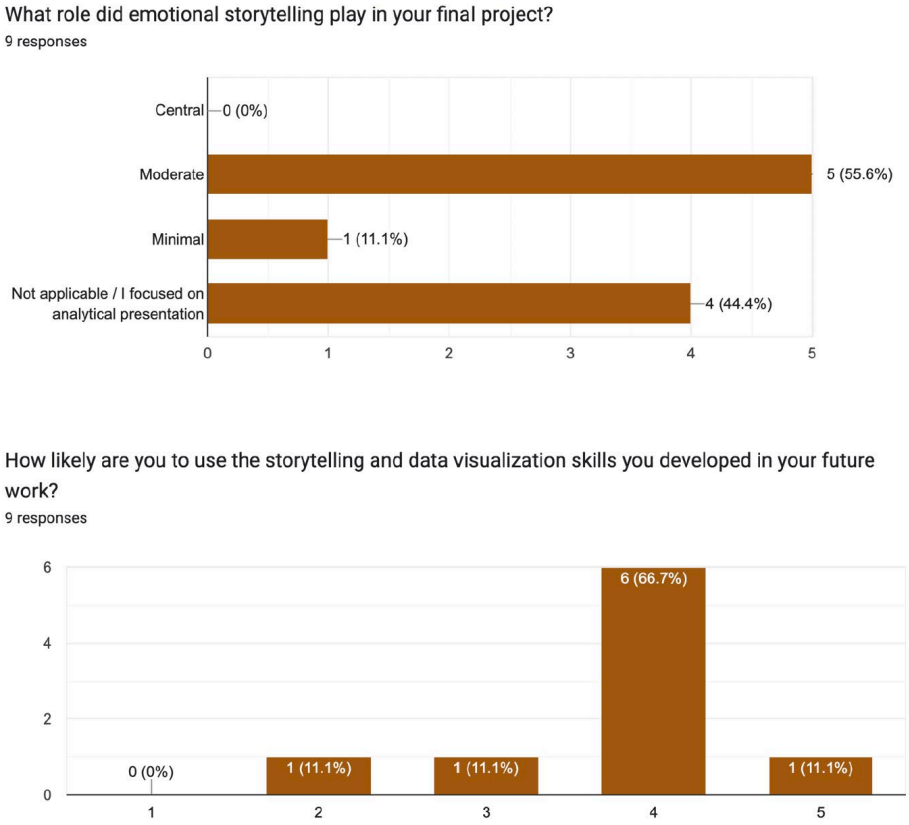

Figure 7. Students see data visualization as a skill they will use in their future work.

NEXT STEPS

Several actionable improvements, informed by student feedback and reflective course evaluation, will guide the next iteration of *Visualizing Data Narratives*. These changes aim to deepen technical fluency, clarify project expectations, and enhance student confidence throughout the learning process. Some suggestions, including a curated gallery of previous student projects, will be incorporated into the course next year.

Expand Instructional Time for Data Foundations

Students consistently requested more structured instruction in data analysis, ontology, and storytelling logic. Despite a blog reflection on the learning material, building a knowledge map, and other assignments, a new assignment requiring students to find real-world examples of this concept will be added to the courses to aid in better mastery of these concepts. In addition, the students' suggestion for more guest speakers will be incorporated into the course. In the future, the course will include data journalists, civic technologists, and/or information designers.

Emphasis on Why Topics and Datasets Are Not Supplied

While curated themes and datasets can offer clarity, intentionally withholding predefined starting points also serves a critical pedagogical function. Open-ended inquiry challenges students to engage in the full arc of the design thinking process—from problem identification and data sourcing to narrative framing and ethical reflection. This ambiguity mirrors real-world design scenarios in which there is no predefined brief or readily available dataset, and where designers must develop their own

criteria for relevance, rigor, and impact. By navigating this early-stage uncertainty, students cultivate resilience, critical thinking, and research autonomy—capacities that are essential in a rapidly evolving design economy where new roles are often self-constructed.

As the graphic design industry undergoes rapid transformation, students must be prepared not just to produce artifacts but to define their own roles within increasingly interdisciplinary, decentralized, and strategic contexts. Contemporary design challenges are embedded within complex physical, psychological, social, cultural, technological, and economic systems.[34]

Job roles are increasingly emerging from outside traditional graphic design production: in UX strategy, civic tech, environmental data storytelling, and platform development. "This 'everywhere all at once' mindset is essential for understanding individual design tasks within larger contexts and tackling complex, layered design challenges.[35]" When students are empowered to align their passions with data-driven narratives and strategic communication tools, they are better positioned not only to find work—but to shape the future of work itself.

Introduce More Targeted Guest Speakers

Future classes will include more guest speakers, such as data journalists, civic technologists, or information designers, who can share real-world applications of data storytelling. These talks will bridge theory and practice and model the integration of ethics and persuasion in professional contexts. The course is also going to be part of a newly created Integrated MultiMedia Production course.

Collect Better Individual Feedback Through Structured Reflection

Future project submissions will include a short reflection form to improve evaluation and self-assessment. Prompts will ask students to explain design choices, discuss what they learned, and reflect on peer work (e.g., "Whose project stood out and why?"). These reflections will enrich critique discussions and help instructors track learning more effectively.

These next steps are rooted in the belief that design students thrive when creative exploration is grounded in technical clarity and supported by structured scaffolding. By responding directly to areas of confusion or frustration, the course aims to foster an environment where every student—not just the visually fluent—can grow as an ethical and compelling data storyteller.

Another critical area for development is helping students recognize that while they may often work from a design brief, they will just as frequently be the ones crafting those briefs. Within an agency environment, the ability to pitch concepts that are both polished and responsive to real-world challenges is an essential professional competency. These skills are not ancillary but foundational to the design profession. As emphasized in both AIGA's *Designer 2025* report and recent job market analyses, the capacity to frame and communicate design intent is as vital as executing it. The future of design education must therefore emphasize not only technical proficiency and creativity but also the rhetorical and strategic thinking that underpin successful collaboration and societal impact.[36]

CONCLUSIONS

In an era increasingly defined by data saturation, algorithmic decision-making, and contested truths, design education holds a critical responsibility: to cultivate not only technical fluency but also ethical data literacy. As the boundaries between disciplines blur and the consequences of misinformation deepen, students must be equipped to translate data into narratives that resonate with clarity, integrity, and civic purpose. The transformative role of design education lies in its ability to humanize information, while combining quantitative reasoning with qualitative storytelling, fostering

interdisciplinary collaboration, and embedding ethical responsibility into the creative process. Through visual experimentation, civic engagement, and philosophical inquiry, students learn to treat data not merely as information, but as a relational and communicative act.

Data Storytelling Must Bridge Technical Rigor with Human-Centered Design

The course affirms that data literacy in design education cannot be limited to technical skill or software fluency. Instead, it must incorporate human-centered and ethical frameworks that foreground the audience's lived experiences, values, and trust. The course positions data not as static fact but as a relational and transformative process. Students are encouraged to think beyond chart creation toward crafting narratives that balance *logos* (logic) with *ethos* (credibility) and *pathos* (emotion) to move audiences to action.[37]

Quantitative and Qualitative Modes Must Be Taught as Interdependent

By integrating classical information theory (e.g., Shannon and Weaver) with qualitative storytelling approaches (e.g., visual metaphors, mapping, zines, kinetic artifacts), the curriculum demonstrates that effective data communication involves synthesis—not opposition—between technical and creative methods.[38] Students gain a toolkit that spans analytical reasoning, participatory formats, and visual experimentation, reinforcing the necessity of interdisciplinary thinking in emerging data-driven professions.

Assignments Rooted in Civic Relevance Enhance Engagement and Meaning

The structure of the course—particularly its emphasis on real-world datasets tied to social justice, climate change, and community storytelling—grounds student learning in public impact.[39] Final projects that require civic relevance encourage students to see design not only as an expressive or aesthetic act, but as a communicative and ethical responsibility. This approach equips students to analyze, interpret, and visually translate complex issues into accessible formats that resonate with diverse audiences.[40]

Pedagogical Innovation Emerges from Interdisciplinary Collaboration

The integration of disciplines—design, journalism, music, and communications—reflects an understanding that contemporary design problems are rarely solved within a single domain.[41] Encouraging students to collaborate across fields (e.g., creating musical interpretations of data or interactive games) cultivates adaptability, a key competency in a job market increasingly populated by roles outside traditional graphic design production. The course thus supports students in pursuing passion-driven projects while developing the strategic thinking needed to navigate and shape new career pathways.[42]

Data Visualization Pedagogy Must Prioritize Trust, Participation, and Ethics

In a post-truth media landscape marked by statistical mistrust and fragmented publics, the ability to design for clarity, credibility, and engagement is paramount.[43] The course's emphasis on avoiding "chartjunk," leveraging participatory storytelling, and aligning visual integrity with audience needs shows a clear pedagogical commitment to teaching data responsibility as well as data fluency.[44]

In conclusion, to meet the demands of a data-driven future, institutions must expand and adopt curricula that integrate technical, ethical, and participatory approaches to data storytelling. Courses that ground data visualization in civic relevance and collaborative practice—like the one described

here—offer a blueprint for reimagining design education as a site of social transformation. By prioritizing trust, engagement, and interdisciplinary literacy, such programs prepare students not only to work with data but also to critically shape the narratives that define public life in the 21st century. This model must be scaled across disciplines and programs to cultivate a generation of designers who are not only fluent in data but also responsible in its use.

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VISUAL COMMUNICATION DESIGN EDUCATION WITH A TWIST: DESIGNING CIGARETTE PACKS THAT DO NOT SELL

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INTRODUCTION

Artificial intelligence (AI) is reshaping design education and transforming the creation process. Educators are challenged to develop new pedagogical approaches and to evaluate the benefits and drawbacks of such technologies.[1] With generative AI, traditional executive skills of designers become less central, and critical thinking becomes more important than ever. The core of the design profession now requires a focus on problem analysis, research, and ethical questioning that extends beyond client satisfaction to encompass global well-being.[2]

While design thinking has been conceptualized in simplified frameworks, such as the double-diamond model, it remains insufficient for educating design students. Given the new paradigm shifts, fostering critical thinking in education gets increasingly crucial, particularly in design specializations.[3] This shift highlights the need for innovation in design education to equip future designers for their professional roles.

For our second-year graphic design studio in Spring 2024, we challenged students with a packaging design project, featuring a twist: Designing cigarette packs that do not sell. We asked them to go beyond standard plain packaging regulations,[4] having health warnings on neutral backgrounds, and to persuade smokers to quit by developing innovative *counter-packaging* ideas. This pedagogical experiment aimed to portray how problem-based learning fosters critical thinking in design education. The aim extended beyond technology adaptation to strengthen strategic approaches by confronting Turkey's commerce-driven design norms with ethically oppositional briefs.

This demanding project prompted students to reevaluate their design understanding, explore attractive product creation through learned principles, and then challenge themselves by designing repulsive products.

Our pedagogical approach consisted of encouraging students to consider all aspects of the problem[5] and focusing on what to visualize rather than how to do so.

The works evaluated in the final section are anticipated to enhance our comprehension of the evolving designers' roles, encompassing both their technical competencies and moral perspectives in an AI-integrated world.

Today's design work requires understanding how everything connects and affects the long-term future. Designers should consider environmental and ethical impacts at every level of an organization.

This expanded social role for designers is particularly relevant as artificial intelligence reshapes the field.

AI AND DESIGN EDUCATION

Recent advances in generative AI sparked discussions about the role of design and design education. IBM[6] highlights the transformation of designers into curators, with generative AI integrated into the design process.

Educators are gradually adopting generative AI to expedite visual production, freeing students from laborious execution to idea development.[7] However, integrating these tools into design education remains experimental for designers and educators who question the role of AI and explore effective collaboration methods.[8]

While technological progress demands more rapid execution from designers,[9] generative AI accelerates the visual production process. Given this acceleration, educators may recognize AI's potential to free students from technical constraints, enabling them to dig deeper into conceptual development.

As AI capabilities grow, designers may evolve into strategic directors of these systems. Design education should contribute to this process by developing new pedagogical approaches emphasizing critical thinking and analytical skills to monitor the AI generation process.

THE ROLE OF CRITICAL THINKING IN DESIGN EDUCATION

By freeing students from technical constraints, AI allows them to have a deeper engagement in the thinking process. The IF Design Foundation's white book on the future of design education (2021) starts with Dieter Rams highlighting the essence of design: "Design is first and foremost a process of thinking".[10] In recent decades, methods for creative problem-solving have been shared widely, leading to the term "design thinking." Nevertheless, for designers, the thinking process reflects a professional mentality and thought processes that are much more complex than what can be summarized into double-diamond diagrams.

With the advent of AI and its inevitable use by design students, design education perspectives and the importance of critical thinking for these students should be reevaluated. Research suggests that design thinking should be paired with critical thinking to improve design skills. Dynamic teaching and learning experiences, where both skill sets support each other, provide the best outcomes.[11]

Higher education sees critical thinking as crucial for addressing global challenges.[12] Employers value these skills, and universities are prioritizing their inclusion in their curricula.[13] Yet despite widespread support from policymakers, educators, and stakeholders, universities still struggle to effectively develop CT skills.[14]

The OECD's 2006 research identified key 21st-century skills, organizing them into three areas: New ways of thinking, shifts in cultural behaviors and social values, and changes in teaching methods.[15]

Facione's influential Delphi Report recommended developing critical thinking through specific mindsets: Curiosity about diverse topics, openness to different viewpoints, and honest self-reflection about personal biases. The report stressed that "The cultivation of these dispositions is particularly important to ensure the use of CT skills outside the narrow instructional setting".[16]

OECD's assessment criteria show that strong CT students "show clear understanding of chosen and alternative position strengths and limitations," while exceptional students "present specific personal positions to formulated problems, relate positions to alternative theories or perspectives within or outside disciplines, justify positions with good evidence and acknowledge chosen position assumptions and limitations".[17]

Promoting CT matched our goal of training well-rounded visual communication designers in the AI era. This required developing "generalist" designers who are "creative as well as analytical, that exercise critical judgement, communicate with various stakeholders, be familiar with technology and materials, values and ideals, and have the ability to compose all of these, making something whole from knowledge and information from the smaller parts".[18] Today's designers must understand complex, interconnected systems and practice ethical design, becoming "guardians of broader societal and environmental well-being".[19] To prepare students for this role, we designed a project that would challenge conventional commercial approaches.

ADVERTISING EXAMPLES FOR CIGARETTE PACKAGING

New advertising campaigns discouraging the use of tobacco emerged during the early 21st century. "Think. Don't Smoke," led by Philip Morris, featured a commercial video about a male teenager trying to impress a female by juggling cigarette packs, with the unimpressed girl seeing him as a monkey. "Truth" campaign videos by American Legacy Foundation took a serious approach, showing thousands of white-clothed people dying instantly on streets before tobacco company buildings as if "stubbed" like cigarette butts. Tobacco counter-marketing awareness almost doubled during Truth's first 10 months, creating a visible impact on teenagers as it underlined the harms of smoking, even though "Think. Don't Smoke" lacked a similar effect.[20]

Early 2010s research suggests adolescent smoking decreased reasonably since tobacco packaging regulations with health warnings and unhealthy organ visuals made smoking less appealing.[21] However, while plain packaging allegedly deters smoking, its efficacy remains contested as later research indicates teenagers show lower interest in long-term smoking effects, being more concerned with short-term effects like bad breath and not looking cool among peers.[22]

Despite their apparent failure, plain packaging communication strategies are unlikely to resonate with all cigarette consumers across different ages, genders, regions, and socio-economic backgrounds. Therefore, considering the marketing strategies used by cigarette brands before the implementation of plain packaging regulations, there is room for more consumer-specific counter-marketing strategies to produce better results. This marketing gap prompted us to create a brief that reveals students' CT abilities, targeting specific cigarette brands to design packages that discourage cigarette consumption among the respective target audiences.

EXPLORING AI INTEGRATION AND ANALYTICAL THINKING NEEDS IN PACKAGING DESIGN PROJECTS

Building on the foundation of targeted counter-marketing, we developed our pedagogical approach. Developing and assessing this studio project considered both Facione's original critical thinking education role evaluation and its laconic design thinking formula version. This project included controversial components, preparing students for highly commerce-oriented Turkish design marketplaces primarily focused on sales-enhancing design skills rather than addressing social change.[23] Another challenge in fostering critical thinking attempts was Turkey's arts education system, which discourages CT, instead favoring authoritarian and submissive mindsets from a young age.[24]

Shaped by accumulated design education knowledge, this project targeted higher learning pyramid segments in Bloom's taxonomy, asking students to analyze, evaluate, and create based on questioning.[25] Today's designers require leadership and sound judgment, "demanding action and ability to act, based on overwhelming amounts of insufficient information, within restrictive resource and time limits", as well as "reasoning", as "deliberate attempts to control thought direction towards

intended end products where obstacles must be overcome", eventually fulfilling Schön's reflective practice conception.[26] Our pedagogical approach to applying this knowledge was guided by Papanek's "non-conformist autonomy" and techniques like Osborn's brainstorming and de Bono's lateral thinking for creativity[27] through four-week in-class critique sessions.

While mainstream commercial design approaches involve using learned skills to create attractive, engaging, effective final products, this project asked students to employ design skills differently—convincing the consumers not to buy—thereby engaging critical thinking processes in both students and audience members.

Based on research, students developed new marketing insights, understanding brand user mindsets, and preventing purchases. They were encouraged to propose different approaches than contemporary plain packaging examples and deliberate on broader-scale smoking adverse effects, more efficiently catching target audiences. Students were encouraged to avoid visualizing long-term smoking effect fears, as seen in recent anti-marketing strategies, instead conveying rapid, clever, and compelling messages.

They were allowed to exceed brand guidelines. Distorting brand logos was welcomed as a supportive counter-marketing strategy element. They were expected to create photography, illustrations, and graphics to be used on the cigarette boxes, harmonizing visual assets with the strategies that they proposed. AI was permitted as a supporting tool for image generation, particularly utilizing images that students could not create themselves.

Although their primary task was to discourage purchasing, they still needed to apply basic graphic design principles and create aesthetically pleasing visuals that were simple, clean, and easily understood by target audiences. This task explicitly implied using all cognitive skills considered as critical thinking staples: Interpretation, analysis, evaluation, inference, explanation, and self-regulation.[28] Consistent feedback from course instructors on completing critical thinking activities was a very significant factor in fostering their critical thinking.[29]

The intentional brief twist aims to empower today's students to innovate for better worlds. This effectively guided their diverse idea generation abilities and subsequent pros and cons discussions, making critical thinking processes more transparent. Through similar critical inquiries, we can instill and assess the highest quality thinking in new-generation designers.

THE EVALUATION OF SELECTED WORKS

The results of this critical inquiry approach can be seen in the student work produced. Six designs were selected from 36 student submissions based on the authenticity of the idea, execution quality, and the variety of advertising strategies. The projects relied on carefully determined target audiences to discuss how well they met counter-packaging project objectives.

Students were allowed to use AI in generating photographic images that they could not shoot themselves, or for detailed illustrations that required an extra workload.

"Oink, Oink Folks!" was designed for Marlboro, the world's most popular cigarette brand.[30] Taking target-specific approaches, the designer narrowed audiences to Islamic countries, using smoking pigs on pack covers, associating smoking activities with animals forbidden in Islam. Swine images were created using Artbreeder and photo-manipulated, incorporating human bodies and cigarettes in mouths.

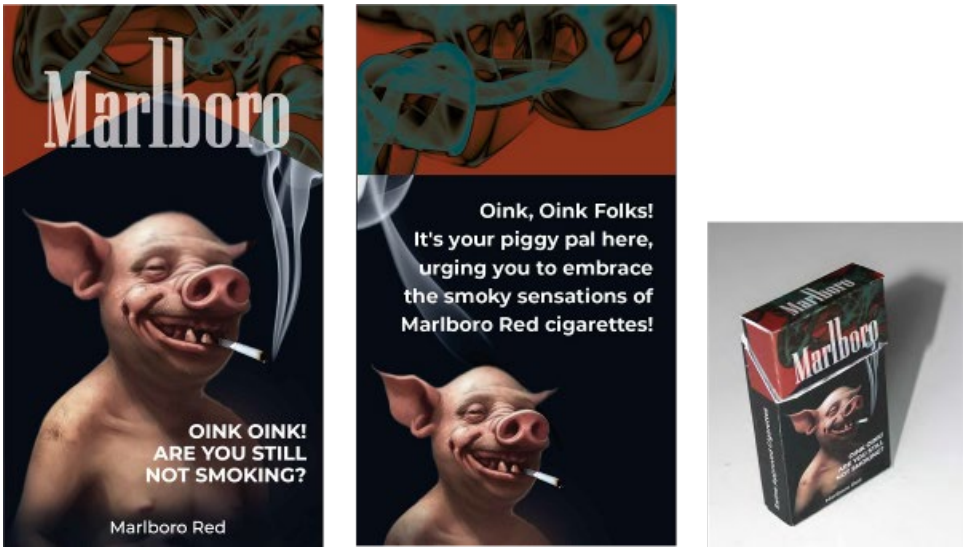

Figure 1. Oink, Oink Folks!

"Don't Risk Your Life", designed for Camel, focuses on smoking-caused bad teeth. Camel, predominantly selling in the Middle East and North Africa, follows Middle Eastern aesthetics in brand names, visuals, and color palettes.[31] The designer used lower portions of men's faces, focusing on mouths with mustaches, commonly associated with Middle Eastern people. To balance unappealing bad teeth appearances and create humorous effects depicting human faces with cartoon-like illustrations, blending AI-generated references and traditional illustration.

Figure 2. Don't Risk Your Life

"Lighting Up Cash" packaging design, titled "You are lighting up cash, not just cigarettes," underlined the financial harms of tobacco consumption with AI-generated burned banknote images on Parliament pack front covers, considered higher-priced tobacco brands.[32] Designers intentionally increased production costs by applying customized cutouts to burnt banknote parts and exposing cigarettes within boxes.

Figure 3. Lighting Up Cash

A second Parliament package design criticized high-end brand perceptions, altering the design with handwritten logos and unsterile-looking packs featuring sketchy pieces, taped on, presumably disturbing high-end consumers by designing boxes they'd prefer not to carry. While designers intended to remove mass-production feelings by crafting most packages by hand, they used generative AI assistance to create stained background textures.

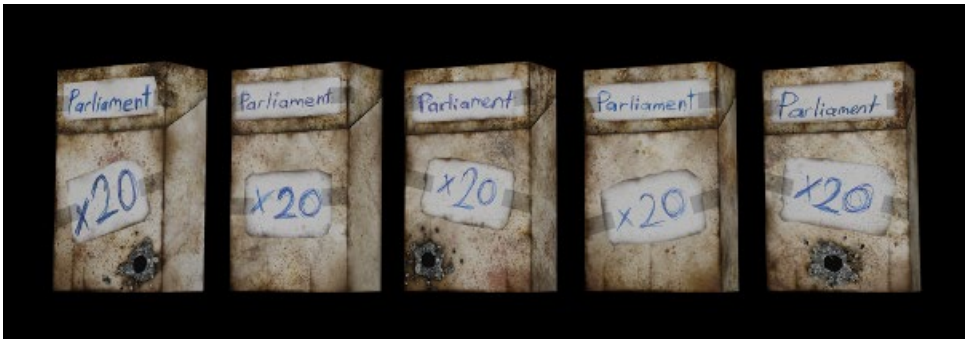

Figure 4. Untitled.

"It Slims Your Chance" packaging design for Winston Slim cigarettes, brands primarily targeting female consumers with stylish and feminine stances,[33] resembled pregnancy tests, where two red lines on pack lids indicated positive results; however, when lids opened, one line disappeared, and results turned negative. Pack backs featured slogans "It slims your chance!" concurrently referring to correlations between smoking and reduced pregnancy chances.

Figure 5. It Slims Your Chance

Another package design highlights harm to the eyes with slogans on the front side of the Marlboro pack: "Your first lesson with Braille; you're going to need it." This ironic tone was accompanied by embossed Braille characters on packs, translated by generative AI tools, reminding consumers to feel messages every time they handled packs.

Figure 5. Braille

CONCLUSION

This project balanced different definitions of critical thinking while addressing two main challenges: Preparing students for Turkey's business-focused design market, which prioritizes sales over social impact, and overcoming Turkey's arts education system, which discourages critical thinking in favor of an obedient student attitude.

Students typically sought instructor approval rather than thinking independently, often asking, "Did I get it right, professor?"[34] during critiques. Yet when confronted with the complex, unconventional cigarette packaging assignment that required repeated examination, the goal of enhancing analytical design processes through critical examination naturally emerged. Through an analysis of selected student submissions, as the course instructors, we observed how projects evolved as learners explored the harmful effects of smoking, identified appropriate target demographics based on their chosen focus areas, and developed corresponding messaging strategies. Once engaged in critical thinking, their need for constant validation decreased.

Initially, we opposed using AI for final visuals, but we shifted focus to help students think about what to visualize rather than how to technically create it. The pig imagery in "Oink, Oink Folks!" perfectly demonstrated how students were encouraged to thoroughly consider their audience's vulnerabilities and religious sensitivities while balancing message effectiveness with visuals that were impactful yet respectful. This comprehensive reasoning process directly supported the educational goal of stimulating critical analysis, making the image creation method secondary in importance.

The project's "don't sell" requirement challenged students accustomed to commercial success. Rejecting industry expectations to boost sales through appealing design aesthetics became the assignment's strength, promoting analytical reasoning. The anti-sales objective produced surprising visual approaches, exemplified by the Winston Slim project titled "It slims your chance!"—referencing reduced fertility odds for female smokers. The reasoning behind this concept involved specifically targeting potential mothers to discourage smoking, thereby achieving a persuasive impact. The minimalist final design resembled a pregnancy test, and as a clever interpretation of the unconventional brief, one of the two positive-result indicators was positioned on the package lid, vanishing when opened.

While we followed systematic design processes, our focus remained on developing critical thinking skills, using design thinking as a foundation. Although they were second-year students with limited experience, the students successfully handled the complex elements of the design challenge, investigating and expanding upon foundational concepts while meeting our educational objectives. They commonly expressed frustration about the assignment's difficulty level; nevertheless later acknowledged significant skill development.

For AI integration in this project and visual communication design studios generally, the experience revealed that incorporating these technologies during later design phases, rather than initial stages, provides greater student benefit by preserving space for independent thought, reasoning, and creativity. Instead of banning AI from studio courses entirely, we found it was better to introduce these tools carefully and teach students to think critically about how they use them. Students need experience with AI tools to understand the ethical and professional consequences of generative content. However, caution is still necessary—relying too heavily on generative AI would weaken students' ability to think critically. The key is to use generative AI as a helpful tool to boost human creativity and intelligence, rather than letting it overthrow the authentic human mind.

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MAKING IMAGINED INFRASTRUCTURES ACCESSIBLE: DISSEMINATION THROUGH ZINES

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INTRODUCTION

A common critique of academic research is that it is inaccessible – researchers write articles using technical terminology, journals are hidden behind paywalls, and investigative work is presented at conferences to like-minded professionals more often than to the public at large. In the fields of architecture and design, faculty and their students are equipped with specialized skills in representation that can be harnessed to broadcast research work in novel formats.

How can a course-based research and design project be presented in a format that works for both academics and professionals, as well as the greater public? This question was considered within a course called Infrastructural Imagination in the Clemson University School of Architecture in Spring 2025. Within this course, study of sequential art and graphic novel precedents facilitated the design projects of micro-scaled infrastructural interventions presented via zines. These self-published booklets provided students with the opportunity to present proposals and research, voice opinions, and experiment with formats that made the work accessible to a broader audience and paid homage to the legacy of art and activism of the medium.

Inaccessibility of Research

Critique of the availability of academic research includes both criticism of the complexity of the writing structure utilized as well as the limited accessibility of research articles guarded by paywalls.[1] A study conducted by Emerald Group Publishing also has demonstrated that both academics and students are increasingly turning to other sources to engage with academic content, citing books, online newspapers, internet websites, YouTube, and social media as alternatives to consuming research articles.[2] A separate study from the University of Minnesota has shown that presentations with visual aids were 43% more compelling for an audience and improved attention, comprehension, and retention. Additionally, more recent investigations have shown that research that utilizes imagery such as visual abstracts help attract social media attention.[3] Given these trends and tendencies to access research content through different platforms and via visual media, it can be argued that research production and dissemination of the future may take on alternate avenues to typical written articles. Researchers and students of architecture and design, due to the discipline's emphasis on the production of imagery, already have skills that lend themselves to potential alternative means of research broadcasting.

Using Visual Media for Storytelling

The use of sequential art for storytelling has a legacy that traces back to 50,000 year old cave paintings.[4] Over centuries, various platforms for communicating sequence, time, and story are demonstrated in artwork ranging from the Bayeux Tapestry in the 11th century, a 70 meter long textile that depicts the Norman Conquest of England, to Frans Masereel's *25 Images of a Man's Passion* from 1918, which uses woodblock prints to illustrate a narrative.[5] These earlier modalities of sequential art inspired later typologies for visual storytelling, including graphic novels and zines.

Figure 1. Images from Frans Masereel's '25 Images of a Man's Passion'[6]

Graphic Novels

The graphic novel emerged in the late 1970's with the publication of Will Eisner's *A Contract with God and Other Tenement Stories*.[7] Eisner is said to have come up with the term "graphic novel" to differentiate his work from comic books to a publisher.[8] The work is fictitious, but Eisner is said to have modeled many of the characters and experiences based on his own life growing up in a Bronx tenement.

As the graphic novel gained prominence and popularity, numerous graphic novelists developed the media into a platform for nonfiction stories. Some graphic novels, such as Alison Bechdel's *Fun Home*, are autobiographical narratives of authors' personal experiences, but others, like *The Beats: A Graphic History* by Harvey Pekar or *Maus: A Survivor's Tale* by Art Spiegelman, detail historically accurate accounts of people, events, and movements.

Figure 2. Drawing from 'Berlin' by Jason Lutes[9]

Many graphic novels also have intrinsically architectural qualities and characteristics. They illustrate space, architecture, and the built environment in a way that parallels the representation methods found in architectural studios. Works such as *Berlin* by Jason Lutes communicate and utilize architecture as an important backdrop to the narrative. There are also examples of architects explicitly utilizing the graphic novel as a way of promoting architectural discourse. Bjarke Ingels published his architectural manifesto *Yes is More* as a graphic novel in 2009. [10] In *Citizens of No Place* by Jimenez Lai, manga-style storyboards explore architectural problems and issues of urbanism in short stories.[11]

Zines

While graphic novels and comic books are professionally published, zines could be argued to be their informal counterpart. Zines are a self-published work that combine images and text, utilizing easily available materials and often with a focus on niche themes. Beginning in the 1930's, the science fiction fandom community began producing "fanzines" to celebrate and discuss their favorite works. [12] In this way, zines became a method not only to convey a story or message but also to present an opinion for zine authors or "zinesters".

In the 1990's, the punk movement reclaimed zines as a tool for activism. A prime example of this was the use of zines by riot grrrl, a feminist punk group who first authored zines to confront sexism in the genre of punk rock but later evolved into a means to share stories of women's issues and to foster solidarity.[13] As Steven Duncombe notes in his book *Notes from the Underground: Zines and the Politics of Alternative Culture*, "By producing zines and networking with each other, Riot Grrrls become producers instead of merely consumers, creating their own spaces rather than living within the confines of those made for them."[14] In the present day, zines are still a tool for activism, serving as an outlet for underrepresented voices and also as an "anecdote to perfectionism", as Jenna Freedman, founder and director of the Barnard Zine Library, suggests. [15]

Figure 3. A riot grrrl zine from 1991. [16]

INFRASTRUCTURAL IMAGINATION: THE COURSE, METHODS, AND PROJECTS

The application of sequential story telling modalities as a way of presenting research and design was explored in the course Infrastructural Imagination in Spring 2025. The class sought to ask how infrastructure has shaped the built environment and how the built environment has shaped infrastructural systems. How can infrastructure respond to contemporary issues of climate change and social inequities, and how will architecture evolve with such responses?

This theme was explored through readings, discussions, lectures, research, and design projects. While the themes and work of the course bridged both technical and theoretical discourses, the class also included dialogue related to the ethos, evolution, and culture of graphic novels and zines as a way of presenting non-fiction research work and speculative design ideas.

Environmental Justice Emphasis

A key objective of the course was to examine infrastructure as a tool for promoting environmental justice. How can tactics such as decentralizing, cross-programming, or otherwise reimagining the implementation of infrastructure into places give autonomy and agency to marginalized groups while also promoting goals of environmental sustainability and resiliency? This and related questions guided the dialogue and informed the use of zines as a final product to be developed by the students, calling upon the media's ties to activism to holistically relate the course goals and production.

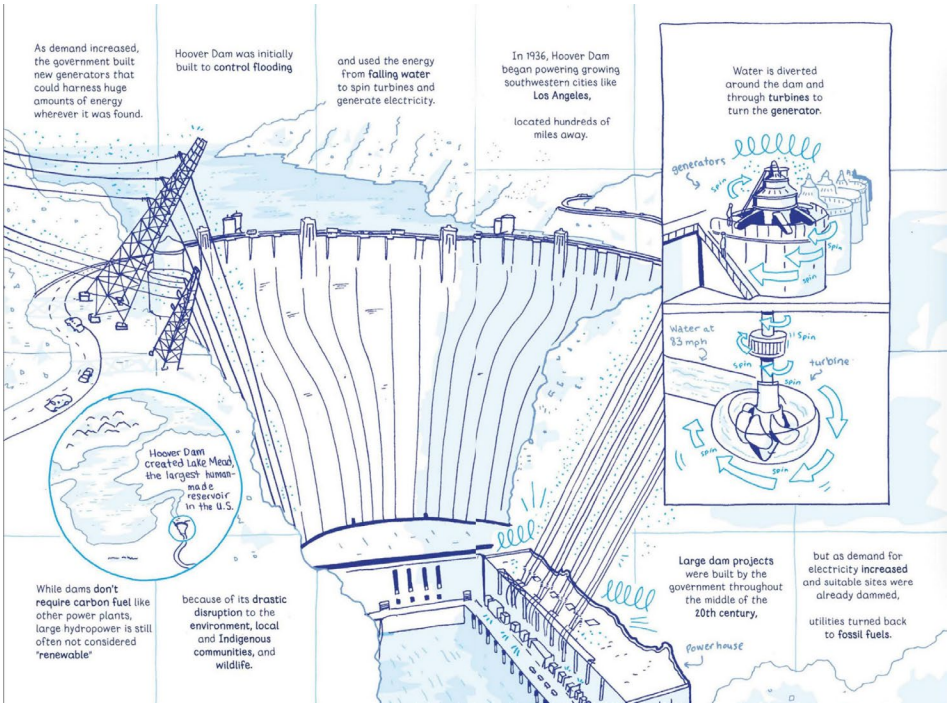

Figure 4. Illustration from 'Hidden Systems' graphic novel by Dan Nott[17]

Graphic Novel as Precedent

To unify the course content related to infrastructure and the representational ideas from graphic novels and zines, the first assigned reading for the course was the graphic novel *Hidden Systems: Water, Electricity, the Internet, and the Secrets Behind the Systems We Use Every Day* by Dan Nott. This graphic novel provides a holistic overview of the invention, development, consequences, and future of numerous infrastructural systems. With illustrations and diagrams conveying information

ranging from the construction of the Hoover Dam to explanations of how policy changes have altered power production, the novel distills extensive nonfiction research into a digestible visual story.[18] The work showcased how elements of infrastructure that are technical in nature could be represented using architectural drawing techniques. Additionally, it opened the conversation within the course to discussions about ways of making research work accessible to the public through graphic communication.

Class Research and Individual Zine Project

Following curated readings, lectures, discussions, and exercises that included both written responses and graphic interpretations of course material, the students engaged in two key projects.

In Project 1, students developed a body of research that investigated infrastructure in South Carolina. Students combined their efforts to develop maps that explained infrastructural access to various systems across the state, investigated and highlighted case studies of infrastructural failures, and generated diagrams that conveyed how common systems presently function. This research was also cross referenced with socioeconomic data to demonstrate links between infrastructural issues and problems of social equity.

In Project 2, students were tasked with designing a small scale “micro-infrastructure” for a self-selected site with the goal of crafting a response to a specific problem that was uncovered in the research in Project 1. Students framed an argument for how and why their infrastructural design solution was both valuable and contextually appropriate and presented this research and the design solution as zines. Students were encouraged to consider how the zine was a tool of storytelling and advocacy in their ways of designing the artifacts. Multiple copies of each zine were produced by students to not only distribute to peers and critics but also to hide in public places to reach the community at large.

Example 1: Lowcountry Signal

This project sought to imagine a micro-infrastructure radio tower that reclaims an abandoned church for the Gullah Geechee community of coastal South Carolina. This intervention would allow for communication and media production, both to function in times of natural disasters for coordination of responses and to promote cultural stories and heritage on a day-to-day basis. The form and function of the infrastructure also reclaim a culturally significant but defunct institution in a new way, mimicking the architectural gesture of the steeple.

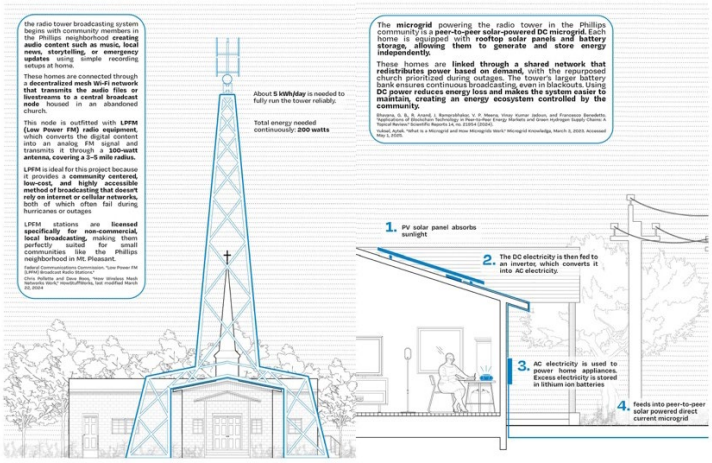

Figure 5. Image from Lowcountry Signal zine by Luke Esparza

The student produced a zine that could be printed on 11”x17” paper, allowing for easy mass production. By making a few simple cuts, the paper creases into a traditional book-like format. In this way, the explanation of the research and design project can be conveyed sequentially and in a familiar format. However, the zine can also be unfolded to reveal a full-spread drawing. This element of surprise draws attention to a particularly impactful image.

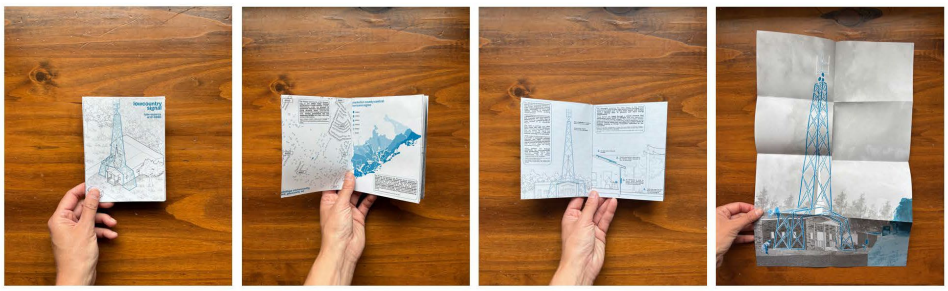

Figure 6. Lowcountry Signal zine by Luke Esparza

Example 2: Grey Water, Black Water

In Grey Water, Black Water, a student examined the wastewater disposal issues faced in rural South Carolina. The project proposed a sustainable, low-tech solution to wastewater management at a local campground, where RVs deposit wastewater into a conventional dump station. The design suggested that a living machine wastewater system, which utilizes plants for decontamination, could function well in sites with small wastewater management needs. The plants are proposed as a garden space that serves as both a teaching tool and an amenity, destigmatizing conventional ideas about the messiness of wastewater treatment with its odorless greenery.

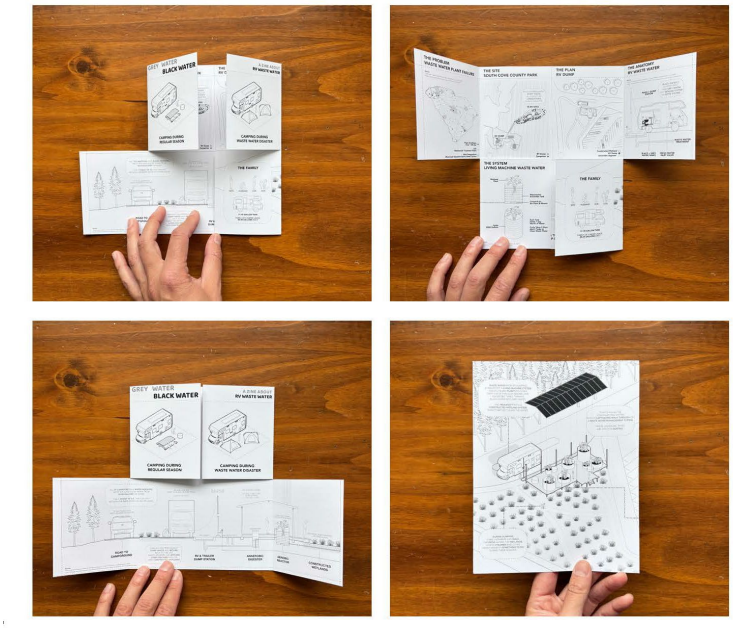

Figure 7. Grey Water, Black Water zine by Salvatore Costanzo

The zine produced by this student utilized a bi-folding tactic. This allowed for hierarchical relationships to be the most prominent aspect of the storytelling, as the order in which the flaps are opened is less significant than the larger images revealed inside. Since an aspect of this project involved students hiding copies of their zines to be discovered by the public, this student opted to place his zines in wastewater-related locales, including port-a-potties, wastewater treatment plants, and restrooms.

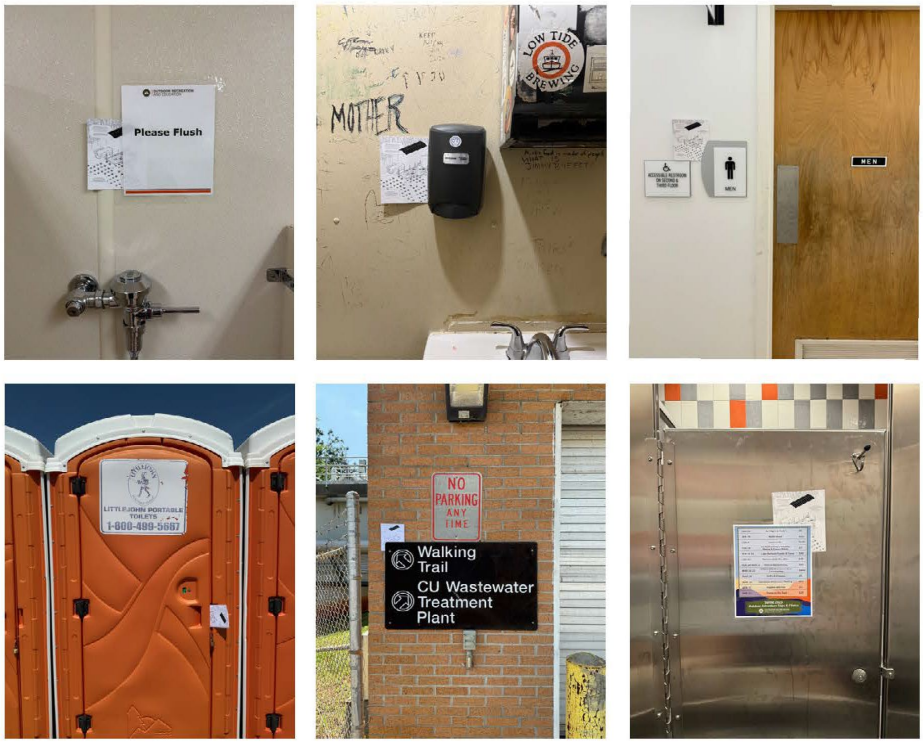

Figure 8. Zines in wastewater-related locales.

Example 3: A Field Guide to the Internet

In the third example, a student proposed an infrastructural intervention that would implement stylized tree-like internet towers into remote South Carolina state parks. The project offered social commentary on the desire for connectedness even in natural landscapes while also arguing that such an infrastructure enhances the safety of hikers in emergency situations. These internet trees not only offer internet signals but also have some functionality like real trees, with designed nooks in which animals can take refuge. In addition to the internet tree, a solar panel "tree" structure was also proposed to support the primary design intervention, thereby suggesting a technological biodiversity in these pockets of artificial forest.

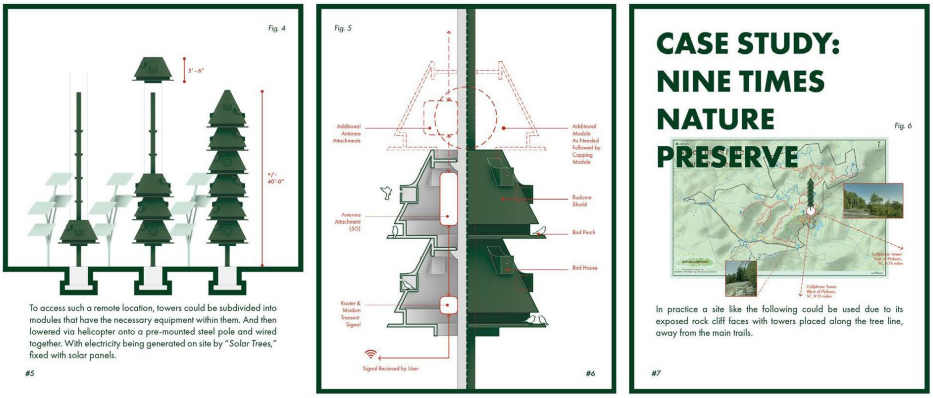

Figure 9. Images from A Field Guide to the Internet zine by Zach Wells.

Graphically, the student paid homage to nature field guides to communicate the idea and reinforce the argument of his narrative, that the internet belongs in nature. Read as a traditional booklet, the zine sculpts text excerpts to fit nestled within architectural illustrations that relate the intervention to site. The student opted to hide the zine in various locations throughout campus where students pause to connect to the internet.

Figure 10. A Field Guide to the Internet zine by Zach Wells.

CONCLUSIONS, FEEDBACK, AND NEXT STEPS

As Gemma Sou and Sarah Marie Hall note in their investigative research into the use of zines for research impact, "Comics and zines enable readers to access places and moments that other mediums are less able to, and they gesture toward a participatory slowed-down practice of research engagement."[19] While in this particular course it was not possible to assess quantitatively how the zines were received by the public at large, post-course surveys with the students allowed for some assessment of the efficacy of zines as a representation tool for research and design. This information will inform subsequent course development.

STUDENT FEEDBACK

Students were given a three-question survey related to their engagement with a graphic novel, the development of their zine project as a method of representing design, and the use of zines to present research. 7 of the 8 students in the course completed the anonymous survey.

In response to the first question, which asked students if the use of a graphic novel as the first reading assignment influenced the way in which they thought about the production of their final project deliverables (the zine), six out of seven students responded with "yes" or positive replies. Selected responses noted:

"Yes, I think it was interesting to perceive a more technical topic in a different manner. I thought the way the author drew specific features like the scale of the infrastructure, made it easier to understand."
"The graphic novel that we read at the beginning of the semester was a huge inspiration for how I wanted my zine to physically look. The style of drawings that were sketchy yet very explanatory was a strategy that I wanted to focus on using my zine."
A second question spoke to the zine as an alternative format to architectural presentation boards or slide shows, asking students how producing a zine changed the way in which they thought about their projects. Student comments included feedback that suggested it helped present the project as more of a story. Selected responses noted:
"… I was able to think about my project based on how it would be read page by page which forced me to really think through how someone would understand my project."
"It helped me use my graphic communication skills to tell more of a story about the issue and the resolution my project tackled."
The third question asked students whether they thought the production of zines, rather than presentation boards, is an effective way to explain research and design work to the public or those not involved in the field of architecture and asked them to explain why or why not. Six out of seven responses were positive or suggested they felt this was an effective strategy to present the project. Selected quotes from responses suggested:
"Yes, I think it is effective. The nice thing about zines is that multiple could be produced quickly so you have the ability to distribute them amongst a lot of people. I think it can also make the general public more open to learning about these topics because it is not as intimidating or serious as a lecture or presentation board. It's a good way of getting people interested."
"Yes, I think the production of the zine made me more conscious of how my project would be understood…I think the idea of zines make it more readable for the public, as they can understand the project at a smaller scale rather than get overwhelmed by a full presentation board."

FUTURE EVOLUTIONS

While the use of zines and the study of sequential art media for storytelling and conveying research proved to be effective for student engagement, there are several ways to evolve this type of project in future courses to better assess engagement with the broader public. A layer to this development could be achieved by unifying the physical artifacts of zines with digital interfaces and spaces.
An initial idea for an evolution of the work would be to include a social media handle or QR codes on the zines that are distributed to allow the public to report the zines they have found. For example, an Instagram hashtag would give agency to zine finders to engage with zine creators. Alternatively, a future course could seek to generate not only zines but also a website on which digital copies of the zines exist. A QR code embedded in the physical artifacts would allow the public to scan the code and view other zines beyond the physical copy they encountered, promoting further engagement with the culmination of work produced in the course.
Additionally, displays of zines in public places – libraries, coffee shops, community centers, art galleries – may help to expand the outreach further.
Working with graphic novels and later zines as a medium for a course related to environmental justice pays homage to the legacy of zines as a tool of activism and helps students reconsider and disseminate research and design differently, and evolving this process in future courses can help to better include the public in the discourse.

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ADAPTING TO INTEGRATED DESIGN STUDIO: THE ROLE OF MENTORSHIP STRATEGIES

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INTRODUCTION

Mentorship is increasingly recognized as an important component of design education, where learning relies on collaboration, iteration, and studio-based practices. First-year students often face challenges in adjusting to time management, critical thinking, and the culture of design studios. Peer mentoring helps address these challenges by offering emotional and academic support. According to the study,[1] effective mentoring reduces students' anxieties and supports their transition into complex academic environments. Another study also emphasizes that peer mentoring strengthens the academic skills needed for design practice.[2] In addition to supporting mentees, mentoring also benefits mentors by improving their confidence, communication, and leadership abilities.[3]

Several universities have implemented mentorship programs to help students adapt to university life, especially in their first year. For example, UNSW Sydney offers a peer mentoring program through its Arts Society, in which first-year students are grouped with two mentors and participate in weekly meetings throughout the academic term. Similarly, the Rhode Island School of Design (RISD) offers two forms of mentorship: an alumni-based career mentoring network and a peer mentoring program through the College of Arts and Sciences, which supports onboarding and academic orientation. At UCLA, graduate student mentors provide academic guidance on course selection and long-term planning. Central Saint Martins (UAL) emphasizes strategic collaboration through interdepartmental mentoring and institutional networking. Meanwhile, the Academy of Art University and Gies College of Business integrate mentoring and peer tutoring to enhance the academic success of students and support time management. While some mentorship initiatives in design-related fields integrate collaboration with professional practice—such as Afolabi and Akinola's model pairing female architects with architectural students to support skill transfer and career development—this study focuses on an entirely faculty-based framework embedded within the academic environment.[4] However, many of these programs remain disconnected from the core of design education and do not directly support studio-based learning. Research shows that the success of such programs depends on selecting mentors with empathy and communication skills and ensuring they receive clear guidance and training.[5] Also, the study found that peer mentoring complements project-based learning and has a positive effect on student performance.[6]

The example program structures in different universities have been developed as peer-based or alumni career guidance; however, the difference of our proposed mentorship program lies in supporting the

studio-based learning process with delegated mentors. At Izmir University of Economics (IEU), the Faculty of Fine Arts and Design identified a need for a structured mentorship program due to recurring issues faced by first-year students, such as low motivation, irregular attendance, and weak engagement in studio courses. These issues became more visible after the return to face-to-face education following the COVID-19 pandemic. The program was designed to support integration of students into academic life and studio culture by building peer connections, promoting active participation, and encouraging academic continuity. In this context, the IEU mentorship program follows a peer-led structure. Senior students from five different design departments, architecture, interior architecture, industrial design, visual communication design, and fashion and textile design, were selected as mentors. This selection was based on academic performance, communication abilities, and previous involvement in student activities. Since the program design also included spatial planning, such as creating shared mentoring zones, and digital tools for easier communication, the system can sustain the mentor-mentee interaction.

This paper presents a qualitative case study of the IEU mentorship program. In this context, the key elements and principles of the program are explained. It then outlines the methodological approach, a case study which consists of a three-phase process: the preparation for the program, program implementation, and data collection. Data sources include meeting records and feedback from both mentors and mentees. After the data collection, analysis, and categorization that identify challenges and strategies were completed. Then, the findings are discussed across institutional, faculty, and program levels, and the paper concludes with recommendations for future applications.

METHODOLOGY

In this case study, qualitative methods are employed to investigate the role of mentorship in supporting first-year design students' adaptation to design education. Surveys and interviews have been conducted with both mentors and mentees to understand the feedback of the program actors throughout the process. The data have been analysed and categorized based on (1) the lived experiences and perceptions of first-year students, (2) mentor reflections on their roles and engagement, and (3) the organizational structure and institutional integration of the program. The research was conducted within the context of a mentorship program implemented at the Izmir University of Economics in Türkiye. The program was designed and evaluated through a three-phase and iterative process, emphasizing the continuous development of strategies to address students' academic and institutional integration. The initial phase involved the design of the mentorship program framework, including the definition of objectives, expected outcomes, and a guidance document explaining mentor-mentee interaction protocols. A selection process was implemented to five senior-year students as mentors, each representing a different design discipline (industrial design, architecture, interior architecture, textile and fashion design, and visual communication design). Mentors were selected based on academic competence, personal skills, and previous involvement in school activities. Program actors were identified and categorized into three key groups as the program committee, mentors, and first-year mentees. The mentorship program was implemented across three planning stages, combining spatial and organizational strategies to facilitate effective interaction. These stages started with introducing the program structure and expectations to both mentors and mentees. Second, it featured a mix of physical and digital meetings, with defined formats such as one-on-one guidance and peer group discussions. Interaction frequency and scheduling were adapted to fit students' academic calendars and availability, fostering consistency. Lastly, the mentorship team processed the collected feedback from the surveys, interviews, and evaluated observation data.

During the survey and interview process, data were gathered through mentor-mentee meeting reports, session observation notes, focus group discussions, and reflective feedback from mentors and mentees. The collected data were analyzed and categorized based on the feedback data. These data are used in periodic team evaluation sessions to assess the evolving needs of students and identify critical challenges related to academic integration and institutional engagement. Based on the findings from each evaluation cycle, the resulting strategies were classified across three operational levels as institutional level, faculty level, and program level. While the institutional level refers to administrative and curricular integration, the faculty level refers to cross-disciplinary communication and support between the students. Within the program level, the study targets mentor-mentee dynamics and individual academic growth. Each iteration aimed to improve the support structure and better align the program with the realities of integrated design education.

CASE STUDY: PEER MENTORING FOR INTEGRATED DESIGN STUDIO

The implementation of the mentoring program has generated qualitative data reflecting the dynamics between mentors, mentees, and the institutional context. Through analysis and categorization, the data have revealed important insights into how first-year design students experience the academic and social adaptation process, how upper-year students perceive their changing roles as mentors, and how programmatic and spatial structures influence the effectiveness of peer support. The findings presented in this chapter aim to address these dynamics in the context of broader discussions related to design education and student-centred support strategies.

Process

The implementation of the mentorship program followed a four-phase process, including preparation, first data set, second data set, third data set, and analysis over two semesters. It is designed to support the adaptation of first-year design students through strategic planning, iterative action, and responsive changes.

Phase 1: Preparation

The preparation phase of the peer mentorship program aimed to build a strong, responsive support system for first-year students adjusting to integrated design education. Senior students from five departments, including architecture, interior architecture and environmental design, industrial design, visual communication design, and textile and fashion design, were selected as mentors. Selection was based on academic performance, communication skills, and prior involvement in student-led activities.

In this phase, the program’s foundational structure and identity were developed to ensure coherence and visibility within the faculty. A distinct visual identity was designed to unify communication materials, and a dedicated social media account was designed to facilitate outreach, share mentor availability, and foster engagement among students, as illustrated in Figure 1.

In addition to providing informal support, mentors were also assigned a set of structured responsibilities. These included participation in relevant faculty meetings, management of the mentoring zone, and encouragement of first-year students to attend design juries, critique sessions, and studio-based workshops. Furthermore, mentors facilitated cross-level and cross-disciplinary interaction among students and supported academic continuity by promoting engagement with studio culture. In parallel, a central physical mentoring zone, referred to as the "hot-desk," was established on the first floor of the design building to host informal interactions and encourage spontaneous guidance (see Figure 2).

Figure 1. Visual Identity for the offered program

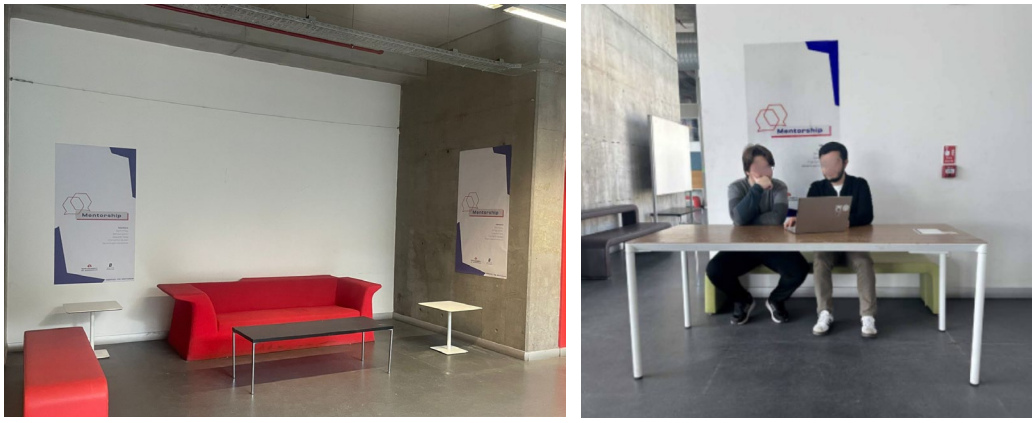

Figure 2. Initial Hot-desk area set up and Meeting of mentor and mentee in the Hot-desk

Phase 2: Initial Engagement and First Data Set

During the initial weeks of the first semester (approximately one month), mentors were introduced within the studio environment to ensure early and approachable contact with first-year students. This integration into the everyday design studio setting allowed mentees to engage with mentors in a natural yet intentionally guided manner, fostering trust and familiarity from the outset.

To enhance the program's visibility and accessibility, a visual banner and on-site signage were placed in key studio areas to signal the presence of mentorship support. Concurrently, a dedicated Instagram account was initiated to facilitate communication, disseminate timely updates, and enhance peer-to-peer connections among students from diverse design disciplines.

A significant feature of this phase was the series of mentoring sessions between mentors and mentees during the collection of the first dataset (Table 1). These individual discussions revealed recurring questions and concerns among first-year students, ranging from course planning and academic performance to emotional uncertainties and future aspirations. Mentors, drawing from their own lived

experiences in design education, responded with empathy and specificity. Portfolio preparation, software selection, and course combinations (e.g., double majors or elective courses) also emerged as frequent themes, particularly among students from Industrial Design and Interior Architecture.

Mentors		**Mentees (Novice Design Students)**		**Environment**
Feedback	**Insights&Highlights**	**Feedback**	**Insights&Highlights**	
Early studio integration facilitated approachable contact.	Build trust and sustained engagement.	Valued mentor accessibility in studio and specific spaces.	Clarified academic expectations and studio processes.	Hot-desk

Table 1. First Dataset of Second Phase

Phase 3: Program Adjustment and Second Data Set

Following approximately two months of the first semester, adjustments were made to enhance the accessibility and efficacy of the mentorship program. After collecting feedback from mentors and mentees, the mentoring area was strategically relocated to the fourth floor, which is a more visible and frequently used area within the faculty. This relocation has provided easy access for students seeking support.

In order to maintain the momentum of the program and re-establish awareness, a reintroduction session was conducted during the collection of the second dataset (Table 2). This session was designed to achieve two principal objectives. First, it was intended to re-engage students and mentors. Secondly, it was intended to reiterate the availability of support mechanisms. These refinements helped to reestablish the program's presence within the studio environment and reinforced its role as an accessible and responsive support structure during a critical phase of students' academic transition.

Mentors		**Mentees (Novice Design Students)**		**Environment**
Feedback	**Insight&Highlights**	**Feedback**	**Insight&Highlights**	
Relocation improved visibility and access.	Reintroduction sessions reactivated participation.	Increased mentor presence encouraged interaction.	Changes enhanced perceived support and responsiveness.	Hot-desk

Table 2. Second Dataset of Third Phase

Phase 4: Final Review and Third Data Set

In the concluding stage of the mentorship program, implemented during the latter part of the second semester, a final studio visit and a structured reflection session were conducted during the collection of the third dataset (Table 3). These activities were designed to sustain program visibility and facilitate a critical evaluation of its overall implementation. The reflection session served as an informal yet focused forum in which both mentors and mentees were invited to share their

experiences, articulate perceived benefits and limitations, and offer constructive suggestions for future development. Through this dialogic process, insights were gathered regarding the efficacy of peer mentoring as a pedagogical support mechanism within integrated design education.

Mentors		Mentees (Novice Design Students)		Environment
Feedback	**Insight&Highlights**	**Feedback**	**Insight&Highlights**	
Reflection sessions enabled overall evaluation. Identified outcomes and improvement areas.	Reflection sessions enabled overall evaluation. Identified outcomes and improvement areas.	Appreciated being included in the program review.	Improved value of mentorship and adaptation awareness.	1st year design Studio

Table 3. Third Dataset of Fourth Phase

Data Analysis and Discussion

The qualitative data collected throughout the implementation of the mentorship program were analysed to identify recurring patterns. The analysis was structured around three interrelated dimensions: (1) the lived experiences and perceptions of first-year students, (2) mentor reflections on their roles and engagement, and (3) the organizational structure and institutional integration of the program. Within each dimension, categories were developed to capture emerging concerns, evolving expectations, and the complex dynamics of peer-supported learning in integrated design education.

Immediate Challenges and the Development of Self-Awareness

The mentorship program revealed a wide spectrum of immediate and short-term difficulties experienced by first-year students. These included adaptation issues in applied project-based courses, technical drawing and model-making courses, and challenges related to understanding course content, software tools, and the learning pace. Students often described feeling overwhelmed by feedback complexity, unclear evaluation criteria, and an inability to manage time due to workload and unfamiliar learning processes.

These problems were particularly prevalent among students with no prior design education experience. Mentors noted that mentees were often uncertain about their progress and expressed doubts such as “How do I know I’m doing the right thing?” or “No one tells me what to do—how can I be sure I’m on track?” In response, mentors encouraged the development of self-awareness through self-assessment, confidence-building, and personal development. They acted not as instructors, but as relatable role models, helping students navigate ambiguity and reflect on feedback and iterative design processes.

Mentorship, in this context, was instrumental in cultivating a “self-aware individual” identity. Rather than solving students’ problems directly, mentors helped them recognize and evaluate their strengths, weaknesses, and growth areas, especially in managing ambiguity, balancing workload, and interpreting critique. These findings suggest that the mentor’s role in short-term student development is best described not only as a support figure but as a peer-based role model who exemplifies reflective learning.

Fostering Belonging Through Informal Knowledge Exchange

One of the most valuable outcomes of the mentoring experience was the informal yet deep knowledge exchange between mentors and mentees. What often began as technical or academic questions gradually evolved into wider conversations covering design philosophy, studio dynamics, and the emotional aspects of being a design student. This layer of interaction highlighted the significance of mentorship not only as an academic scaffold but also as a source of psychological belonging. Mentors reflected that such dialogues helped normalize the struggles of the design journey, making mentees feel less isolated. These findings resonate with the literature on peer learning environments, which suggests that social-emotional engagement is critical for first-year student retention and success in creative disciplines.[7] Mentorship here served as a "horizontal bridge" across class levels, reinforcing a collective studio culture.

Spatial Visibility and the Design of Interaction Zones

An important theme that emerged from the data was the impact of spatial planning on the efficacy of mentoring interactions. While the program initially provided a designated mentoring desk in a visible location, mentors reported that its effectiveness depended heavily on signage, spatial accessibility, and visual coherence with other studio environments. When the hot-desk was relocated to a more central position within the faculty building, interaction frequency increased slightly, but many students still hesitated to use the space regularly. This indicates that visibility alone is insufficient unless accompanied by intentional spatial and graphic design strategies. In a design school context, where space itself carries communicative value, the aesthetic and functional integration of support areas appears essential to student perception of legitimacy and approachability.[8]

Temporal Alignment and Scheduling Constraints

Despite the strategic planning of mentoring hours, a consistent barrier was the misalignment between mentor availability and the schedules of first-year students. Studio-based departments in particular posed difficulties due to overlapping course times. While mentors made efforts to adapt their shifts, low attendance persisted, especially during midterm periods. This reflects a broader institutional challenge in integrating extracurricular support within rigid academic structures.[9] To address this, future iterations of the program may benefit from more flexible or asynchronous scheduling formats, such as rotating hours or co-location within studio critique sessions. Moreover, involving students in determining preferred mentoring slots may foster more inclusive planning and reduce temporal mismatches.

The Role of Digital Platforms and Asynchronous Engagement

A notable observation was students' reluctance to initiate face-to-face mentoring sessions, especially when they perceived their questions as "too small" or "not urgent." Mentors linked this hesitancy to broader generational shifts in communication preferences. Suggestions from mentors included integrating digital tools such as messaging groups or social media updates may improve accessibility, particularly for students who are less inclined to engage in face-to-face interactions.

Feedback Loops and Program Evolution

Mentors widely appreciated the opportunity to take on leadership roles and contribute to the educational environment. Nonetheless, they also voiced a need for systematic feedback from mentees to help tailor mentoring content. Currently, mentor reports and meeting summaries form the primary evaluation method, but direct input from mentees remains underutilized. Implementing short

anonymous feedback forms, session ratings, or semester-end reflections could offer more nuanced insights into student needs and expectations. Such two-way feedback loops would align the program more closely with participatory education models and support its iterative refinement.
Mentors further proposed that the program be extended to second-year students, especially in departments with high workload and project complexity. This suggestion reflects both the success and the perceived limitation of the current scope, which focused only on first-year transitions.

CONCLUSION

This paper presented a mentorship framework designed to support the integration of novice students into design education through a structured, peer-based mentoring system. Even though this initiative is not finalized or a universally applicable model, it is a proposed framework that has been shaped by field experience and revised through ongoing feedback. The first implementation of this program at Izmir University of Economics in the Fine Arts and Design Faculty has shown that mentorship has the potential to not only facilitate academic and emotional integration but also to enhance the adaptation to studio culture. Mentors took on the roles of both peers and guides; therefore, they helped students cope with emotional challenges and make decisions about their academic journey. Since this study is a first step toward building a structured mentorship model in design education, it aims to contribute not only through its practical outcomes but also by providing a basis for further research. Key insights from the implementation process point to several areas for development, such as involving students from second or third year levels, developing mentoring applications, and creating stronger feedback mechanisms. The proposed program may support students in a more structured way and offer a basis for future research and development in creative education.

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DESIGN EDUCATION IN PRACTICE: COLLABORATING WITH STUDENTS BEYOND THE CLASSROOM

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INTRODUCTION: PROCESS AS PRODUCT AS PRACTICE

In architectural design, process is widely understood as an iterative continuum embedded in exploration and critical inquiry, enabling ideas and methodologies to evolve beyond the formal termination of a project. Schön's concept of "reflection-in-action" positions design as an ongoing dialogue with the problem context, where learning and adaptation are inseparable from making.[1] Lawson likewise emphasizes that design is cyclical and non-linear, with problem redefinition and testing continuing beyond the final artifact.[2] This understanding of process as an open-ended and inquiry-driven continuum forms the basis for a deeper exploration of its role in both architectural education and professional practice, where it emerges not merely as a pathway to a finished work, but as a creative and enduring outcome in its own right. Through studying student projects produced in a material fabrication course in the American University of Sharjah's Bachelor of Architecture program that take an empirical approach to learning by doing, the paper examines the critical relationship between evolution and innovation, and how design outcomes embedded in iterative investigation can be extended into practice. In doing so, the case study demonstrates how material experimentation can evolve into meaningful public work, connecting education, practice, and collaboration.

In this approach to pedagogy, professional practice and teaching are closely integrated, enabling students to engage directly with ongoing design research as an advanced opportunity to explore the realities of architectural practice. This research centers on material investigation and its application to spatial elements and environments, with particular emphasis on environmentally sensitive material processes. By participating in these projects, students gain first-hand experience in translating experimental material studies into architectural solutions, fostering skills in critical inquiry, innovation, and sustainable design thinking. Such engagement also encourages a deeper understanding of how design decisions are shaped by environmental, cultural, and material contexts.

The paper highlights the benefits of collaborating with architecture students on research-driven projects that bridge classroom learning and real-world practice. Using the course *Advanced Topics in Material Fabrication* as a case study, this paper demonstrates how material investigations in the classroom inspire further research into biodegradable soy wax in the design and construction of, *EN-SI-AB*, a spatial installation for Dubai Design Week 2024.

Figure 1. Detail of EN-SI-AB, installation for Dubai Design Week 2024. Photo by Tania Ursomarzo

REDEFINING LEARNING ENVIRONMENTS

Design education has traditionally revolved around structured classroom instruction, studio critiques, and formal assignments. However, these settings lack the unpredictability, diversity, and intricacy found in real-world design challenges. As design practice evolves in complexity and interdisciplinarity, educators are increasingly recognizing the value of extending collaboration with students beyond the confines of the classroom. This prompts a reconsideration of what defines educational spaces and how such environments can be leveraged as opportunities for learning.

A range of established collaborative models explore design education beyond traditional boundaries. Community-based design projects, such as those run by the Detroit Collaborative Design Center at the University of Detroit Mercy, immerse students in participatory processes with local residents to improve neighborhood housing, streetscapes, and civic spaces, blending social engagement with spatial innovation.[3] Industry mentorships and project-based collaborations also bridge academia and practice; for instance, open-source internships guided by volunteer industry mentors have proven effective in helping students gain professional experience, technical skills, and employment opportunities without the constraints of traditional internship models.[4] Informal creative environments, such as the fabrication labs and exhibitions hosted by MADWORKSHOP in Los Angeles, provide space for experimentation, cross-disciplinary exchange, and peer critique outside the pressures of formal studio work.[5] Design-build initiatives similarly encourage students to carry projects from concept to completion. The decade-long Design-Build Initiative at the American University of Sharjah has embedded the design-build ethos into its curriculum, with students engaging in every stage from design inception to fabrication, reinforcing collaboration, technical proficiency, and civic impact.[6]

Study-abroad programs offer another potent model, particularly when they position the city itself as an active learning environment. The London School of Architecture (LSA) exemplifies this approach through its ethos of “using the city as the campus.”[7] Instead of operating from a fixed university campus, LSA delivers teaching across cultural venues, architectural practices, and public spaces throughout London. By shifting its focus across different boroughs, the program enables students to

immerse themselves in diverse architectural contexts, communities, and histories. This place-based engagement not only strengthens students' design literacy but also fosters professional networks and situates architectural education within the living fabric of the city.

While many beyond-the-classroom initiatives emphasize physical engagement, digital platforms can similarly extend design pedagogy. The *LIA Platform, a Multimedia Platform for Architecture in the City (www.liaplatform.it),*[8] exemplifies this by combining archival lectures, contemporary debates, curated exhibitions, and narrative itineraries that link architecture with literature and film. Through formats such as *Debates* and the *Open School*, it replicates elements of studio learning in a virtual environment while sharpening analytical and project-based skills. Positioned as a digital extension of open studios and community-based learning, *LIA* overcomes geographic barriers and demonstrates how online platforms can generate new modes of participation in architectural education.

In the context of the course, *Advanced Topics in Material Fabrication*, the "classroom" encompasses a diverse range of environments and experiences. Within the institution, learning takes place in design studios that facilitate both two-and three-dimensional exploration, as well as in analogue and digital fabrication laboratories. Beyond the campus, educational spaces and activities expand to include public design festivals, urban project sites, construction sites, fabricators' workshops, material suppliers, and collaborations with structural engineers, contractors, tradespeople, and craftspeople. Students may also engage in presentations to sponsors, coordination with event curators such as Dubai Design Week, and other industry-facing activities. Collectively, these varied contexts constitute collaborative and inherently dynamic learning environments – spaces where experiential and empirical modes of engagement are central to the pedagogical process.

EXPERIENTIAL LEARNING + EMPIRICAL EXPERIMENTATION = ALCHEMY

Within both architectural practice and education, the design process functions as more than a means to an end – it is itself a form of creative output that is both iterative and participatory, enriching both learning and outcomes. Cross describes designing as a mode of knowledge production, in which the act of making generates new insights and methodologies that persist beyond the project's completion.[9] In the context of design education, Oxman identifies iterative loops of analysis, synthesis, and evaluation as essential, mapping the thinking process in ways that frame it as the creative product.[10] Till extends this view to professional practice, characterizing architecture as contingent and open-ended, where the enduring value of process lies in its capacity to adapt, respond, and generate new possibilities well after a specific design outcome has been realized.[11] This is reflected in experimental practices such as *Rural Studio* in Alabama, which positions each built work as part of a sustained dialogue between students, community members, and local materials allowing design ideas to evolve across multiple projects and years.[12] Similarly, *Assemble's* community-engaged projects often remain active sites of adaptation and co-creation after their initial completion, embodying a process that resists closure and continues to shape the built environment over time.[13] This participatory, iterative ethos is not only theoretical but also pedagogically validated; in studies of architectural design studios, engaging students and community stakeholders through multiple design cycles has been shown to elevate both the quality of student work and their capacity for co-creatively informed responses.[14]

Rather than emphasizing the highly resolved final product, the course *Advanced Topics in Material Fabrication* focuses on material experimentation and design in response to material performance to discover, analyze, and develop making methodologies. The course places significance not on what students make, but on what happens in the process of making and the rigor of exploration. In other words, the process *is* the work; making methodologies that emerge from student projects become the

substance of significance. Student work is driven by an approach that embraces failure, risk, uncertainty, and intuition as necessary acts of exploration and discovery. An emphasis on experiential learning compels students to operate within an iterative feedback loop, critically analyzing, re-evaluating, and editing their work in sustained dialogue with material.

Coursework in *Advanced Topics in Material Fabrication* focuses on materiality and material processes as the primary generators of form. The course challenges students to place material at the center of the design process allowing form to emerge in synergy with the capabilities of a medium. In essence, material informs design, rather than being selected to suit a form. Central to this approach is the development and refinement of methodologies rooted in material research, enabling students to generate a diverse range of outcomes along a continually evolving, rather than singular, trajectory.

Students begin by studying the inherent properties and behaviours of natural, biodegradable, renewable, and recyclable material alternatives for design. This exploration unfolds through prolific, hands-on experimentation with fundamental transformative elements – temperature, moisture, and airflow (earth, air, fire, water). Initially, students focus on a single material to gain a deep understanding of its performance before advancing to combinations, discovering how materials can support and enhance one another.

While students are encouraged to 'play,' this play is purposeful serving as a structured mode of material inquiry. Material experimentation is coupled with the development of a formal methodology that responds to a material's innate behavior. This process requires students to work empirically and reflexively, rather than relying on strategic preconception. The value of this approach is captured in the detailed documentation students produce, which journals the step-by-step methodology behind the evolution of their work. Although a variety of design tools may be employed, experimental, hands-on making remains the primary mode of investigation in the course, ensuring that material engagement is central to both discovery and design.

Markus Berger's work with the *Repair Atelier* demonstrates how design can thrive within ambiguity embracing deconstruction, material recontextualization, and the open-ended transformation of spaces and objects.[15] Such an approach disrupts the assumption that design outcomes must be predetermined, instead positioning uncertainty as a catalyst for discovery and innovation. The pedagogical perspectives in *Working with Uncertainty for Educational Change* extend this thinking to the structure of education itself, advocating for the reconstruction of curricula and learning environments to engage complexity and ambiguity as central to the learning process.[16] Together, these perspectives suggest a reimagining of design education as a space where students are equipped not merely to resolve uncertainty, but to work creatively and critically within it.

Building on this embrace of uncertainty, the idea of *design alchemy* offers a way to describe the transformative interplay between materials, methods, and ideas, in which iterative experimentation generates outcomes that transcend the sum of their parts. This form of *generative synthesis* emerges from a willingness to work within uncertainty, allowing unexpected relationships to guide innovation. In this spirit, material experiments in the studio explore the integration of different materials and fabrication techniques to test how they can transform the performance of a material invention. This approach resonates with the work of Karana, Blauwhoff, Hultink, and Camere, whose research on mycelium-based fabrication demonstrates how design processes are shaped by the evolving properties of the material itself demanding adaptation, negotiation, and innovation from the designer.[17] Through such investigations, an alchemy emerges in student work, leading to the discovery and refinement of not only fabrication methodologies and novel material systems but also to the generation of new architectural possibilities.

In her explorations with soy wax – both as a singular medium and in combination with other media – student Sarah Alothman investigates methods that transform the material's formal capabilities and challenge its expected behaviour. Soy wax, a soft, brittle medium that typically requires mass and an environmental temperature below 48 °C for stability, was alchemized through the integration of water, cork, and eggshells. In one study, Alothman discovered that casting wax onto the surface of a shallow pool of cold water produced a paper-thin, translucent sheet that remained fully intact without cracking. In subsequent experiments, she sought ways to reinforce the wax to retain its thinness while gaining flexibility, enabling a wider range of forms. To achieve this, she mixed different percentages of cork granules into liquefied wax before casting the composition into water, a process that produced thin sheets capable of holding an array of curved and folded configurations. Building on these findings, she continued testing organic additives to strengthen wax in its most delicate state. Unexpectedly, the incorporation of broken eggshells yielded the thinnest supported sheet she was able to produce – a biodegradable, translucent, rigid material. Here, a substance commonly associated with fragility became the enabling agent, allowing wax to perform in ways it could not on its own. The significance of Alothman's experimentation lies not only in transforming the performance of soy wax, but also in developing entirely new composite materials that open possibilities for design applications beyond candle-making.

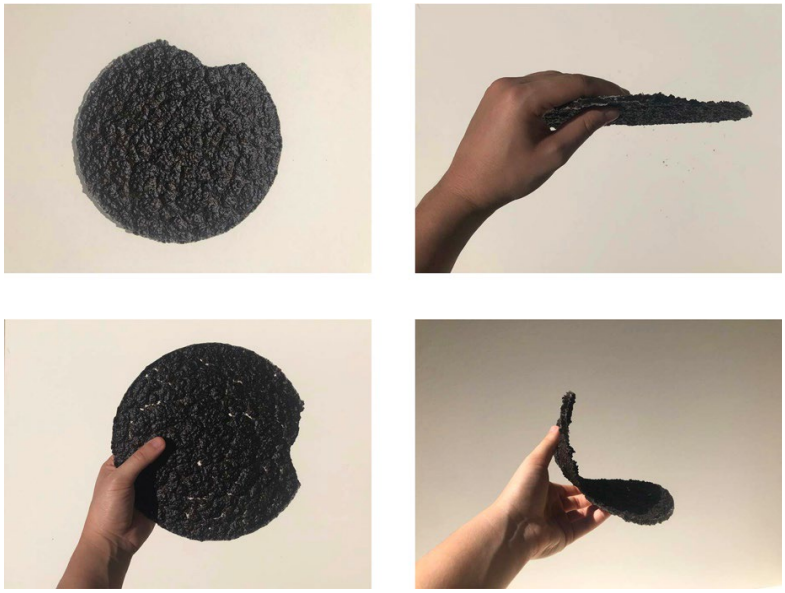

Figure 2. Material experiments with soy wax composites in the course, Advanced Topics in Material Fabrication, by Sarah Alothman

Figure 3. Material experiments with soy wax composites in the course, Advanced Topics in Material Fabrication, by Sarah Alothman

In the coursework of students Sarah AlMahmoud and Maryam AlQassim, soy wax was explored through the deliberate methodization of a technique intended to recreate a “beautiful accident.” Their investigations employed water as a fluid mold for casting liquid wax, capitalizing on the interaction between the two media to produce unique formal and textural variations in the resulting casts. Through extensive experimentation – testing different ratios of water to wax, modes of combination, and temperature differentials – they identified one result they considered exceptional. They then developed a process to replicate this outcome across multiple casts. After a sustained period of trial and error refining ratios, interactions, and thermal conditions, they arrived at a methodology capable of reproducing what was initially a one-off result, while still allowing for aesthetic differentiation. The ingenuity of this process lies in its capacity to operate as a modular system, one that enables infinite variability in the formal and textural articulation of solidified wax, yet retains overall parametric control. In effect, each cast is dimensionally identical but formally distinct. Such a system positions wax as a design medium capable of broad variation without compromising its constructive potential. Moreover, the formal and visual qualities of the material invention transform wax’s perceptual identity, allowing it to transcend its conventional associations and uses.

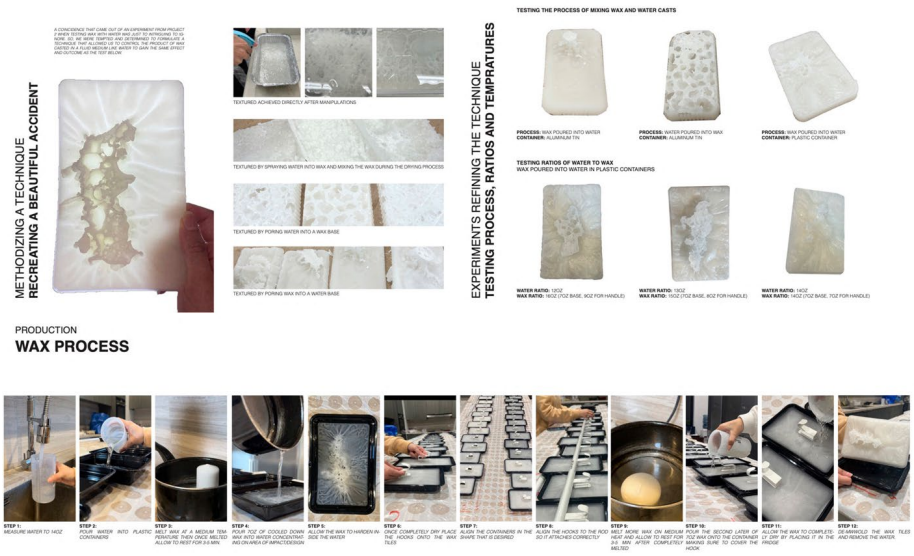

Figure 4. Material experiments with soy wax and water in the course, Advanced Topics in Material Fabrication, by Sara AlMahmoud and Maryam AlQassim

Figure 5. Refined wax cast as a variable modular system developed in the course, Advanced Topics in Material Fabrication, by Sara AlMahmoud and Maryam AlQassim

EXPLORATION BEYOND THE "CLASSROOM"

Working with wax as a modular system inspired another project in collaboration with students Sarah AlMahmoud and Maryam AlQassim – this time beyond the classroom – extending investigations initiated in the course *Advanced Topics in Material Fabrication*. Over the spring, summer, and fall of 2024, the student–faculty team designed, developed, fabricated, and installed a public work made entirely from soy wax for the Middle East's leading international design festival, Dubai Design Week. *EN-SI-AB*, a spatial installation exploring soy wax masonry as an alternative sustainable material for architectural design, was exhibited at Dubai Design District (d3) during the 2024 edition of Dubai Design Week.

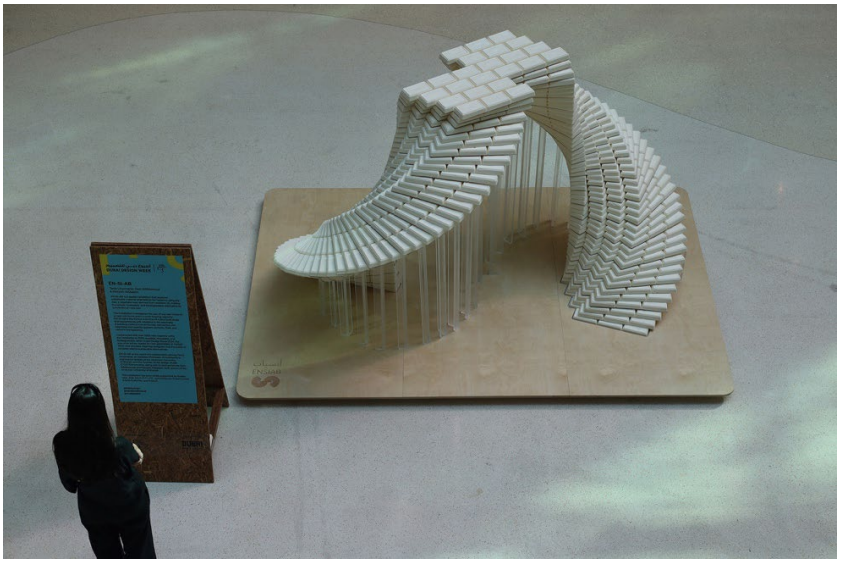

Figure 6. Overhead view of EN-SI-AB, installation for Dubai Design Week 2024 on-site in Dubai Design District (d3). Photo by Tania Ursomarzo

Constructed from more than 1,000 wax masonry blocks, *EN-SI-AB* (Arabic for "*flow*") tested the structural and formal potential of soy wax, a vegetable-based material derived from soybean oil that is natural, renewable, and biodegradable. The installation examined soy wax masonry in a load-bearing capacity as the formal outcome of a structural study experimenting with rotations in the assembly's modular wax building blocks. Following its exhibition, the wax blocks were disassembled and stored, awaiting recycling into future design work underscoring the project's sustainable ethos.

Like the coursework that preceded it, the installation was a large-scale experiment marked by uncertainty, risk, and periodic failure, demonstrating to students that ongoing research and adaptability remain essential in design practice. Realizing the project from concept to construction required coordination with a wide network of collaborators, including sponsors, material suppliers, contractors, structural engineers, and Dubai Design Week program managers. Development involved an iterative process moving fluidly between digital drawing and hands-on material testing, with several physical experiments – such as casting trials, insulation studies, mold fabrication, thermal performance testing, assembly mock-ups, structural studies, and modular coursing prototypes – informing and evolving the design proposal.

Two major obstacles shaped the final outcome: the late arrival of soy wax from a supplier in Bombay, India, necessitating a redesign of the modular block system at a very late stage; and the site installation, which demanded temperature-controlled transport and assembly to preserve the structural

integrity of the wax. These challenges reinforced for students that the most valuable learning often emerges from navigating the contingencies of making, flexing the adaptability, resourcefulness, and problem-solving skills essential to architectural practice.

Figure 7. EN-SI-AB development and process work including casting trials, insulation studies, mold fabrication, thermal performance testing, assembly mock-ups, structural studies, and modular coursing prototypes. Photos by Sara AlMahmoud and Maryam AlQassim

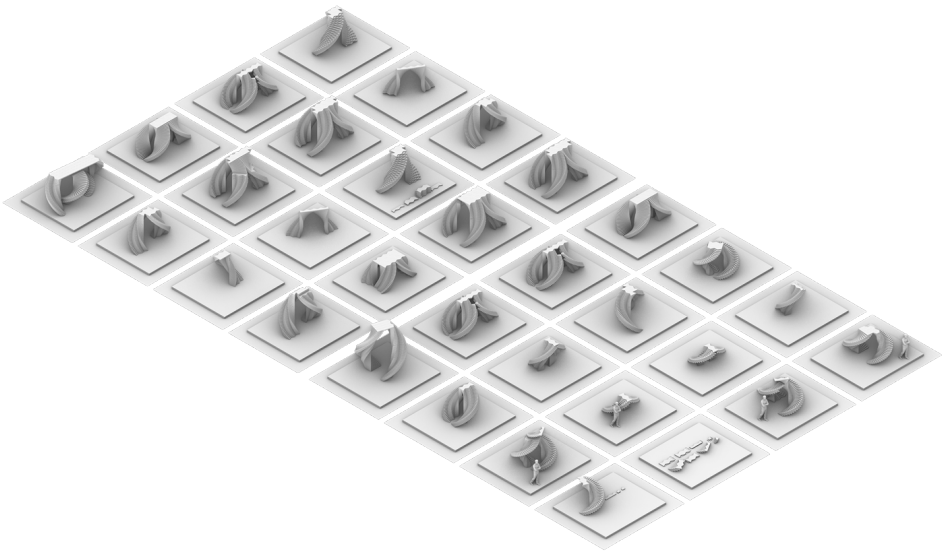

Figure 8. Digital iterations of EN-SI-AB. Image by Sara AlMahmoud and Maryam AlQassim

Figure 9. Assembly mock-up of EN-SI-AB. Photo by Tania Ursomarzo

In *EN-SI-AB*, material research with soy wax moved from the confines of the studio to the public realm, transforming coursework from an abstract academic exercise into a tangible, consequential work of design. The project demonstrated that experimentation and exploration extend far beyond formal education, remaining central to both research application and the cultivation of design dexterity. Moreover, collaboration with partners outside the institution emphasized that design and building are inherently collective, shaped by multiple forms of expertise and influenced by a complex network of conditions and constraints.

CONCLUSION: THE ENTANGLEMENT OF DESIGN EDUCATION AND DESIGN PRACTICE

Collaborating beyond the classroom offers architecture students a vital bridge between academic learning and the complex realities of practice.[18] Real-world engagement with clients, communities, and civic stakeholders fosters empathy and the ability to design with contextual sensitivity.[19] The iterative nature of these collaborations, shaped by feedback from non-academic partners, builds adaptability and reflexive thinking,[20] while interdisciplinary exposure to fields such as engineering, environmental science, and sociology expands both conceptual frameworks and technical toolkits.[21] By simulating the multifaceted demands of professional life, from negotiation and project management to clear communication, such experiences not only strengthen design competence but also prepare students for the social, cultural, and logistical challenges of their future careers.[22]

The learning outcomes of *EN-SI-AB* underscore the significance of design education's entanglement with design practice. Developing a public installation with students that meaningfully exercises essential skills demonstrates how education can be elevated, tested, and informed through the challenges of practice. Crucially, when teaching becomes practice and practice becomes teaching, students are integrated into the discipline of architecture in a substantive way. Producing work that enters into dialogue with the public, site, and context generates a feedback loop impossible to replicate within the boundaries of a conventional classroom or course assignment. Equally important is the sense of accomplishment that emerges from realizing a project experienced by audiences beyond the institution – an affirmation of architecture's social and cultural agency.

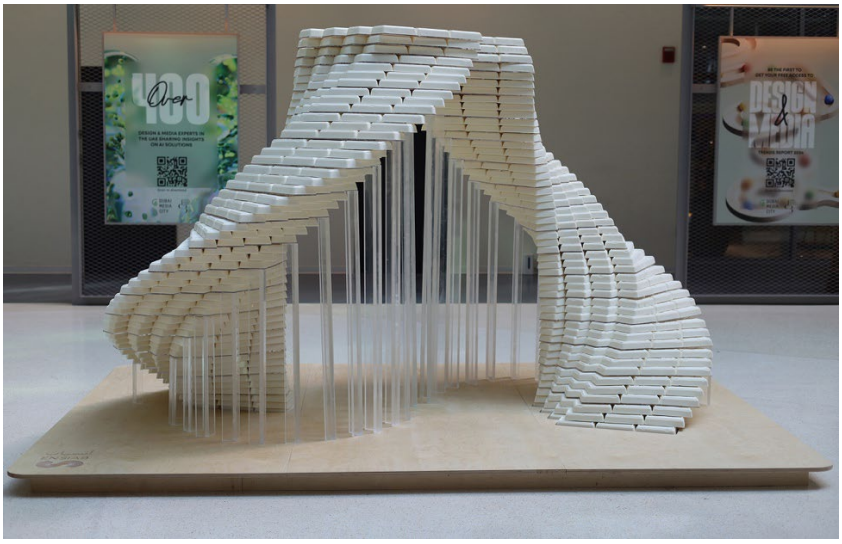

Figure 10. EN-SI-AB, installation for Dubai Design Week 2024 on-site in Dubai Design District (d3). Photo by Tania Ursomarzo

NOTES

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EXPLORING FOOD LITERACY BEYOND THE PLATE: "COMMUNITY IS OUR HOBBY". THE FORMATIVE ACT OF COMMUNAL EATING AND COMMENSALITY IN A REPURPOSED CHURCH IN COPENHAGEN

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INTRODUCTION

This article will present a field study, including interviews conducted among guests and staff at the daily communal dining in a repurposed church in Copenhagen. The study examines the act of socialization through eating with the meal as a formative arena, with relation to media studies, perceiving the tablescape as a media, and the food as a text or as a common third among the diners, through the notion of a sense of place and belonging. Theoretically the study is based on food sociology, pedagogical studies and media studies. The study concludes that communal eating, with a common motivation (being both physical and socially hungry) and a sense of social rhythm and place creates a formative arena, where the diners have an opportunity to evolve through food, socialization, subjectification, qualification and the formative, pedagogical act of eating. The findings of this study point to communal eating as not merely an act of consumption but a powerful social ritual that reaffirms identity, nurtures social bonds, and transforms public space into a lived place.

Methodology

A qualitative study was conducted during a period of three months, observing, interviewing and eating with guests (participatory observation).[1] Further interviews were conducted among the staff and founders. Field notes were made during the observations, and the interviews were recorded and later transcribed before analyzed in relation to a theoretical frame consisting of: Eating and sociality,[2] food culture and commensality,[3] The common third,[4] a sense of place and media studies,[5] belongingness,[6] and aspects of formation such as socialization, subjectification and qualification.[7]

Eating as a shared operational community

In the heavily gentrified neighborhood of Vesterbro in Copenhagen, in an old, repurposed church is the community house Folkehuset Absalon.[8] It is described as a community space where locals and others come together through a variety of activities. E.g. Absalon offers a communal dinner every night. Communal dining at Folkehuset Absalon exemplifies what can be described as *a shared operational community,*[9] where the meal is not merely a moment of consumption but a collective

social practice. Here, participants are not passive guests but part of a collaborative structure that sustains the practice of communal eating. Guests sit at long tables with strangers, food is served by both the staff and guests with an ethos of openness, and the space encourages informal conversation across social boundaries. The daily rhythms of setting tables, serving, passing, sharing the food, and cleaning up are woven into a collective infrastructure, both physical and symbolic. As such, Absalon's communal meals constitute more than social events—they are part of a lived and shared operational community, where physical labor and social interaction coalesce into a shared rhythm of everyday life. This practice resonates with German philosopher Georg Simmel's understanding of eating as a ritual that structures time and reinforces social cohesion.[10] At Absalon, the repetitive, collective act of creating a setting for eating creates temporal orientation and fosters a sense of belonging, even among strangers.

Communal Eating as a Formative Act

Communal eating at Absalon is more than nourishment; it is a staged interaction where food serves as a common third,[11] facilitating dialogue and connection. Danish philosopher Christian Coff has described eating as:" … a completely unique activity, because in eating we take in a part of the surrounding world into our body.".[12] This perception is echoed in Absalon, where food is not simply fuel but a relational artifact. At communal tables, food acts as a "common third" or common text—a shared focus that mediates relationships without demanding direct confrontation. This concept, notably articulated by Hussen,[13] describes how a mutual object or activity can facilitate social bonds by offering a point of connection beyond the individuals themselves. In community meals, the food itself becomes this object: its preparation, presentation, and sharing invite participation and dialogue, fostering inclusion and social learning within a safe and structured arena. Or as Douglas[14] describes the meal as a structured social event, with structures that can be read as a set of rules or syntax.

Georg Simmel, in his 1910 essay on the sociology of the meal,[15] noted that eating together is the most universally shared human activity or rather a social rhythm.[16] The idea that people fall into a shared temporal flow through coordinated activities illuminates the experience at Absalon. The moment the bell rings at 18:00, guests sit side-by-side at long tables, synchronizing movements and establishing a shared cadence.

Tablescapes and Media

The arrangement of long tables, the passing of dishes, and the lack of menu choice emphasize the collective over the individual. Guests help set the table, serve each other, and share food and conversation, resembling what French sociologist Claude Fischler describes as commensality;[17] the act of eating together which fosters social cohesion – even a common language.[18] The tablescape at Absalon becomes a form of (social) media, a layout that communicates values of inclusivity, participation, and equality.[19] A media that includes formative elements such as qualification (learning about culinarity and culture), socialization (meeting strangers through a common third) and subjectification (seeing yourself *through* others and being seen *by* others).[20]

Unlike a restaurant, where individual choice and separation prevail, communal meals encourage co-creation. Guests are not passively served - they actively participate in a collective ritual. This contrasts with the increasing nutritionalism in contemporary urban food culture, where individualized diets and schedules contribute to social fragmentation.[21]

Place and Belonging: Let's meet the diners

Cultural geographers distinguish between space and place,[22] space being abstract, and place being imbued with meaning through human experience and relation. Through daily rituals of dining, Absalon becomes a place, not just a spatial location. Just like the church once was a place formed by relations and rites. The cultural geography of Absalon is thus layered: a former church, now a secular meeting place, becomes a symbol of inclusive public life. Its walls, once echoing sermons, now resonate with laughter, clinking glasses, and multilingual chatter.

Ulla, a local woman at 82, is a regular guest who also used to come here when it was still a church. She expresses a sense of belonging that emerges through repeated participation:

"We have a wonderful community. Sometimes we sit at tables with people we don't know. Then we talk together and introduce ourselves, and it's so lovely. Even though it is no longer a church, it is still about love for one's neighbor. And that has been the case all along. Since Absalon opened, it has been our common living room – a shared living room."

She reflects that the shared meals make her feel seen and valued. And even though Ulla loves the food, it is not the food that is the most important to her; It is the community that arises round the tables. Partly because of the food but also because of the hospitality at the tables and the overall framework. A shared operational community:[23]

"When the food is on the table, you find out together how the food should be shared. And then you encounter each other, and that means a lot. But it is not just the food that you come for; it is just as much the community. There are many lonely people, but Absalon increases the opportunity for you to have a good community with others."

For many, particularly those new to Copenhagen like Cinthia and Paula from Argentina, community eating becomes an entry point into Danish culture. The shared meal mediates between differences, allowing people to meet across linguistic, cultural, and generational boundaries.[24] Cinthia reflects:

"…by going to Absalon you can see that there are people from different cultures and it's just super interesting that every time we eat together it's something different. Also, different ages but we all have something in common."

Cinthia and Paula emphasize how community eating helped them connect with Danish society. The setting transcends cultural divides and offers a common ground—literally and metaphorically. Through shared meals, they gain access not only to food but to community and a sense of belonging. The meal is a structured social event, and its structure can be read as a set of rules or syntax.[25] A multicultural grammar.

Food as a Common Text

The meal serves as a media with food as the text - a shared reference point that facilitates conversation.[26] Whether it is the surprise ingredient in the eggplant dish or the ritual of passing bread, food becomes a platform for interaction and sharing cultural identity. From a formative aspect this convey; 1) qualification: you learn about different cultures, 2) subjectification: you learn about yourself, 3) socialization: through the meeting of others,[27] all mediated through food and the act of community eating.

As guests discuss flavors, compare experiences, and reflect on dishes, they engage in co-creating meaning. Even disagreements over taste become part of a shared social fabric. As Paula puts it: "When we start eating, we are in sync."

Commensality and Social Cohesion

Fischler argues that eating together is key to social integration.[28] At Absalon, this is enacted through table rituals that require mutual consideration: waiting to eat until everyone is served, passing dishes, and engaging in conversation. These practices cultivate empathy and cooperation as also shown in studies on communal eating in other contexts.[29]

Furthermore, guests experience the dinner as a form of egalitarian exchange. There are no reserved seats or hierarchy. Everyone eats the same food at the same time, seated at the same tables. This setting dissolves many social markers and promotes a form of social leveling, unlike the postmodern urban food culture on the other side of the repurposed church's old walls. A food culture where eating becomes grazing as described by scholars inspired by Simmel.[30] In contemporary urban food culture, it is possible and even socially acceptable to eat alone, whenever, wherever,[31] like cows grazing in a field.

Participation and a Common third

Absalon's ethos emphasizes participation. Guests are not passive consumers but active co-creators. This aligns with the notion of the common third, where resources—like meals, space, and conversation—are shared and maintained collectively. Staff and guests alike describe the importance of shared responsibility, from serving and sharing the food to welcoming newcomers. This participatory model challenges prevailing norms in public restaurant dining, which often reflect capitalistic, individualistic values. Instead, community eating proposes a social economy grounded in reciprocity, collaboration, and shared joy. For friends Nikolaj and Anders, it is not merely about the food, it is about being acknowledged:

"Eating together is something as basic as being acknowledged by another human. When someone looks you in the eye and asks, 'Do you want more?'—that's when you feel part of a community."

The food itself plays a central role in shaping these experiences. Both Nikolaj and Anders describe feeling "spoiled" by the meals, which offer familiar dishes with unexpected twists. As one of them notes:

"I feel pampered. The food is recognizable but always surprising. It's clear the chef wants to delight and challenge us."

Sally, the Head chef at Absalon, affirms this intention. To her, the meal must spark interaction; the before mentioned commensality[32]:

"There should be something in the food that people can talk about. We never serve pre-sliced bread. Maybe it's a surprising spice—something that gets the conversation going."

Sally also sees community dining as a space for building "food courage." Research supports the idea that eating together fosters positive peer influence, as seen in studies of children in schools[33]. At Absalon, adults also become more adventurous or as Nikolaj explains:

"If I had just read the menu—baked eggplant with Japanese spices—I'm not sure I'd have chosen it. But here, you try it, and it's actually delicious."

For Nikolaj and Anders, communal dining invites openness and a break from routine:

"There's a plan—we've signed up for it—and our experience tells us we won't be disappointed. In a restaurant, I'd just order what I know."

They also appreciate the unpredictability of both the food and the strangers they eat with:

"It's nice with surprises in everyday life. The meal is a surprise, the table is a surprise, and the community is a surprise."

Community as a hobby

These experiences culminate between the two friends in a shared sentiment: community itself is the hobby.

"Sometimes we arrive tired, but once we're at the table, something shifts. We talk with new people, and we leave recharged. It's about something beyond the two of us — a common third. We don't play golf. We do community."

The communal dining experience in Absalon illustrates how food, recognition, and spontaneity converge to create meaningful urban social spaces. While participants often share core values around connection and openness, the cultural diversity of guests raises further questions: Do different backgrounds yield different ideas about what matters at the table, or does the act of eating together create shared values across differences?

Affective and Sensory Dimensions

Eating together is a multi-sensory experience. The aroma of freshly cooked meals, the clinking of cutlery, the warmth of conversation—these sensory cues reinforce a collective atmosphere. Musicological studies suggest that creating shared rhythms, in music, promotes oxytocin release and deepens social bonds.[34] One could argue that the ritual of sharing food, passing food, waiting for each other, making sure everyone had enough, saying cheers etc. is equivalent to singing together in the same tune and clapping together in the same rhythm; both needs the participants to be aware of the others in order to reach a common tact or a sync as one of the diners described it. Studies about eating among firefighters suggest that eating and cooking together strengthen a team's cooperation in general.[35]

The tablescape—the physical arrangement of dishes, utensils, and shared platters—functions as a communicative media, conveying care, inviting interaction, and establishing a rhythm of engagement. The ritualized practices of passing dishes, waiting for others before eating, and offering food serve as nonverbal communication or a form of social media that reinforces belongingness. These shared practices create a collective temporal and spatial rhythm, synchronizing participants and cultivating a sense of social cohesion.

Meyrowitz's thesis about the erosion of "place" in media societies finds a compelling counterpoint here: while electronic media often fragment attention and social context, the communal meal reasserts place as a formative condition for social belonging. The meal is not merely about food consumption but about co-presence, mutual recognition, and rhythmic interaction. The waiting—pausing before eating to ensure everyone is ready—is itself a social signal a deliberate slowing down that fosters attentiveness and respect – a socio-interactive cadence. This shared temporal experience builds a social rhythm that contrasts with the fragmented pace of everyday, mediated (e.g. SoMe, Zoom, TV-dinner) interaction and as an opposite to grazing.

Furthermore, community eating creates a situational identity, where participants negotiate roles (guest, host, peer) through repeated ritualized interaction. The food and the common motivation to eat, supports this role negotiation by focusing attention away from individual anxieties toward a collective activity, counteracting the placelessness Meyrowitz describes and reinforcing belongingness through embodied, situated practice – through food and eating.

Being hungry as a common third, the food as a text, the tablescape as a media, and the rituals of sharing and waiting collaboratively constitute a formative arena where place, identity, and social cohesion are dynamically produced.

Conclusion: **Commensality, the Common Third, and Social Belonging in a media-saturated world.**

In an era defined by electronic media that disrupt traditional social boundaries, the sociological significance of eating together—commensality—emerges as a vital counterbalance. More than 100 years ago, Simmel described the physical and social significance of eating in his urban studies and Meyrowitz's highlights how electronic media blur physical and social contexts, transforming how individuals engage, perform roles, and experience belonging. As digital interactions dissolve the structure of place, social life risks becoming fragmented and dislocated. Yet, community eating reinstates place and rhythm by grounding social interaction in the shared, embodied experience of the meal.

Communal eating is a rich, embodied form of social media, that fosters belonging by creating a shared rhythm and socio-interaction, and more than the act of dining at a restaurant, it is a deeply formative social practice. Through mutual participation, and co-created meaning, guests form bonds that transcend traditional social boundaries. The tablescape becomes a media, the food a common text, and the act of dining a ritual of belonging.

This study highlights how places like Folkehuset Absalon reimagine urban space, reclaiming it for human connection and social cohesion. In a time marked by isolation, polarization and individualization, communal eating offers a counternarrative, a reminder that eating together is a profound act of being together and has been, since the first circles, formed around the first bonfires.

NOTES

[1] 16 interviews were conducted with guests, staff and founders, observations + participatory observation (eating with guests).
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A SCAFFOLDING PEDAGOGICAL APPROACH TO DESIGNING INTERACTIVE ENVIRONMENTS: AIMS, CHALLENGES AND PROTOTYPING METHODS

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INTRODUCTION

The ubiquity of digital technologies has introduced new challenges to teaching interaction design and human-computer interaction (HCI). Interaction design now extends beyond creating user experiences for products—it involves shaping how people engage with the world, exchange ideas, and interpret culture.[1] This shift reflects a broader trend in HCI toward relational approaches that recognize the deep interconnection between technologies and their environments.[2] Technologies are increasingly seen as mediators of social relationships[3] and collective meaning-making.[4]

Interaction design is thus evolving into experience design, where "experience" encompasses not only direct human-computer interactions but also the physical, cultural, and historical contexts in which they occur. Drawing on Barad's[5] concept of "intra-actions," this perspective[6] emphasizes the mutual influence between people and their surroundings.[7] For instance, urban spaces become interactive when they respond to human presence, allowing individuals to temporarily reshape public environments, bend social norms and adopt new roles, such as performers or spectators.[8] These interactions reflect values of inclusion and citizenship, turning citizens into active participants in urban life.

Teaching interaction design requires engaging students in real-world contexts where they can explore these dynamics.[9] University campuses and cultural institutions like museums and galleries offer ideal settings: they are public yet flexible, enabling experimentation with interactive technologies and narratives.[10] Universities are increasingly opening their spaces to the community, promoting broader social engagement and sharing research outcomes.[11] Museums and galleries, while valuable partners in creative education,[12] face logistical challenges in consistently providing access for academic use.

This article explores how a postgraduate studio at The University of Sydney attempted to address those new dynamics in interaction design pedagogy. The studio partnered with the University's Campus Infrastructure Services and the Multi Arts Pavilion (MAP mima) in Lake Macquarie. It aimed to foster student-led engagement with technology, people, and culture through iterative design and prototyping. The article outlines the studio's pedagogical goals, partnership rationales, and strategies used to navigate constraints. It introduces the Scaffolding Pedagogy for Augmented Cultural Experiences (SPACE) model, which emerged from the studio, and evaluates virtual versus physical prototyping approaches. The conclusion reflects on the model's contributions and limitations in advancing interaction design education.

METHODOLOGY

This research adopts an action research[13] approach, integrating theory and practice through iterative interventions and reflective learning.[14] It involved collaboration between the author—as both researcher and lecturer—students, and external partners to actively engage with public built environments. Rooted in reflective practice,[15] the study emphasizes research through design, where the design studio itself becomes a research artefact.[16] Given the power dynamics between educator and students, no personal feedback, grades, or performance metrics were included; instead, the study is framed as a first-person reflection by the author as an educational designer.

The author coordinated all teaching activities and developed the pedagogical model through experiential learning[17] across course iterations. Each iteration was followed by reflective analysis, applying Schön's concepts of reflection-in-action (adapting during delivery) and reflection-on-action (evaluating outcomes post-delivery).[18] These reflections informed ongoing adjustments to the course syllabus, which evolved into both a design artefact and a medium for generating knowledge about teaching interaction design and HCI in public urban contexts.

BACKGROUND

The Design Studio and pedagogical influences

Throughout the paper, I will refer to the postgraduate design studio used as basis for this work as "The Studio". The Studio is a core unit in the Master of Interaction Design and Electronic Arts (MIDEA) at The University of Sydney. Offered in the second semester of the degree, it builds on students' foundational knowledge of design thinking and creative coding. Over 13 weeks, students engage in lectures, tutorials, and studio work, applying their skills to a full-cycle design project involving research, prototyping, testing, documentation, and presentation. Coordinated by the author from 2016 to 2023, The Studio emphasizes process over final outcomes, encouraging creativity and experimentation with digital technologies in a controlled environment. Each project responds to a design brief, ideally set by an external partner, and intentionally open-ended to foster innovation. Partners are informed that the focus is on learning, not deliverables, and collaborate with the teaching team to shape suitable briefs. This approach supports critical making and experiential learning, which are central to The Studio's pedagogy.

Design education is inherently creative and participatory. Reid and Solomonides[19] describe creativity as a blend of person, process, and product, and link it to student engagement and identity formation. They outline four dimensions of this "sense of being": artistry, transformation, designer identity, and contextual awareness. The Studio fosters these through constructivist[20] and constructionist[21] principles, emphasizing learning through lived experience and hands-on engagement with technology. Inspired by Ratto's critical making framework,[22] the Studio follows three stages: theoretical grounding, collaborative prototyping, and iterative reflection. Loh[23] emphasizes that technology should not just be a tool but a medium for conceptual exploration. Accordingly, the Studio's activities are designed to translate theory into tangible engagement, balancing passive and active roles as described by Svinicki and Dixon.[24] Drawing on Kolb's experiential learning model, activities vary in immediacy and real-world engagement, shaped by the operational context and partner priorities.

Partner organizations

Since 2016, the Studio has focused on urban interaction design,[25] media arts,[26] and digital placemaking.[27] This transdisciplinary approach encourages students to explore digital interfaces embedded in public spaces, engaging with social norms,[28] spontaneous interactions,[29] and civic

expression. Partnerships with space owners or administrators enable interventions like urban acupuncture[30] and interactive installations.[31]
Two key partnerships shaped the Studio: one from 2017–2019 and another from 2021–2023 (with a fully online adaptation in 2020 due to COVID-19). Each presented unique challenges, requiring tailored teaching and technical strategies. These experiences led to a flexible, resilient pedagogical framework capable of delivering consistent learning outcomes across varied contexts.

PARTNER ORGANISATION CASE STUDY: CAMPUS INFRASTRUCTURE SERVICES

Motivations and design constraints

From 2017 to 2020, Campus Infrastructure Services (CIS) – then responsible for managing physical and digital infrastructure at The University of Sydney's campus – supported The Studio as part of its Campus Improvement program, aimed at revitalizing public spaces and promote a new cultural identity across university precincts. Students in The Studio were invited to design interactive installations for selected locations, informed by ethnographic observations, user interviews, and spatial analysis. For CIS, this collaboration enabled exploration of campus spaces as potential urban interfaces,[32] assessing community responses to digital public art. Simultaneously, the author collaborated with CIS to develop the Footbridge Gallery, a public digital placemaking space featuring an LED media façade and outdoor projector.[33] During 2018 and 2019, students could access these interactive platforms both as design material and a testbed for refining the gallery concept.
However, working with CIS introduced several constraints. Due to the public nature of campus spaces, CIS required a rigorous approval process for installations, including detailed specifications and safety assessments. This slowed deployment and limited student access for testing. Moreover, students could only finalize these specifications late in the semester, after completing essential design phases. Resource limitations also posed challenges. The school could only provide basic equipment – small projectors and electrical hardware – while robust installations often require custom-built structures and weather-resistant materials. Students had to consider durability, safety, and public interaction in their designs, despite lack of financial support. These limitations shaped the scope of feasible solutions but also became a valuable part of the learning experience, highlighting intrinsic dependencies in creating new public space experiences.

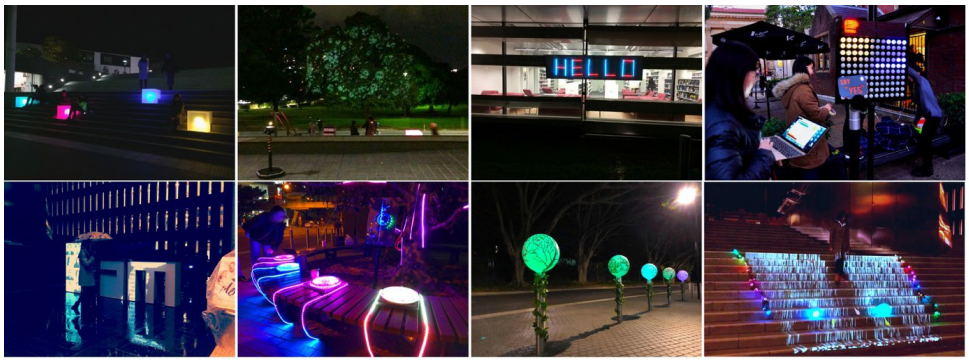

Figure 1. Compilation of some of the outcomes from the popup student exhibition, realized from 2017 to 2019 at The University of Sydney campus. As illustrated above, students would design their own hardware, making use of various media such as interactive lights and projections.

Teaching approaches, responsibilities and contributions

The Studio was structured around three assessment stages. First, groupwork to conduct grounding research using design thinking methods, select a site from a predefined pool, and propose an interactive concept based on their findings. After receiving feedback from peers and staff, students moved to the second stage: prototyping, user testing, and refining their concept through increasingly sophisticated prototypes. This culminated in a pop-up exhibition,[34] where students showcased their installations to the public, gathered feedback, and documented their work. These insights informed a final individual essay, where students reflected on the design process.

The exhibition was designed to align with CIS's safety and approval requirements. Its temporary nature minimized risk and liability, while enabling students to engage in real-world experiential learning. The Studio also included tutorials on electronics and Arduino programming, equipping students with skills to build functional interactive sculptures. While this hands-on approach deepened their understanding of physical computing, it limited time for broader design experimentation, highlighting a pedagogical trade-off.

The author coordinated all teaching activities, provided feedback, and liaised with CIS to identify suitable campus locations. CIS offered strategic and logistical input, and once student concepts were developed, the author presented them for approval. CIS issued permits and recommendations, while the author oversaw deployment, maintenance, and removal of installations. All activities were integrated into existing workloads and budgets, ensuring the partnership ran smoothly without additional strain on staff or students.

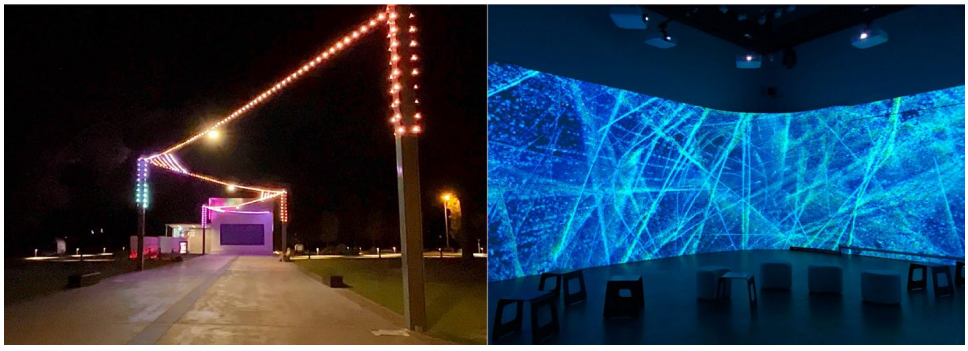

Figure 2. The two digital platforms at MAP mima, Lake Macquarie, Australia. Left: student work displayed at The Catenary. Right: EMERGE, artwork by PluginHUMAN, displayed at indoor immersive projections of The Cube (photos by the author).

PARTNER ORGANISATION CASE STUDY: MAP MIMA

Motivations and design constraints

MAP mima is a contemporary arts venue in Lake Macquarie, Australia, designed to host diverse art forms – from theatre and music to video, holograms, and interactive media. Its name combines "MAP" (Multi-Arts Pavilion) and "mima," an Awabakal word meaning "cause to stay," reflecting its mission to unite ancient and emerging cultural expressions.

In 2020, the author was commissioned by Lake Macquarie City Council to design an interactive lighting system – The Catenary – for MAP mima's outdoor canopy. Before its launch in 2021, the Council partnered with The Studio, allowing postgraduate students to partake in a real-world design brief under the author's supervision. This collaboration revived external engagement after COVID-19 disruptions and offered equitable learning opportunities for both on-campus and remote international

students. With MAP mima still under construction in 2021, students could not conduct site visits or ethnographic research. Design work relied on architectural plans and technical specifications. Remote teaching also limited hands-on electronics work: students could not use Arduino kits due to safety concerns. Although the author had access to some lighting hardware, replicating the full structure was impractical. These constraints shifted the focus from physical prototyping to conceptual design, adapting The Studio's methods to the realities of online learning.

Teaching approaches, responsibilities and contributions

The Studio's pedagogy remained consistent with previous iterations, maintaining core theory, assessments, and learning outcomes. However, due to hybrid teaching and the constraints of working with a remote partner, hardware prototyping was replaced with a software-based approach: a server application at MAP mima controlled the canopy lights, while a public website acted as the client, sending messages via a cloud-based MQTT broker. Visitors could interact with the installation by scanning QR codes around the venue.

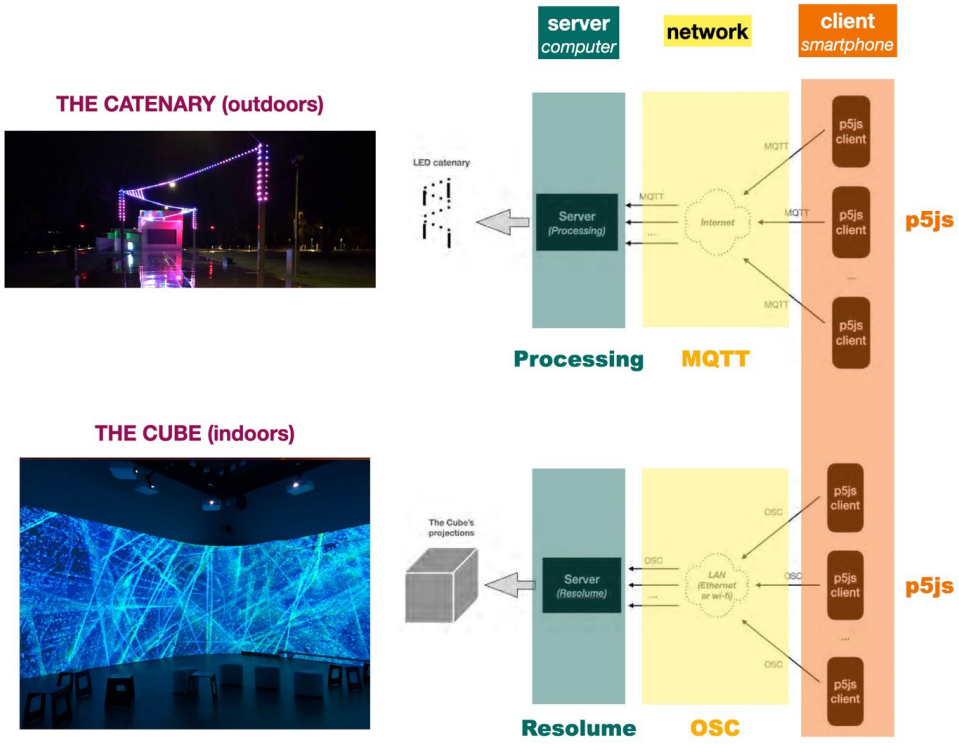

Figure 3. The scaffolded client-server software architecture adopted at The Studio for the collaboration with MAP mima. Top: the architecture for the external interactive LED structure, enabled by messaging via the internet. Bottom: the architecture for the internal interactive projections, enabled by messaging via the local Wi-Fi network (artwork displayed: EMERGE, by PluginHUMAN).

The server, written by the author, featured a 3D model of The Catenary, enabling students to visualize and test their animations using Processing, an educational creative coding platform. This allowed students to design dynamic media content and control the physical lights remotely. The software abstracted hardware complexities, effectively "scaffolding" the interaction design process. On the client side, students customized a p5.js web app also written by the author, who intentionally hid technical details to favor interaction design over coding proficiency. Students adapted the interface and message structure to reflect their concepts, working within a functional system that supported

critical making despite remote learning constraints. In 2022 and 2023, the collaboration expanded to include The Cube, an immersive indoor projection space. A similar client-server setup was used, with Resolume – a media editing tool – serving as the server. Students sent OSC messages via Wi-Fi to control visuals, enabling full prototyping and testing from anywhere.

The author coordinated all teaching, including lectures and tutorials on customizing the client-server systems. Additional responsibilities included liaising with MAP mima's curator and the local government's art producer, who provided feedback during student presentations. Selected student projects were refined with the author's guidance and prepared for potential launch at MAP mima. All contributions – technical support, feedback, and exhibition preparation – were provided in-kind, requiring no extra budget or resources. This clear division of responsibilities ensured a smooth partnership and effective experiential learning, even at a distance.

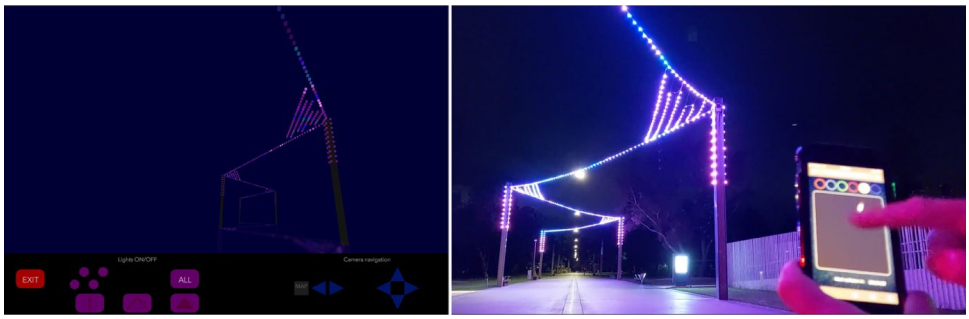

Figure 4. Virtual urban prototyping for The Catenary at MAP mima. Left: software simulation allowing students to create remote prototypes. Right: illustration of the interaction with the actual lighting structure on-site, via a mobile website developed by one of the student groups.

A SCAFFOLDING PEDAGOGY FOR AUGMENTED CULTURAL EXPERIENCES (SPACE)

The two case studies explored creative design solutions for enhancing cultural experiences in urban spaces, but they reflect distinct approaches to critical making. In The Studio's collaboration with CIS, students had direct access to the sites and freedom to design both hardware and software. In contrast, the MAP mima project involved a simulated site with predefined technical constraints. These differences influenced the level of scaffolding provided—more support meant students could focus on key aspects of critical making.

Scaffolding,[35] rooted in Vygotsky and Cole's theory of child development,[36] refers to structured support that helps learners master tasks they could not complete alone. Like temporary structures on a construction site, scaffolding in education guides learning until students gain independence. It also sharpens and narrows the scope of experiential learning. To better understand how varying levels of scaffolding affect critical making, this article proposes a pedagogical model – Scaffolding Pedagogy for Augmented Cultural Experiences (SPACE) – focused on designing interactive augmented cultural experiences in public spaces, with two goals: to reflect on and compare teaching approaches used with external partners in The Studio, and to offer an accessible framework to educators unfamiliar with experiential learning or critical making, allowing them to plan their own scaffolded learning activities.

The SPACE model comprises five components: (a) experiential learning continuum; (b) critical making stages; (c) pedagogical levers; (d) scaffolded activities in real and simulated environments (magenta and pink); and (e) student-led activities (blue and yellow). Drawing on Bergsteiner et al.'s[37] critique of Kolb's theory on experiential learning, SPACE distinguishes between primary (active/concrete) and secondary (passive/abstract) learning. Activities are categorized as "read,"

"hear," "watch," or "do," and placed along a continuum from passive to active engagement. The model also differentiates between real and simulated environments, acknowledging that while both involve "doing," real-world interactions are experienced as more concrete. For example, students working with CIS engaged with physical sensors and lights, while those with MAP mima used simulation software, contexts which influenced how activities were scaffolded. SPACE uses color coding to represent four combinations of scaffolded and non-scaffolded activities in real or simulated environments, helping educators visualize trade-offs and design effective learning experiences.

Beyond mapping key learning typologies, SPACE aligns them with Ratto's three stages of critical making: concepts, prototyping, and reflection. "Read" and "hear" typologies correspond to the concepts stage, involving literature review and theory mapping. "Watch" and "do" align with prototyping, where students engage with materials and tools. To accommodate Ratto's reflection stage, the SPACE model introduces a fifth typology – "reflect" – positioned at the active/concrete end of the learning continuum. Together, these typologies form the top row of the SPACE model (Figure 5), visually integrating Bergsteiner et al.'s learning continuum with Ratto's critical making framework. This structure serves as a container for organizing course activities and identifying opportunities for scaffolding. In The Studio, ten core tasks were grouped into five pedagogical 'levers': Theory, Place, Medium, Experience, and Rollout, representing flexible dimensions of experiential learning, allowing educators to better plan and calibrate scaffolding, clarify roles and expectations, and design more effective experiential learning experiences in collaboration with students and external partners.

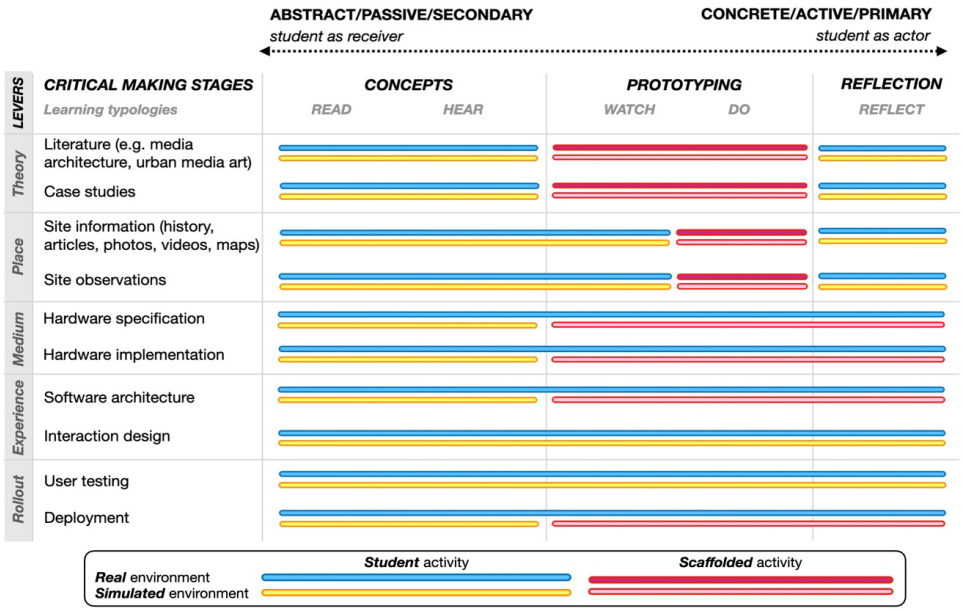

Figure 5. SPACE pedagogical approach, indicating pedagogical levers and corresponding scaffolds for both real and simulated environments.

DISCUSSION

Experiential learning and critical making emphasize formative assessment – focused on learning progress – over summative evaluation[38]. Even when passive learning occurs, its purpose is to support active, hands-on engagement. However, concrete learning activities often require significant time and technical resources, which may challenge feasibility within a semester. Scaffolding those resources by

providing pre-populated datasets or simulating hardware can shift focus to areas like experience design and user testing, which are thus prioritized. Likewise, when physical access to a site is limited or impossible, digital modelling and simulation offer effective alternatives.[39] These approaches, known as augmented placemaking,[40] virtual experience prototypes,[41] or virtual urban prototyping,[42] allow educators and students to bypass logistical constraints by recreating environments digitally. This enables deeper exploration of interaction and experience design without the burden of constructing physical systems.

In The Studio, two partnerships illustrated different scaffolding levels. With CIS, students designed hardware and software, conducted user testing, and deployed prototypes in a public exhibition. This hands-on approach fostered rich experiential learning but limited refinement due to time constraints. In contrast, the MAP mima partnership provided students with pre-built software architecture and a simulated site. Freed from hardware concerns, students focused on cultural research and interaction design. While this allowed deeper conceptual exploration, it offered fewer opportunities for critical making.

The SPACE model (Figure 5) highlights how varying levels of scaffolding—especially in simulated environments—can shape learning outcomes, helping educators balance feasibility with pedagogical goals. During the MAP mima partnership, students focused deeply on interaction design, supported by software simulations that allowed rapid iteration and multiple rounds of user testing. With hardware and deployment abstracted, they could refine their concepts and explore cultural and social contexts more thoroughly. One student project has even remained permanently installed at MAP mima's Catenary since 2021. This approach aligns with interaction design's increasing emphasis on experience and social behavior, enabling students to develop relevant skills without the burden of sourcing hardware, thus promoting equity and inclusion.

The Studio adopted a middle-out approach, with the author acting as media artist, studio coordinator, and liaison with external partners. This structure reduced risks and administrative load for students, yet expanded the educator's role to include design consulting, which can be onerous. For scalability and sustainability over time, clear planning and role definition among educators, institutions, and partners are essential.

CONCLUSION

As HCI evolves, its expanding subfields demand teaching approaches that are both broad and focused, while remaining practical and socially relevant. This article explored experiential learning through critical making in a postgraduate interaction design studio, comparing two partnerships with external organizations. These collaborations led to different levels of scaffolding and informed the development of the SPACE pedagogical model to help educators balance trade-offs in experiential learning. SPACE reflects years of studio teaching and is intended as a flexible template, not a prescriptive guide. By mapping learning activities to pedagogical levers—such as Theory, Place, and Experience—educators can tailor scaffolding to suit their context, fostering experiential learning and critical making through adaptable, inclusive studio practices.

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CRITICAL THINKING IN THE DIGITAL AGE: CLIOVIS IN THE CLASSROOM AND BEYOND

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INTRODUCTION

Today's students are digital natives. They grew up surrounded by technology. They scroll, swipe, post, and search almost instinctively. However, while they are often tech-savvy in navigating and consuming information on social media platforms, many struggle with more complex cognitive skills, especially those essential to academic inquiry, such as evaluating sources, understanding different methodologies, and employing interpretive strategies.

In short, they often lack the very critical thinking skills that scholars use every day. Our panel at AMPS 2025 aimed to explore the various ways students in the classroom and graduate student researchers have utilized the ed tech platform ClioVis to develop those skills. Dr. Erika Bsumek discussed creating the platform and described the pedagogy behind it, Dr. Rachel Ozanne discussed how the platform was used in her classes, and Dr. Marcus Golding provided one research-based case study from his own work.

The idea that students have difficulty with critical thinking isn't just anecdotal. A growing body of research shows that even students at top universities struggle to distinguish between a peer-reviewed article and a blog post, or to explain the difference between correlation and causation.[1] These deficits matter, not only in the classroom but in the real world, where the ability to think critically, assess evidence, and build coherent arguments is more important than ever.

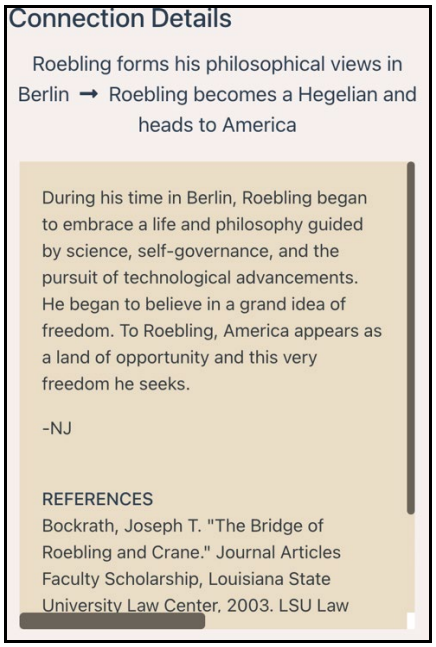
To address these challenges as a historian and professor, Dr. Bsumek worked with a small team of computer scientists and educational technologists to create ClioVis. This digital tool combines timeline building, mind mapping, and network visualization into a single interactive platform. As one of the nine Greek muses, Clio (or Kleio) is sometimes called the "historian's muse." We named the software after her because her name represents the idea that history is not only about facts but also about inspiration, safeguarding knowledge, and keeping a connection to active learning alive. Vis means to visualize. Thus, the platform is designed to function as an interactive digital timeline and concept mapping tool that helps students in history, humanities, and even STEM courses visualize connections between events, ideas, and sources. By guiding students through the process of building arguments, identifying causation and making connections, ClioVis promotes deeper critical thinking and stronger writing skills.[2] The platform encourages experiential learning by requiring students to actively engage with historical evidence and create meaning through structured analysis. As a teaching tool, ClioVis supports instructors in making the learning process more transparent, reflective, and collaborative, which were Dr. Bsumek's intentions in designing the platform.

CLIOVIS AS PEDAGOGICAL INFRASTRUCTURE IN UNDERGRADUATE CLASSROOMS

To address the kinds of skill gaps Dr. Bsumek noticed students demonstrating in the classroom, she designed ClioVis to be process-oriented: it invites students to construct arguments, articulate relationships among concepts, and engage in original interpretive work. In this sense, it functions not as a passive learning aid, but as an active cognitive scaffolding platform.

ClioVis prompts students to generate discrete "nodes" (events) that represent historical events, concepts, actors, or texts. These nodes are then connected by lines that students must define and justify—whether causally, thematically, or methodologically. This visual process externalizes the kind of analytical reasoning that scholars perform implicitly, or learned in graduate school, allowing both students and instructors to observe and evaluate student reasoning and learning in real-time.

The pedagogical value of this structure is twofold. First, it helps students differentiate between content acquisition and interpretation. It also helps students see how knowledge produced across disciplines is often connected. For example, in a project connecting the history of Brooklyn Bridge to various social and scholarly disciplines, students created category tags to help identify John A. Roebling's background, his primary building projects, the development and influence of western philosophy, and his abolitionism. Group Eight's final network map, which students created using sources they found in the University of Texas library along with those assigned in class, revealed not only the chronology of the building of the famous bridge but how the engineer's educational influences, like Hegelian philosophy, influenced Roebling's career and projects. This assignment made students active participants in their own knowledge acquisition and gave them the freedom to explore themes, like philosophy and engineering, that were of interest to the students themselves. They also created their own audio narration to explain their findings and crafted a well-formulated description of the larger research project that serves as a thesis statement.



Figures 1 and 2. of student work in Dr. Bsumek's Building America class, Spring 2024. Full timeline and example of the information in the connection between two nodes, "Roebling forms his philosophical views" and "Roebling becomes a Hegelian and heads to America."

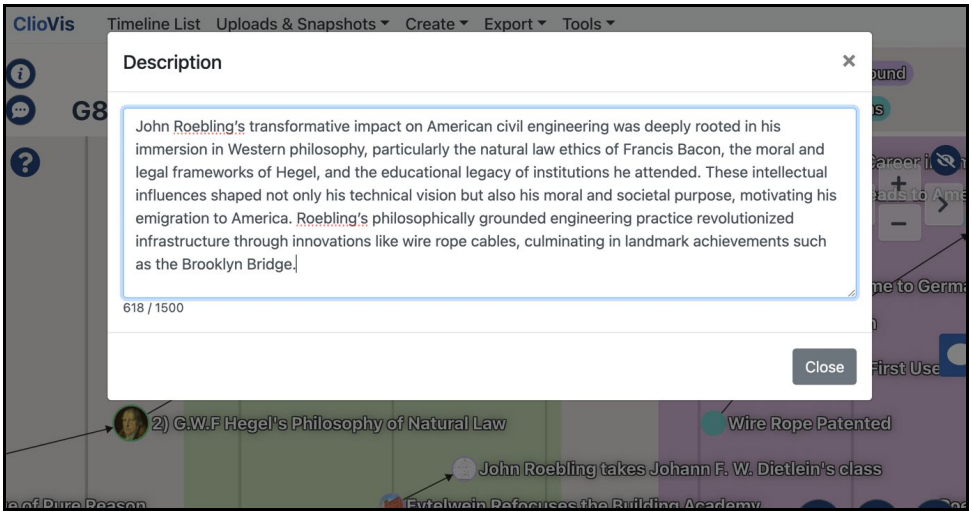


Figure 3. Description/thesis of the timeline.[3]

Second, ClioVis aligns with writing and history pedagogy by integrating mind-mapping, source analysis and argumentation into the early stages of a project.[4] Each node and connection can be annotated with citations, commentary, and analytical notes. Students thus begin writing in an organized way, and their visual maps often serve as outlines for final papers. This approach reduces reliance on generative AI tools, emphasizes originality, and supports academic integrity through transparent thinking. This is true even if students do use AI to produce some of the content they put in their timelines.

ClioVis also models what Liezel Nel (2021) describes as a **"design for partnership"** in technology-enhanced teaching. In her study of engaged scholarship in computer science education, Nel argues that effective digital pedagogy must center students not only as users, but as collaborators in shaping the learning process. Her action inquiry framework highlights the value of empowering students to co-construct technological learning environments that are flexible, iterative, and meaningful.[5]

ClioVis exemplifies this participatory ethos. It places responsibility for active engagement and learning in students' hands. With the guidance of a good assignment and input from the instructor, students select sources, determine relevance, and construct timelines, building their arguments and honing their writing along the way. Unlike templated platforms or auto-graded tools, ClioVis cannot be used without the student's doing some interpretation. Instructors provide the framework, but students must actively populate, link, and defend their network maps —becoming what Nel calls *co-designers of learning*.

Moreover, Nel's call for pedagogical structures that accommodate evolving student voice resonates strongly with ClioVis's transparent and reflective design. Each project functions as a living document—open to revision, peer feedback, and instructor guidance. This supports what Nel identifies *as authentic student engagement*—learning environments that adapt to students rather than constrain them within pre-defined outcomes.

As digital humanities pedagogy continues to evolve, ClioVis reminds us that educational infrastructure is not merely technological. It is cognitive, social, and ethical. By enabling students to visualize complexity, practice writing and argumentation, and participate in the construction of knowledge, ClioVis advances a vision of digital pedagogy that is not only about tools—but about interpretation and scholarly participation. In the spirit of Nel's engaged scholarship model, it demonstrates the power of co-designed environments to transform both student learning and instructor

practice. ClioVis' malleability makes it useful in classrooms of all sizes and modalities including Dr. Ozanne's large online courses.

PRACTICAL IMPLEMENTATION OF CLIOVIS IN LARGE ONLINE COURSES

In summer 2020, Dr. Rachel Ozanne needed to convert her two large lecture courses (320 students each) to fully online, asynchronous formats. Like many of her colleagues, Ozanne not only had never taught an online course–she had never even taken one. She knew that her typical assessments (in-class essay exams) would not be easily implemented in an online setting. As introductory US history courses, Ozanne's classes also needed to advance student learning in key competencies set by the state of Texas's Core Curriculum requirements, including: "1. To evaluate sources, methodologies, and interpretive strategies historians use to investigate and narrate the past; 2. To articulate and analyze how institutions, cultures, concepts, or relationships change over time; and 3. To interpret events, texts, and arguments within their political, economic, cultural, and/or social historical context and as expressions of individual beliefs, values, and decisions."[6]

With that in mind, Ozanne was searching for new kinds of assignments that would enable her to assess student mastery of course learning objectives in the online environment. She joined informal discussions of other faculty, who also faced this challenge, and took inspiration from *Small Teaching Online* by Flower Darby with James M. Lang to find ways for students to meet and collaborate with each other, because, as Darby argues, "interacting with others is a key component of our ability to learn new things."[7]

Ozanne was drawn to ClioVis, because she had seen Bsumek present it in an online workshop at the University of Texas at Austin. She saw right away that it would allow her to design an assignment that encouraged students to evaluate sources, analyze change over time, and interpret ideas, events, etc. in context. She also saw that ClioVis could work as a medium for student collaboration in group projects, which would allow students to form "Communities of Inquiry" within a large online course that could facilitate the "social presence" and "cognitive presence" that Randy Garrison, Terry Anderson, and Walter Archer identified as crucial to learning online.[8]

In collaboration with the Center for Teaching and Learning at UT Austin, Ozanne designed a group project using ClioVis for students in HIS 315L: The United States, 1865-present and in HIS 315K: The United States, 1492-1865. She implemented practices of backwards design to ensure that the assignment would achieve this goal.[9] Working in groups of five, students answered a question related to lives of historically marginalized people in the United States. Below is the question students answered in HIS 315K:

Assignment #2 Question:

How were women, African Americans or Native Americans affected by the political and social transformations from European colonization to the US Civil War (1865)? How did they advocate for themselves despite the political and social constraints placed upon them? Timeline #1 covered 1492-1763, so your new events added to this timeline must cover 1763-1865.

In your answers to this question, you must choose one of the above groups (women, African Americans, or Native Americans) to focus your timeline on. If you choose to examine women, be sure to consider women of different races and ethnicities. If you choose a particular racial or ethnic minority group, be sure to consider the history of both men and women.

Figure 4. Prompt for student assignment HIS 315K

Students used primary and secondary sources to write the text of their events, and they collaborated throughout the semester to add events to the timeline. By the end of the semester, a completed timeline might look like the sample provided below, which covered the entire time period of the class.[10]

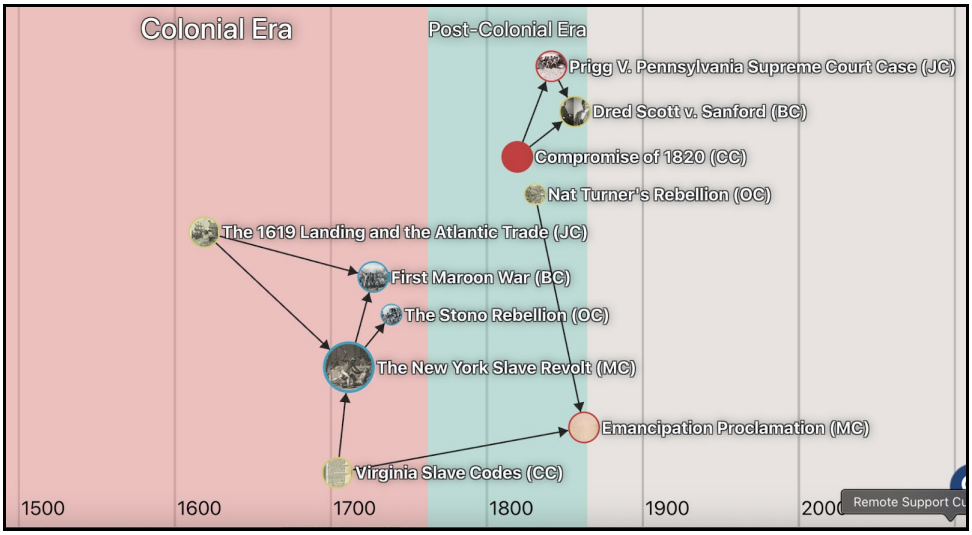
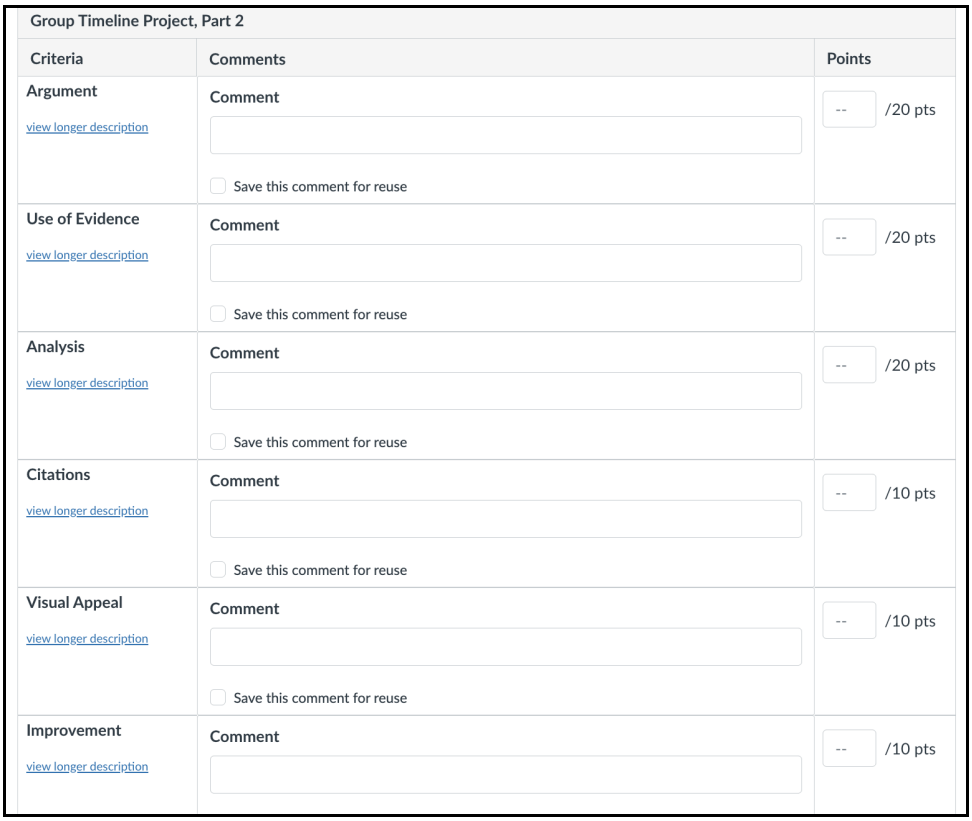


Figure 5. Timeline built by students for HIS 315K

Student projects were assessed using a rubric that examined their ability to craft a thesis statement, to use primary and secondary source evidence well, to analyze historical events, to demonstrate connections between events using connection arrows; and to cite their sources correctly and accurately. They were also assessed on visual appeal and improvement across the semester. See below for a sample rubric:



Group Timeline Project, Part 2

Criteria	Comments	Points
Argument view longer description	Comment Save this comment for reuse	-- /20 pts
Use of Evidence view longer description	Comment Save this comment for reuse	-- /20 pts
Analysis view longer description	Comment Save this comment for reuse	-- /20 pts
Citations view longer description	Comment Save this comment for reuse	-- /10 pts
Visual Appeal view longer description	Comment Save this comment for reuse	-- /10 pts
Improvement view longer description	Comment	-- /10 pts

Figure 6. Sample rubric for assignment HIS 315K

Based on student grades, comments, and University assessment, Ozanne has found ClioVis to be exceptionally successful at meeting course learning objectives. At the end of the timeline project, students in HIS 315K provided individual reflection on what they learned from doing the timeline project. One student explained that the timeline assignment was his "favorite project in the class," because he could track the history of slavery "all the way to… the Emancipation Proclamation." Another student observed that she made a connection "between the French and Indian War and the Treaty of Greenville," which "increased her knowledge of the topic even more than before."[11] While not all students individually reported enthusiasm for the assignment, these anecdotes show that many students not only enjoyed the assignment but gained important knowledge and skills from completing it.

Independent evaluation of the ClioVis timeline assignment also shows that it is successful as a teaching tool. In spring 2024, Ozanne's courses were assessed by UT's office of Academic Assessment and Evaluation to ensure compliance with state-mandated Core Curriculum learning objectives. She provided assessment personnel access to the timeline assignments of HIS 315K, and independent evaluators scored each piece of student work according to a rubric to determine its success at meeting Core Curriculum competencies.

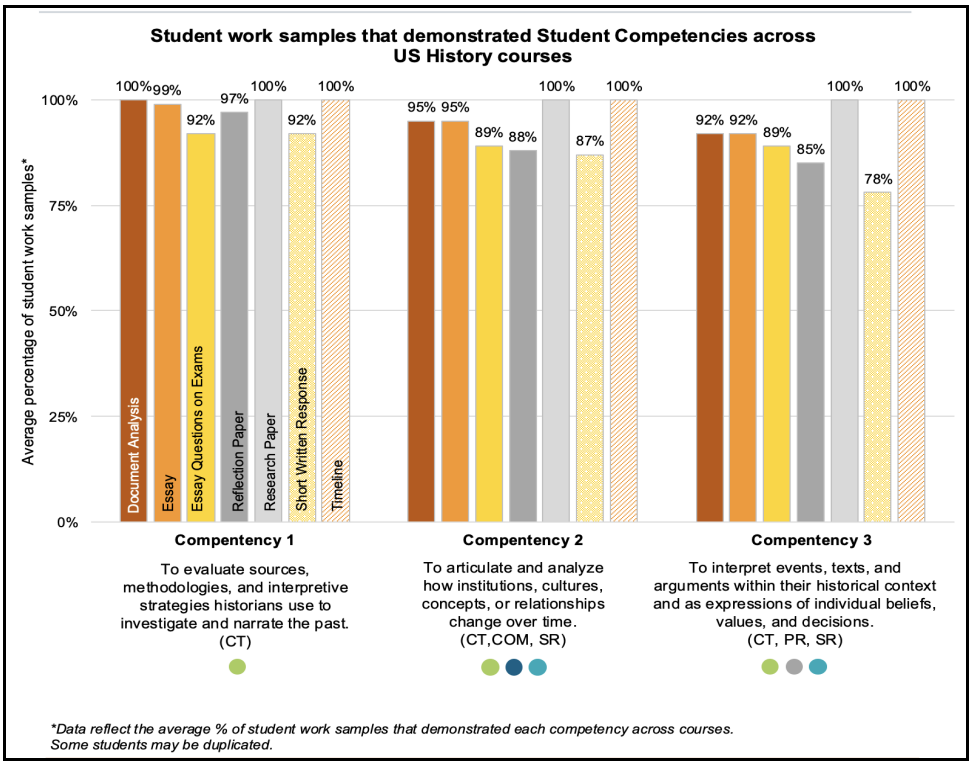


Figure 7. Evidence of ClioVis impact on student learning outcomes

The data from Ozanne's classes and the others who used ClioVis showed that the timeline assignments met each of the three Core Curriculum competencies 100% of the time, which was the best result of all other submitted assignments tied with traditional historical research papers. See the image above for results of this study that surveyed the work of over 1800 students.[12] As Dr. Golding's work reveals, ClioVis also offers great potential in supporting academic research.

CLIOVIS FOR RESEARCHERS

Dr. Golding utilized ClioVis to visualize the arguments for his dissertation "*The Price of Doing Business: Foreign Capital and the Venezuelan Oil Industry (1936-1976)*.". This case, which presents a literary analysis of oil-related narratives from the foundational period of the industry (1920s-1930s), demonstrates how researchers can use digital technologies to visualize their work in similar ways.[13] Golding's ClioVis project explores five novelists' narratives about foreign capital during the first half of the twentieth century. Their stories shaped the views of the Venezuelan public, especially politicians, and nurtured a desire for full government control over the country's natural resources. This process crystallized in 1976 with the state takeover of the sector and the exit of American and British petroleum firms from the industry. But why were their narratives so influential? ClioVis organizes information about each novel and their authors' backgrounds to address this question.

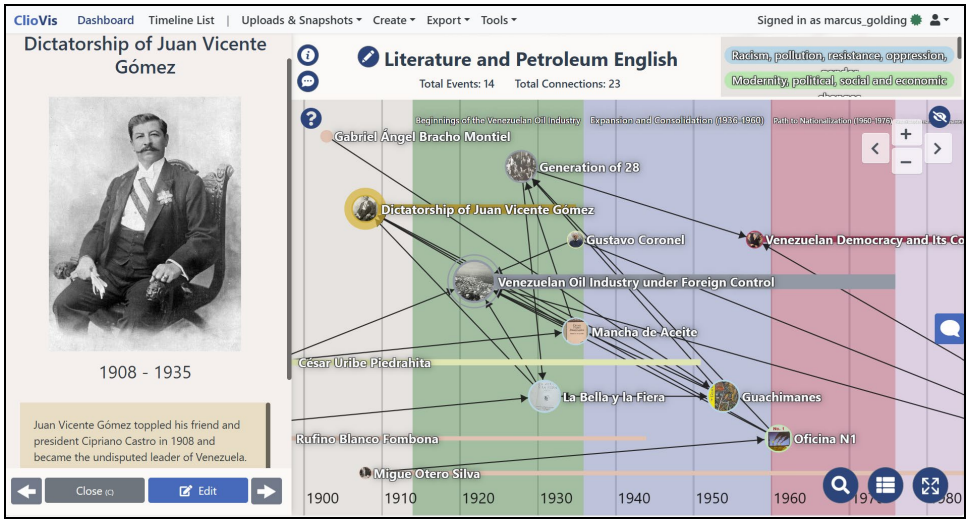


Figure 8. Full timeline with nodes, connections, eras and categories.

Figure 8 depicts different nodes (events) with the titles of the novels, their authors and the connections to political and economic events such as the dictatorship of Juan Vicente Gómez (1908-1935), under which the oil sector developed.[14] Each node displays a portion of the research and references to the sources used. In the background, eras organize the timeline. Labels in the upper-right corner categorize nodes by themes. Finally, connecting lines symbolize relationships between events. This visual organization helps address the research question, pointing to the issue of temporal contextualization.

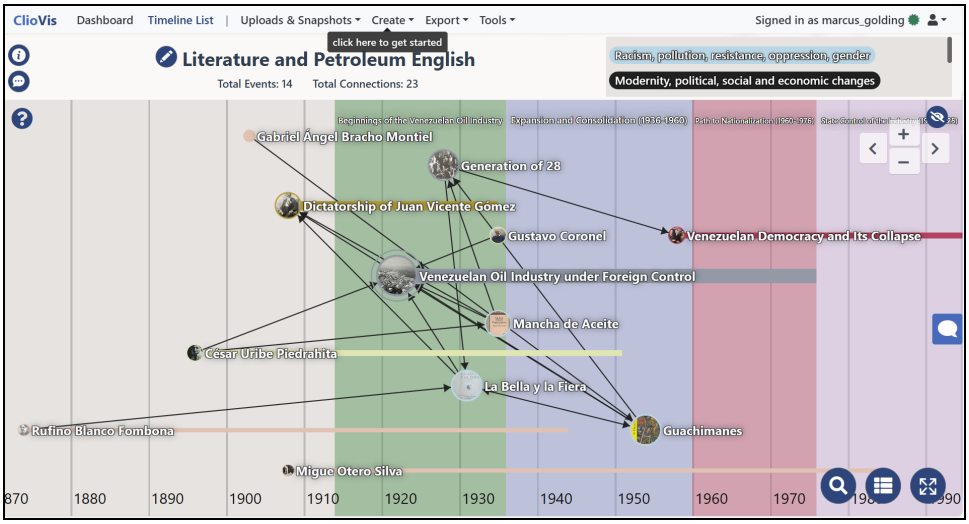


Figure 9. Timeline with green category off.

Labels are important to highlight trends in data. One set of labels identifies common topics in these novels. The second focuses on the professional background of the authors. By toggling them on and off, the timeline reveals that of the five authors, three deal with themes such as racism, oppression, environmental degradation and company sponsored repression of local workers.[15] Only two novels — *Oficina N°1* and *El Petróleo Viene de la Luna* — portray neutral or positive topics such as modernity, development, and social mobility. Their career trajectories also provide telling evidence.

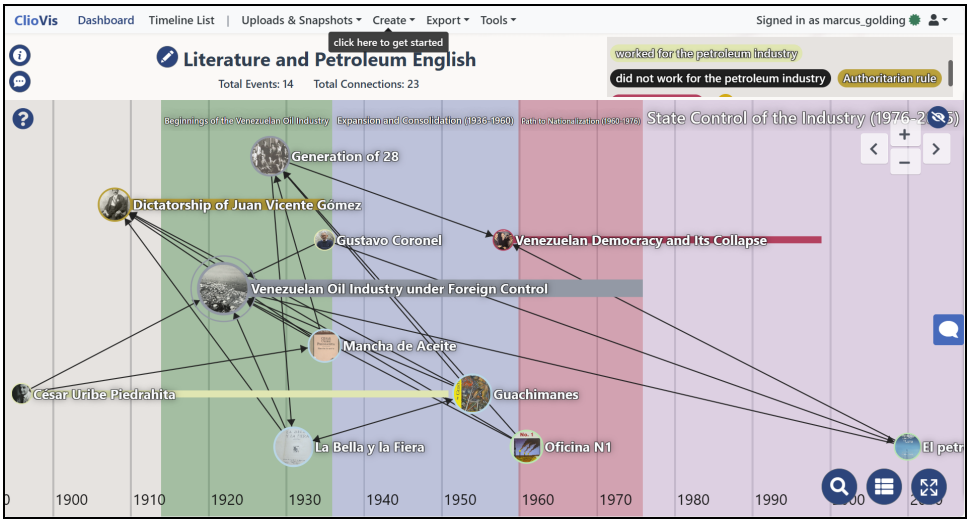


Figure 10. Timeline showing only authors that did work for the industry.

When looking at the professional backgrounds of the five novelists, only two worked for the industry (César Piedrahita and Gustavo Coronel), and only one (Gustavo Coronel) spent his whole career in the hydrocarbon sector. The other three writers became political opponents of Juan Vicente Gómez who persecuted them.[16] Two of them (Miguel Otero Silva and Gabriel Bracho Montiel) even joined the proscribed Communist Party of Venezuela.

The thoughtful use of labels uncovers patterns in the timeline that point towards the issue of contextualization as a plausible answer to the initial research question. The literary discourse portraying foreign petroleum firms in Venezuela as a negative force stems from the specific temporal space, the —1920s-1930s— where four of the five authors situate their narratives.[17] All of them capture the foundational reality of the industry, marked by company abuse and disregard for local concerns, and tolerated by the dictatorship of the time. These writers were mature and politically active during this period. In contrast, Gustavo Coronel, born in 1935, explores a different Venezuelan petroleum industry, starting his novel in the 1950s. His perspective is more personal and less militant. His novel highlights the corporate reform process that led to substantial socio-economic investments and the promotion of Venezuelans to all levels of the corporate hierarchy by American and British petroleum firms from the late 1930s until the nationalization of 1976. The timeline thus reveals how the political and professional backgrounds of these novelists shaped their largely negative perceptions of foreign capital.

To summarize, ClioVis contextualizes the foundational (and largely negative) literary discourse about the petroleum industry in Venezuela by analyzing five novels and their authors. The timeline also highlights alternative narratives. *El Petroleo Viene de la Luna*, written by a Venezuelan from a later generation, reflects a reformed industry. Coronel, who spent his entire career as an oil engineer and manager, portrays foreign capital as supporting social mobility, education, economic development and infrastructure. ClioVis contrasts this perspective with the dominant literary discourse visualized in the timeline. This research case demonstrates how ClioVis enables researchers to surface narrative tensions, trace shifts over time, and situate alternative perspectives within broader historical contexts.

CONCLUSION

One goal Dr. Bsumek had in creating ClioVis was to help students *see* how ideas, events, and interpretations are connected—and in doing so, to *practice* the skills of writing, evaluating evidence, and making arguments. These skills are meaningful and useful beyond the classroom.

Since its creation in 2018, ClioVis has been used by over 35,000 students across disciplines—from history and political science to environmental studies and public health. The students using ClioVis have collectively plotted over **700,000 historical events**, made more than **135,000 analytical connections**, and written over **80 million words** in the process. But this isn't just a story about numbers. As the assessment data from Dr. Ozanne's and many other instructor's classes show, it's a story about student engagement and skill building, pedagogy and active learning.

While the platform is primarily a teaching tool, Dr. Golding demonstrates how ClioVis can also be used as a professional research and writing tool. His literary analysis of the Venezuelan petroleum industry serves as just one example of the tool's capabilities. Researchers can take different approaches, such as creating social network maps to contextualize interactions within specific historical periods. They may also use the software to outline historiographic debates, illustrating how conflicting interpretations have developed over time and where their own arguments fit within the scholarly discourse. Regardless of the task, ClioVis assists users in visualizing arguments and making complex ideas more accessible to non-specialist audiences.

NOTES

[1] Seifert Colleen M et al., "Causal Theory Error in College Students' Understanding of Science Studies," *Cognitive Research: Principles and Implictions* 7, no. 1 (2020): 1–20.
[2] Jason A. Heppler, "ClioVis: Visualizing Connections." *The Journal of American history (Bloomington, Ind.)* 2024: 827–828. Web.
[3] Link to the timeline. https://embed.cliovis.com/v2/app/e/snapshot_ef89f2e5-69a3-4fa5-a6a5-06f5b1646fd8/
[4] Christopher Eaton, "Mind Maps and Metacognition in Writing Pedagogies," *Writing & Pedagogy* 14, no. 3 (2022): 373–89; On history pedagogy, Ashley Admiral, "The History Timeline Chart," *Agora* 47, no. 1 (2012): 53–59.
[5] Nel Liezel, "Students as Collaborators in Creating Meaningful Learning Experiences in Technology-Enhanced Classrooms: An Engaged Scholarship Approach.," *British Journal of Educational Technology* 48, no. 5 (2017): 1131–42; Carlos Vaz de Carvalho and Merja Bauters, eds., *Technology Supported Active Learning: Student-Centered Approaches (Lecture Notes in Educational Technology)*, 1st ed. (Singapore, Springer, 2021).
[6] "Core Curriculum Student Competencies. Office of Executive Vice President and Provost, The University of Texas at Austin," accessed July 22, 2025, https://generaleducation.utexas.edu/core-curriculum-courses/student-competencies.
[7] Flower Darby and James M Lang, *Small Teaching Online: Applying Learning Science in Online Classes* (Jossey-Bass, 2019).
[8] D. Randy Garrison et al., "Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education," *The Internet and Higher Education* 2, no. 2 (1999): 87–105.
[9] See, for example: Darby and Lang, *Small Teaching Online*, 5-25; L. Dee Fink, *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses* (Jossey-Bass, 2013); Celia Oyler et al., *Be the Architect of Your Inclusive Classroom: Building Communities for Learning* (Teachers College Press, 2025), 68-87; Grant Wiggins and Jay McTighe, *Understanding By Design* (Association for Supervision & Curriculum Development, 2005).
[10] This timeline was created in Dr. Ozanne's Spring 2025 HIS 315K course at the University of Texas at Austin. A link to the completed timeline can be found here: https://embed.cliovis.org/v2/#/app/e/snapshot_f7adadfe-8113-4970-94fc-5a4898f67990/timeline/13
[11] These quotations came from students in professor Ozanne's HIS 315K course at the University of Texas at Austin in the Spring 2025 semester.
[12] UT Office of Academic Assessment and Evaluation, *Undergraduate College Advisory Committee, US History 2024 Core Curriculum Assessment Draft Report* (Austin, Texas, 2024).
[13] José Amador Rojas Saavedra, "El Motivo Del Petróleo En La Novela Venezolana," *Revista Cambios y Permanencias* 8, no. 2 (2017), http://revistas.uis.edu.co/index.php/revistacyp/article/view/7770/7952. Rojas Saavedra offers an in-depth examination of oil as a theme in Venezuelan literature, analyzing it through multiple critical perspectives; For further information, Golding's pre-recorded presentation for Panel 238, *"Thinking in the Digital Age: ClioVis in the Classroom and Beyond,"* at the Prague Research & Teaching Conference, features two additional case studies conducted using ClioVis. The first involves developing a social network map to track the social mobility of locals within the foreign-owned petroleum industry. The second presents the "transformational labor activism" argument concerning management-labor relations in the Venezuelan hydrocarbon sector, contrasting it with the prevailing scholarly consensus.
[14] The novelists and their works are as follows: Gabriel Ángel Bracho Montiel, *Guachimanes* (1954); Rufino Blanco Fombona, *La Bella y la Fiera* (1931); Miguel Otero Silva, *Oficina N°1* (1961); Gustavo Coronel, *El Petróleo viene de la Luna* (2010); and César Uribe Piedrahita, *Mancha de Aceite* (1935). Piedrahita, the only non-Venezuelan author on the list, was a physician from Colombia who spent a brief period working in the Venezuelan oil industry in 1923
[15] Myrna I. Santiago, *The Ecology of Oil: Environment, Labor, and the Mexican Revolution, 1900-1938* (New York: Cambridge University Press, 2009); Neveen Abdelrehim, Josephine Maltby, and Steven Toms, "Corporate Social Responsibility and Corporate Control: The Anglo-Iranian Oil Company, 1933—1951," *Enterprise & Society* 12, no. 4 (2011): 824–62; Touraj Atabaki, Elisabetta Bini, and Kaveh Ehsani, eds., *Working for Oil. Comparative Social Histories of Labor in the Global Oil Industry: Comparative Social Histories of Labor in the Global Oil Industry* (Cham, Switzerland: Palgrave Macmillan, 2019); Edgar Andrés Caro Peralta, "'El Petróleo Es de Colombia y Para Los Colombianos': La Huelga de 1948 En Barrancabermeja y La Reversión de La Concesión

de Mares," *Anuario de Historia Regional y de Las Fronteras* 18 (2013): 383; Robert Vitalis, *America's Kingdom: Mythmaking on the Saudi Oil Frontier*, New Updated Edition edition (London: Verso, 2009); Timothy Mitchell, *Carbon Democracy: Political Power in the Age of Oil* (London: Verso Books, 2013); Elana Shever, *Resources for Reform: Oil and Neoliberalism in Argentina* (Stanford, California: Stanford University Press, 2012); Luis Van Isschot, *The Social Origins of Human Rights: Protesting Political Violence in Colombia's Oil Capital, 1919–2010* (University of Wisconsin Press, 2015). Several scholars have examined the same themes of labor exploitation, workers' repression, environmental pollution and racial hierarchies that Venezuelan novelists critiqued in the early twentieth century.

[16] B. S. McBeth, *Juan Vicente Gomez and the Oil Companies in Venezuela, 1908-1935* (Cambridge University Press, 2002); Brian S. McBeth, *La Política Petrolera Venezolana: Una Perspectiva hHstórica, 1922-2005* (Universidad Metropolitana, 2014). McBeth has conducted a detailed study of the origins of the Venezuelan petroleum industry, emphasizing the political and financial alliances that tied foreign capital to the interests of Juan Vicente Gómez and his regime.

[17] Most of their narratives are set during the 1920s and 1930s, which constitute the main temporal focus of the analysis.

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RHIZOMATIC MAPPING IN DESIGN RESEARCH: A CREATIVE METHODOLOGY FOR VISUAL INQUIRY AND PEDAGOGICAL PRACTICE

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INTRODUCTION

Design research engages with knowledge across diverse domains—including user experience, history, culture, emerging technologies, and materials—and draws on varied sources such as images, interviews, and cultural observations. Within this diverse context, visual representation plays a crucial role. Visual methods for organizing research help analyze and structure findings, externalize thinking, and generate insights that can inspire new design concepts.

Traditional visual tools—such as concept maps, mind maps, and affinity diagrams—assist designers in structuring research findings and simplifying complex information. However, these methods often rely on hierarchical structures or fixed categories, making them less effective for research that draws from diverse sources and evolves unpredictably. This rigidity can limit the discovery of connections between distant ideas, a capacity essential for innovation in design practice.

At the same time, AI-driven tools are increasingly integrated into design research, offering powerful capabilities for processing large datasets and identifying statistical patterns. Yet these systems typically remain confined to visualizing semantic relationships within textual data and struggle to capture the contextual relationships that span diverse knowledge domains. There remains a clear need for methods that preserve human sense-making, intuition, and creative synthesis.

This paper introduces rhizomatic mapping as a practical visual method for design research that addresses these challenges. Rooted in Gilles Deleuze and Félix Guattari's concept of the rhizome, rhizomatic mapping offers a non-hierarchical, decentralized approach to analyzing, organizing, and presenting complex research inputs. It adapts to shifting lines of inquiry, embraces contextual understanding of interdisciplinary data, and supports creative ideation.

Developed over several years of teaching master's-level students in Industrial Design, rhizomatic mapping is presented here not only as a research method but also as a pedagogical tool. Through two case studies, this paper demonstrates how rhizomatic mapping enables design students to conduct research, manage complexity, navigate ambiguity, and generate innovative design concepts in both individual and collaborative settings.

CHALLENGES IN CURRENT RESEARCH REPRESENTATION METHODS

Design research engages with knowledge across diverse domains and draws upon a wide range of materials—including images, interviews, market data, historical records, and cultural observations—to inform creative practice.[1] It operates at the intersection of multiple disciplines, where varied forms of knowledge are often combined in ways unique to each project. The purpose of assembling such diverse inputs is to fuel creativity, generating novel design concepts that address real needs, open new possibilities, or rethink existing solutions.[2]

In this context, visual representations are vital not only for documenting information but also for helping researchers make sense of complex data and sparking new ideas. Traditional visual tools—such as concept maps, mind maps, affinity diagrams, empathy maps, and perceptual maps—structure complex research findings into simplified visual schemas that help navigate the richness of qualitative data.[3]

However, these frameworks can impose rigid structures that limit the flexibility essential in design research. They often oversimplify complexity, forcing insights into fixed categories and losing overlapping meanings and ambiguities crucial for nuanced design thinking.[4] Strict clustering can also obscure connections between distant ideas—connections that often spark new design concepts.[5] Additionally, frameworks built on predetermined paths or hierarchical structures may steer research toward predefined solutions rather than supporting open-ended exploration.[6]

Beyond these traditional methods, recent years have seen growing interest in artificial intelligence (AI) platforms that extract semantic relationships from large datasets to support design research and its visual representation.[7] These semantic networks are typically constructed by analyzing co-occurrences of words within extensive text corpora, resulting in visual maps of established relationships. Advocates argue that machine-driven tools can overcome human limitations in managing complexity and volume, delivering speed and consistency where manual mapping might be laborious and prone to error.[8]

Yet AI tools largely operate within textual boundaries, making it challenging to integrate the diverse forms of knowledge that characterize design inquiry.[9] Moreover, AI-generated maps often reflect existing semantic structures derived from past data, risking the omission of contextual nuances and inadvertently reinforcing established biases.[10]

These limitations—present in both traditional visual frameworks and AI-driven methods—highlight the need for research approaches that preserve flexibility, integrate multiple media and knowledge types, and actively support human intuition and creative synthesis. Rhizomatic mapping offers one such alternative.[11]

RHIZOMATIC MAPPING AS A DESIGN RESEARCH METHOD

Rhizomatic mapping is a visual research method grounded in Gilles Deleuze and Félix Guattari's concept of the rhizome. Drawing inspiration from botanical rhizomes—horizontal root systems that spread unpredictably and without hierarchy—Deleuze and Guattari proposed the rhizome as a metaphor for human thinking. In their philosophy, thinking does not follow a hierarchical structure but unfolds through interconnections, expanding in multiple directions and constantly shifting as new ideas emerge.[12]

Although the idea of rhizomatic mapping has previously appeared as a metaphor[13] or visual practice,[14] it has not yet been fully formalized as a systematic research method.[15] This paper advances it as such, translating the philosophical concept into a practical tool for knowledge representation and creative exploration.

Rhizomatic mapping involves arranging research materials on a physical or digital surface. Items are placed in proximity when their meanings are related within the evolving context of the research and are color-coded to indicate themes or types of knowledge. Connections between items are depicted as lines that visually define the nature of the relationship—for instance, causality, ambiguity, or mutual influence. These visual links help articulate and reveal the interrelationships among research insights. As the map evolves, new findings are added, inviting reinterpretation of existing elements. Connections may shift, strengthen, weaken, or acquire new meanings as understanding deepens.

Beyond merely documenting knowledge, rhizomatic mapping empowers designers to foster creative ideation by forging unexpected connections. This process is facilitated by "prompt markers"—visual indicators that connect seemingly unrelated nodes to inspire innovative thinking. Prompt markers allow researchers to deliberately create links between distant domains that have not yet been connected. In doing so, they reveal design opportunities that might remain hidden in conventional methods or in AI-driven analyses focused on semantic relationships. For example, a designer investigating sustainable furniture might place a prompt marker on insights from materials science, cultural symbolism, market trends, and user rituals—connecting them to spark novel and unexpected design concepts.

While rhizomatic mapping prioritizes human understanding and creative synthesis, it can be meaningfully augmented by AI. Once a map has developed sufficient complexity, it may be uploaded to an AI platform to extract patterns or highlight overlooked connections. Designers can also instruct the AI to suggest new marker groupings that link distant insights and open unexpected pathways for ideation. Rather than viewing AI and rhizomatic mapping as mutually exclusive, they can function as complementary tools, combining the breadth and speed of computational analysis with the interpretive depth and creative intuition of human designers. Together, they expand the designer's capacity for innovation and discovery.

Lastly, while rhizomatic mapping shares visual elements like nodes and connectors with systems mapping, it differs fundamentally in purpose and application. Systems mapping is based on defined relationships and feedback loops to support analysis and problem-solving in fields such as policy or ecology.[16] In contrast, rhizomatic mapping remains open-ended, emphasizing creative associations, ambiguity, and the exploration of unexpected pathways rather than stable, prescriptive models.

STUDENT CASE STUDIES IN RHIZOMATIC DESIGN RESEARCH

Over several years, I have implemented rhizomatic mapping as a core method in the "Rhizomatic Research" course, a one-semester offering in the Master's Program in Industrial Design at Bezalel Academy of Arts and Design.

Throughout the semester, each of the 10–12 students investigates a chosen object through multiple lenses, including history, culture, user behavior, technology, materials, and market context. These findings are continuously integrated into personal rhizomatic maps. Each map encompasses the full scope of the collected information and evolves organically as students gather, connect, and expand insights across diverse domains. As research progresses and the maps grow, students begin using prompt markers to explore how distant insights might connect and inspire new design directions.

In this course, rhizomatic maps are created on paper rather than digital platforms, a choice that offers distinct advantages. On paper, students can view the entire map at once, avoiding the limitations of digital screens, which require constant panning to navigate. Additionally, working by hand fosters a more tactile and intuitive engagement with the research material, supporting spontaneous connections and deeper cognitive involvement.

At several points during the course, students share their maps with their peers. In these sessions, they analyze each other's maps, offer new insights, identify overlooked connections, and propose additional prompt markers. This ongoing exchange transforms the classroom into a collaborative research studio characterized by dialogue, critique, and adaptation.

For the final assessment, each student presents the design concept(s) they have chosen to develop, along with the insights connected by prompt markers that led to these ideas. Assessment, conducted collaboratively by peers and the instructor, focuses on the richness of the collected information, the coherence of the map's structure, and the quality of the evidence supporting the proposed concepts.

The following two case studies illustrate how rhizomatic mapping operates in practice, demonstrating its capacity to support innovation in both contemporary design and prehistoric contexts.

Case Study 1: Dafna Gofer's Rhizomatic Map of a Paintbrush research

Dafna Gofer investigated the paintbrush as a design object from multiple perspectives, examining the physical attributes of a variety of brushes; observing artists at work; conducting interviews about user preferences; and consulting scientific literature on neurological and technological aspects of brush use. As her rhizomatic map expanded, she used prompt markers—numbered 1–18 in red—to connect distant research findings and generate new design ideas. As shown in Figure 1, at the top of her map, small sketches of these ideas appear in red frames.

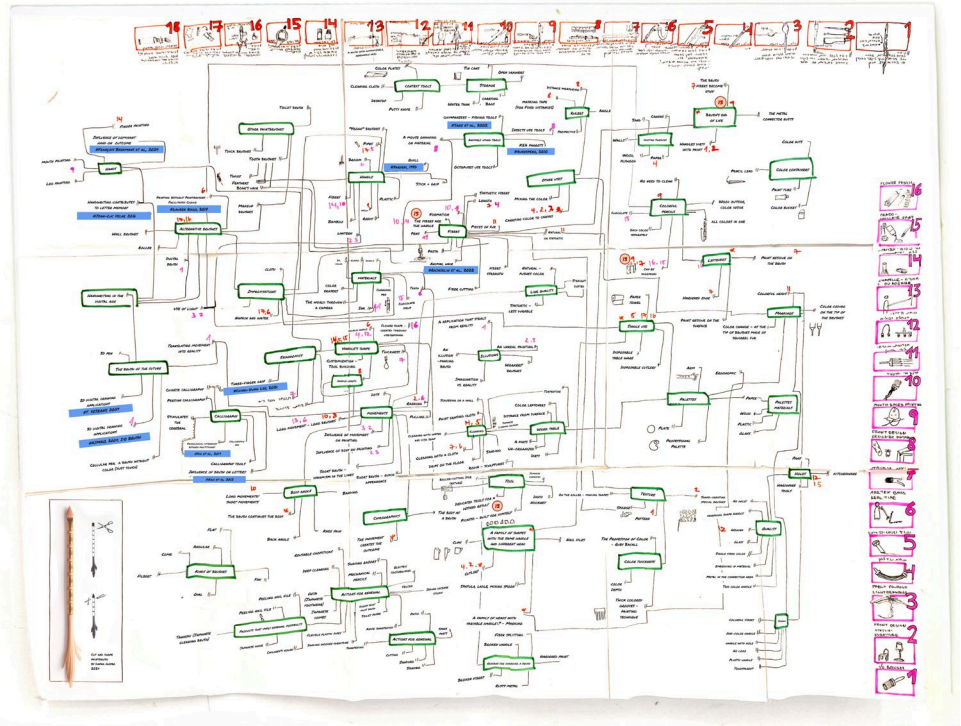

Figure 1. Dafna Gofer's rhizomatic map of paintbrush research.

Prompt marker "13" connected four key insights: brushes often become unusable when their fibers stiffen or degrade; some artists grip brushes directly by the fibers for specific techniques; many artists craft personalized tools to achieve specialized effects; and, unlike brushes, pencils can be renewed simply by sharpening.

From these connections, Gofer developed concept number 13: a customizable and renewable paintbrush. In this innovative design, the fibers themselves serve as the handle, secured by a series of

repeating metal clamps. When the brush head stiffens, the artist removes a clamp to expose fresh fibers and trims them into a desired shape. She also created a visual rendering of this concept to illustrate its features, shown in the bottom left corner of the map. Through rhizomatic mapping, she reconceived the paintbrush as a living tool—adaptable to the artist's changing methods and offering a longer lifespan.

During class discussions, peers proposed further innovations inspired by her map, such as wearable digital brushes or sustainable modular designs. These collaborative dialogues enriched Gofer's individual research and creativity.

Case Study 2: Oded Fridlend's Rhizomatic Map of the Megiddo Bowl

Oded Fridlend investigated a unique archaeological artifact from the ancient city of Megiddo in northern Israel—a wide ceramic bowl featuring a hollow vertical cylinder at its center, topped by a small goblet. Dating to the Middle Bronze Age (circa 17th century BCE), it remains the only known object of its kind, and its original function is still unknown.

Rather than treating this uncertainty as a puzzle to solve, Fridlend approached the artifact's unknown purpose as an opportunity to explore possible uses through design-led inquiry. Using rhizomatic mapping, he examined how the bowl might combine functions, guided by insights from historical parallels and functional analogies. As shown in Figure 2, he mapped nodes for various potential uses—including cooking, incense burning, illumination, pest control, and ritual activity. To investigate how these functions might intersect, he connected insights using prompt markers—small icons shaped like the Megiddo bowl, stamped onto the map's connectors. Through these markers, Fridlend tested how disparate functions could coexist in a single object, transforming archaeological ambiguity into innovative design interpretations.

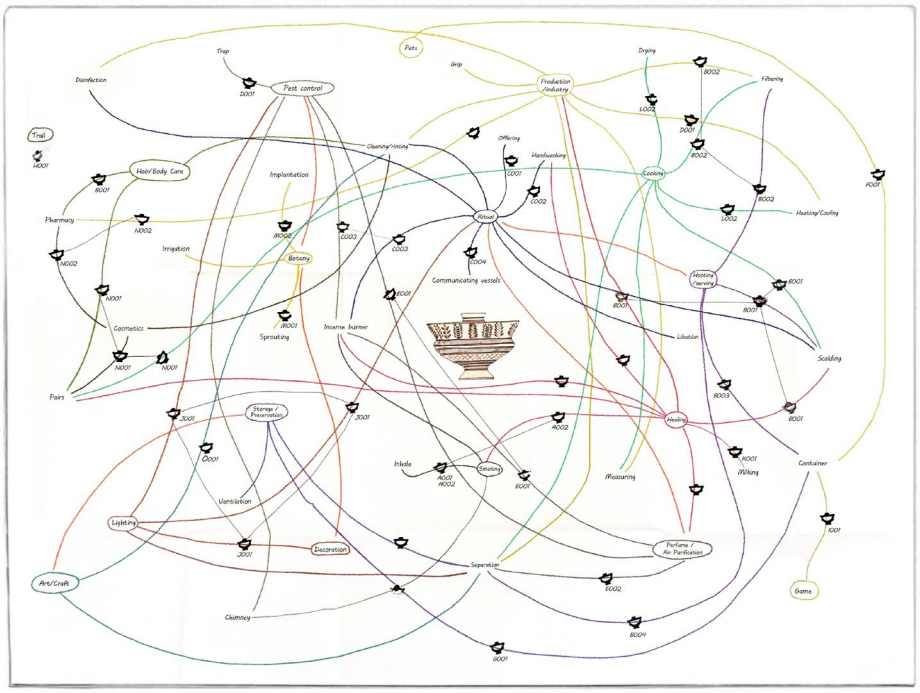

Figure 2. Oded Fridlend's rhizomatic map of the bowl from Megiddo.

He then developed physical prototypes to explore how these combined uses might function in practice (four examples are shown in Figure 3). These diverse functionalities, revealed through rhizomatic

mapping, challenge single-purpose interpretations and suggest new ways of imagining the artifact's cultural role.

Fridlend's research ultimately grew into **Most Likely**, an exhibition at the Israel Museum (June 7, 2024 – February 4, 2025), curated by him with Nurith Goshen. Featuring mysterious artifacts and designers' speculative interpretations, the exhibition demonstrated how rhizomatic mapping can reimagine the narratives of ancient objects.[17]

Figure 3. Oded Fridlend's Prototypes: A001, J001, C001, L001.

PEDAGOGICAL INSIGHTS

The case studies of Dafna Gofer and Oded Fridlend illustrate how rhizomatic mapping functions as both a research method and a pedagogical tool, supporting design innovation across diverse contexts—from reimagining everyday objects to interpreting archaeological artifacts. In both cases, creative breakthroughs emerged not through linear processes but from insights mapped non-hierarchically, enabling researchers to test unexpected connections and generate original directions.

A key advantage of rhizomatic mapping is its ability to help students explore their research findings as a cohesive network of interconnected meanings rather than as isolated facts. This deepens their understanding of complex topics, enabling them to navigate complexity and appreciate multiple perspectives with greater confidence.

Working with rhizomatic maps also builds comfort with with ambiguity and fluidity of meaning. Contemporary design pedagogy emphasizes reflective practice and navigating uncertainty, particularly in an era of abundant data and rapidly evolving challenges.[18] Rhizomatic mapping supports reflective practice and comfort with uncertainty, transforming research into a dynamic visual process where thinking is externalized and open to critique and revision. Students gradually learn that ambiguity is fertile ground for inquiry. Discussions often focus on how to keep the map open to reinterpretation rather than prematurely locking insights into fixed conclusions. Through mapping, students gain confidence in managing evolving information and making informed judgments amid evolving conditions.

In addition to mapping the interconnections within their research findings, rhizomatic mapping empowers students to discover unexpected links—a skill proven to enhance creativity and innovation in design education.[19] For example, in Gofer's project, the challenge of a paintbrush's lifespan became a catalyst for innovation when connected to insights about artists customizing tools or gripping brushes directly by their fibers. This demonstrates how rhizomatic mapping fosters problem-

finding alongside solution-making.[20] Similarly, Fridlend's product concepts for the "Most Likely" exhibition at the Israel Museum exemplify how rhizomatic mapping extends beyond traditional problem-solving, opening new directions for creative exploration.

Equally important, rhizomatic mapping fosters collaborative learning, essential in design education for nurturing creativity[21] and preparing students for professional practice.[22] Sharing maps invites classmates to explore one another's research landscapes, offer critiques, and propose fresh directions. At Bezalel, these sessions often spark lively discussions where peers identify overlooked connections or suggest unexpected crossovers between projects. Students learn to give and receive constructive feedback, broadening their perspectives and sharpening their research. These dialogues frequently generate ideas that might not emerge through solitary work, reflecting the collaborative studio culture central to contemporary design education.

As computational tools advance, educators might also experiment with integrating AI into rhizomatic mapping exercises. By analyzing evolving maps or suggesting novel prompt markers, AI can help students discover unexpected insights while preserving human understanding and creativity.

CONCLUSION

Rhizomatic mapping emerges from this study as both a research methodology and a pedagogical practice well suited to the complexities of contemporary design inquiry. By adopting a non-hierarchical, dynamic approach to organizing knowledge, it addresses the limitations of both traditional visual frameworks and AI-driven tools for mapping semantic relationships. While conventional methods often impose rigid categories, and AI analyses remain confined to textual patterns, rhizomatic mapping embraces the fluid, associative logic of human creativity. It enables researchers to navigate complexity, uncover unexpected connections, and open new directions for design—reflecting the interpretive and generative nature of the designer's mind.

The case studies of Dafna Gofer and Oded Fridlend illustrate rhizomatic mapping's practical capacity to transform complex research into innovative design concepts. Gofer's investigation of the paintbrush shows how mapping distant insights can support the development of entirely new design proposals. Friedler's exploration of the Megiddo bowl, in turn, reveals how rhizomatic mapping empowers designers to engage with ambiguity, turning unanswered questions into speculative prototypes. These projects underscore that the value of rhizomatic mapping lies not only in representing knowledge but in actively provoking creative insight through non-linear connections.

Pedagogically, rhizomatic mapping equips design students with tools to manage complexity, tolerate uncertainty, and cultivate reflection—qualities increasingly vital amid rapidly shifting social, technological, and ecological conditions. The practice of sharing and critiquing rhizomatic maps fosters collaborative learning environments where dialogue and collective sense-making thrive. Students learn to perceive research as an evolving landscape rather than a path toward fixed conclusions, embracing openness as a productive space for inquiry rather than a barrier to be resolved.

Beyond the classroom, rhizomatic mapping holds significant potential for professional practice in design. As designers confront challenges that transcend disciplinary boundaries, the ability to synthesize diverse knowledge sources and recognize latent connections becomes essential. Rhizomatic mapping helps maintain openness and adaptability while keeping the designer's creative judgment central to the research process. Moreover, as rhizomatic maps visually capture the human understanding of contextual relationships, AI tools can be integrated to further empower designers. Designers can upload the map into an AI tool for analysis and actively direct it to suggest prompt markers that might yield innovative design opportunities.

Not merely a pedagogical tool, rhizomatic mapping is proving its value in professional contexts, where it supports design teams in aligning diverse perspectives, navigating complex problem spaces, and fuelling creativity. As both a method and a mindset, it offers designers and organizations a systematic way to sustain innovation, harness collective intelligence, and remain agile in a rapidly changing world.

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DECOLONISING THE CLASSROOM AT 24 FRAMES PER SECOND: LIBERATING LANGUAGE TEACHING THROUGH FILM

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INTRODUCTION

This research's objective is to evaluate the significance of film within the language classroom and explore how its potential for innovative language instruction corresponds with the broader objectives of decolonising the curriculum.[1] We aim to contribute to the critical thought, debate and study of the emerging and rapidly growing scholarship on decolonisation[2] within educational institutions, including curriculum design, and classroom practice, with a particular focus on language teaching in both the UK and South African contexts. In our ongoing research using film to teach not only languages but a range of curricular disciplines, we observe the democratising and inclusive potential of film expanding in reach and depth.

Traditional language teaching usually prioritises grammar and vocabulary at the cost of the rich cultural and communicative contexts that make language alive, real and meaningful. Incorporating short films and films into the curriculum offers learners a creative and engaging way to connect language with culture through play, experimentation, and critical reflection. However, the films used in language classrooms often do not fully embrace this potential by for example still predominantly centring European or Western perspectives; where French is frequently taught through the lens of French national cinema, while overlooking its diverse African contexts, even though more than 60% of French speakers worldwide live in Africa.[3] This paper explores how film - short film in particular - can support the process of decolonising language education by adapting pedagogical approaches in classroom teaching. For our research in this regard, we will be focusing on the teaching of French in South Africa and Mandarin language in the UK and ask whether decolonising the language curriculum should mean adapting to local contexts or be pursued as a global approach, while considering how cinema and non-Westernized/Eurocentric resources can reshape students' engagement and experience of language learning.

DECOLONISATION IN EDUCATION

The struggle to end colonial education systems, combat institutional racism and deconstruct Eurocentric knowledge structures has persisted across various historical periods. Education institutions throughout history functioned as colonial and imperial tools to train students who

sustained dominant power structures and cultural control systems. The organisational frameworks and educational curricula of African universities which implement Western models continue to display colonial elements. Student-led movements in South Africa including #RhodesMustFall[4] and the 'Why Is My Curriculum White?' initiative[5] have revived discussions about how white Western perspectives dominate education while non-Western knowledge systems remain underrepresented. The university curricula in both Global South and North face increasing criticism because they do not demonstrate the student body's diversity or serve the societies they are meant to serve.[6]

The most important knowledge according to South African philosopher Achille Mbembe[7] involves questioning dominant narratives while developing critical thinking skills and deep understanding of power and colonialism's complex histories. Mbembe argues that decolonisation needs to go beyond rejecting Western canon because it requires a complete overhaul of knowledge production and its goals. Mamdani[8] demonstrates that epistemological examination functions as a core element of decolonial approaches because it reveals which knowledge systems gain approval and which ones experience marginalisation. Le Grange[9] argues that any authentic decolonising initiative must alter both the material and organisational aspects of educational programs.

The reading list has emerged as a central battleground in this academic discussion. Bird and Pitman[10] explain how curriculum critiques show how reading lists fail to represent student diversity because they function as tools that maintain exclusive standards. Within the UK educational discourse there is ongoing debate about what types of knowledge are worth teaching. Hall[11] supports a cultural studies approach to education which challenges traditional knowledge structures to validate popular culture teaching methods for higher education democratisation. According to Hoadley and Galant[12] The curriculum serves as a space for identity development so it must represent various knowledge approaches to achieve full inclusivity. The fundamental transformation of education system foundations stands essential for genuine decolonisation efforts since modifying surface content is insufficient.

Decolonising the language classroom

Recent research into Modern Foreign Language (MFL) teaching in English schools highlights many failures when addressing concerns around diversity, history, politics, and engagement in the colonial legacies[13] of target language countries[14] with creativity, personal and emotional engagement with authentic texts[15] cited as hugely lacking.

A blind spot with regard to meaningful, diverse cultural history has also been identified as a key failure, in an MFL curriculum where Eurocentric cultural examples are favoured, European literary texts are centred and black narratives are virtually non-existent in textbooks, and where they are present, largely consigned to the topic area of festivals.'[16]

The case for film

Film can foster engagement, experimentation, and identity work, offering a learner-centred, culturally responsive pedagogy.[17] In this evidence-based practice, films are not simply used to illustrate ideas or as an addition to curricular learning, they are embedded, as a text, in classroom teaching to achieve specific learning outcomes tied to curriculum specifications. This affinity with language learning can be attributed to the capacity of film to be a truly immersive, authentic, and meaningful cultural document that can engage and emotionally connect a learner to the human experience of another culture, by way of sympathy and identification, in very real, and visceral ways. Keiran Donaghy outlines five key benefits of using film in language education:[18]

- Motivation

● Authentic language
● Visuality
● Intercultural communication
● Variety & flexibility

In the context of a decolonising approach to language teaching, it is films intercultural communication that has potential for such an intervention. Donaghy argues that watching films made and set in other cultures can help them to develop an awareness of sameness and difference which is essential to cultural understanding. Film's variety and flexibility can also offer a more inclusive method of classroom teaching enabling space for diverse learning styles.

This research aims to assess practical examples of how film is able to function as an intervention in decolonising the language classroom, particularly aligned with Panford's[19] suggestions for incorporating the histories and culture of the target language countries, and the need to review teaching materials to include meaningful representations, and which challenge racial stereotypes.

METHODOLOGY AND SUMMARY OF CASE STUDIES

We have chosen the two separate case studies, and different contexts, to enable a wider approach to this work, and to consider common themes and outcomes that we hope will go towards considerations of a more global outlook to decolonising practice and understanding within education, Mandarin teaching in the UK, and French teaching in South Africa. We used a mixed-method approach, combining textual analysis, qualitative and quantitative research:

● Textual analysis to explore how film can offer meaningful representational intervention in the Mandarin language classroom.
● Qualitative data from interviews with university students: explored emotional engagement, cultural recognition, identity connection, and critical reflections on language learning.
● Quantitative surveys administered post-viewing (One Year African Francophone short films programme) to measure shifts in students' perceptions of the target language, culture, and colonial legacies.

Case Study 1: Chinese language films - centring modern cultural experience in Mandarin language teaching

Chinese Mandarin is a relatively recent entry into the UK curriculum's MFL subject area and has in recent years grown to stand alongside French, Spanish and German as one of the popular language options for schools from KS2 to KS5.[20] As European languages share more Western cultural norms with the UK, Mandarin language teaching can be considered a vital gateway into learning about non-western culture for UK learners, with history and traditions a considerable thematic focus when connecting UK learners to Chinese culture in Mandarin classrooms. Curriculum topics under these themes such as family and festivals can often lean towards more traditional configurations of Chinese life in these contexts. Likewise, Chinese culture in the UK mainstream is often represented via historical dramas, martial arts, and dynastic fantasy, that lean heavily into Orientalist and western constructions of China and Chinese people and culture. For example, the Chinese film that achieved the biggest box office success in the UK in the past 20 years is Ne Zha 2,[21] an animated fantasy set during the Shang dynasty, that combines the visual spectacle of historical legend and martial arts. Ne Zha 2 and indeed the first instalment Ne Zha[22] follow in the wuxia martial arts tradition that has long been a popular depiction of east Asian culture in the West. The hugely popular China-Hollywood co-productions of the early 2000's such as Crouching Tiger, Hidden Dragon,[23] and Hero[24] reinforced existing Orientalist stereotypes by creating a monolithic cultural representation via blending the visual

spectacle of Chinese traditions with constructionist narratives of a backwards culture entrenched in mythology.

Amid the huge popularity of films such as this, there is little space in the mainstream for modern, realistic, human representations of diverse Chinese voices and experiences.

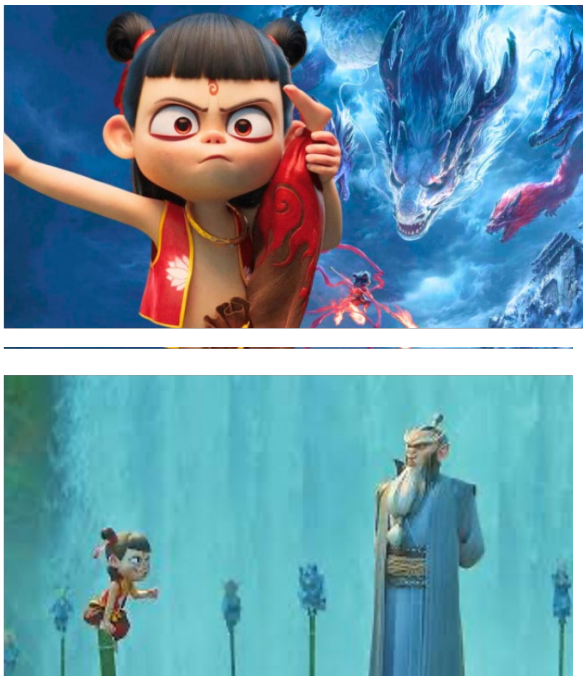

Figure 1. Ne Zha 2, Yang, 2025

It is important therefore to create space in the Mandarin language classroom for stereotypes to be challenged via modern, realistic representations. The need for classroom texts that show positive, diverse, meaningful representations is a crucial intervention for challenging these existing stereotypes and offering learners the opportunity to connect to modern Chinese experiences.

Showing modern Chinese films in the language classroom provides an opportunity to centre Chinese subjectivity due to the opportunities inherent in film being closer to cultural immersion especially when viewed in a cinema. Taking a film from the Mandarin schools programme at the BFI, which is delivered in partnership with the UCL Institute of Education Confucius Institute, 'What is Peppa?'[25] is an example of how film as a text can intervene with meaningful representations in language teaching. What is Peppa? is a China produced, Mandarin language short fiction film first shown in China in early 2019. At just 6 minutes long, and available to watch for free online in the UK, it is therefore very accessible for classroom teaching. It centres on Li Yu Bao, who lives alone in a remote, mountainous region in Hebei, China, and the barriers he encounters when attempting to find out the meaning of 'Peppa' that his city-dwelling grandson requests for a new year's gift.

As a text that can teach learning outcomes as required on the English curriculum at Key Stages 3 and 4, What is Peppa? is narratively, visually, and thematically useful to show learners representations of families, and new year traditions, such as gift giving, cooking traditional foods, and other festival signifiers like fireworks and decorations.

However, on Li Yu Bao's journey, we also learn about the disconnection he feels to his family, and their life in the city, represented by the lack of mobile phone reception in the mountains, and the vast cultural and economic disparity between the lives of people living in rural China and their urban

counterparts. We discover that Spring Festival is the one time in the year that many separated families reunite, and the emotional weight that this can bring. Learners may relate to the nuanced relationships between family members and therefore experience the 'sameness and difference' that Donaghy points out is essential for authentic cultural understanding when learning a language.[26] Offering relatability, complexity and insight via a main character whose life and journey reflects a particular human experience in modern China, a film like What is Peppa is a vital opportunity to open valuable discussions with young learners about real and important concerns affecting families in China today. Therefore, representing the textual intervention that Panford recommended would offer meaningful representations in language teaching.

Classroom activities that embed film as a text, such as exploring how film uses certain cinematic techniques to tell its story, offer the intercultural communication that has potential for meaningful representations to flourish in the language classroom. There are a range of speaking, listening, reading, writing activities that have been developed around the use of short films in the language classroom, over many years of research and teaching practice. Activities such as these can be adapted and built upon when approaching using any film in any language teaching context.

Listening:

● Activities that focus on listening to sound only (image off) are an effective way of engaging learners in the film as a text, by focussing solely on one filmic element and considering how sound (dialogue, sound effects, music, etc.), without being guided by image, helps tell a story in film.

● Hearing different dialects and accents, colloquialism, authentic dialogue, and conversational language, is hugely impactful for meaningful representation, whilst enabling learners to consider the diversity of the target language.

Reading, writing, and speaking:

● Offering screenshots or freeze frames to analyse, and asking learners to write backstories for the characters, based on costume and mise-en-scene. This activity supports critical thinking skills and considerations of what the lives of the characters might be like, their environments, jobs, schools, relationships, etc.

Creative and critical thinking skills:

● Writing scripts or storyboards for additional scenes/alternative endings and adopting the perspective of a character when writing first person dialogue – who are they? What would you do/say/feel/think if you were them? What different scenarios might occur and why? Particularly when role-playing, these activities encourage learners to adopt various perspectives in the film, and a creativity and fluidity in language learning that focuses on the human experience.

Case Study 2: Francophone cinema as a critical pedagogical tool for French language teaching in South Africa - Confronting a colonial past.

This research examines how Francophone African (short) films transform French language education in postcolonial regions through their direct engagement with colonial heritage. The case study took place at a South African university, taught by a white European French woman, while critically examining colonial language education in Africa. In South Africa, French is one of the most taught European foreign languages. Nevertheless, its teaching continues to prioritize France, its culture, and its institutional identity, consequently supporting a Eurocentric narrative that rarely recognises France's colonial legacy over the African continent. Concurrently, South Africa universities operate within inherited colonial epistemologies, as noted by scholars such as Achille Mbembe,[27] Jonathan Jansen[28] and Sabelo J. Ndlovu-Gatsheni.[29] The student-led movements #RhodesMustFall and #FeesMustFall[30] have increased the need to decolonise both institutional frameworks and language

education systems. Students at the University of the Witwatersrand (Wits) must prove their proficiency in one of South Africa's indigenous languages[31] to access European language courses, which demonstrates how language policy functions as a political instrument of redress in post-apartheid South Africa.

Key Challenges in Language, Identity, and Colonial Legacies

During both apartheid and post-apartheid eras, language was used as a colonial instrument.[32] The two main languages used for instruction remain English and Afrikaans which maintain the existing power structures, exclusionary practices and assimilation processes based on white supremacist beliefs. In parallel, French keeps a similar role in many African countries, having been initially imposed due to colonisation it is embedded in institutional and cultural frameworks. Consequently, French cannot be seen as a neutral language. It bears histories of domination, as well as the suppression of indigenous languages, often causing linguistic trauma. African contexts are too often positioned as passive recipients of the French language, ignoring the lived realities and cultural activity of African Francophone speakers. This is particularly noticeable in South Africa, where English and Afrikaans have encountered processes of local reappropriation. Teachers of French face the challenge of developing pedagogical approaches that present French as a language reflecting African realities, hybrid identities, and postcolonial critique.

Film selection and pedagogical purpose

African Short films were selected at Wits University to address these challenges. The films present postcolonial critique (e.g. Cabascabo, Lumumba, La Mort du Prophète) while showcasing cultural and linguistic identities beyond France (e.g. Kaka Yo, Sur la Dune de la Solitude, Le Retour d'un Aventurier, Hyènes, Quartier Mozart). The films demonstrate Africa's linguistic diversity by using Wolof, Lingala and Arabic alongside French. Through this approach students learn French not as an exported European product but as a language shaped, transformed and blended by African contexts.

Figure 2. KAKA YO, Sébastien Kamba, 28min, Congo (Brazzaville), 1965

Figure 3. LE RETOUR D'UN AVENTURIER, Moustapha Alassane, 40min, Nigeria, 1966

Data analysis: curriculum as identity formation

The research findings appear within the framework of South African discussions about curriculum decolonisation through the work of Ursula Hoadley and Jaamia Galant.[33] The authors demonstrate that authentic decolonisation requires knowledge of curriculum spaces where identity formation occurs together with critical analysis of how knowledge production systems and social relations impact identity development in decolonial contexts. The French language classroom requires this approach because French is among Africa's five most spoken languages[34] while the continent holds 3,000 languages and dialects[35] and maintains its position as the world's youngest growing region.

The integration of Francophone African cinema transforms French into a contested hybrid language which learners experience through diverse African narratives told in multiple languages. The pedagogical method places French within a Pan-African context which enables students to experience stories that support their histories and perspectives and develop critical thinking about their linguistic and cultural identities.

Impact and learner perceptions

The first survey results showed students mainly linked French to France while connecting it to traditional French cultural elements. The Francophone African film collection showed students that French exists as a living language which reflects African realities instead of being confined to European cultural standards. Numerous students found that this transition eliminated their static or foreign perceptions of French which created space for both connection and critique and additional potential transformation. Through the films students observed African youth handling colonial heritage while navigating linguistic mixtures alongside youth self-identity in a way that mirrored their personal interactions with English and Afrikaans in South Africa.

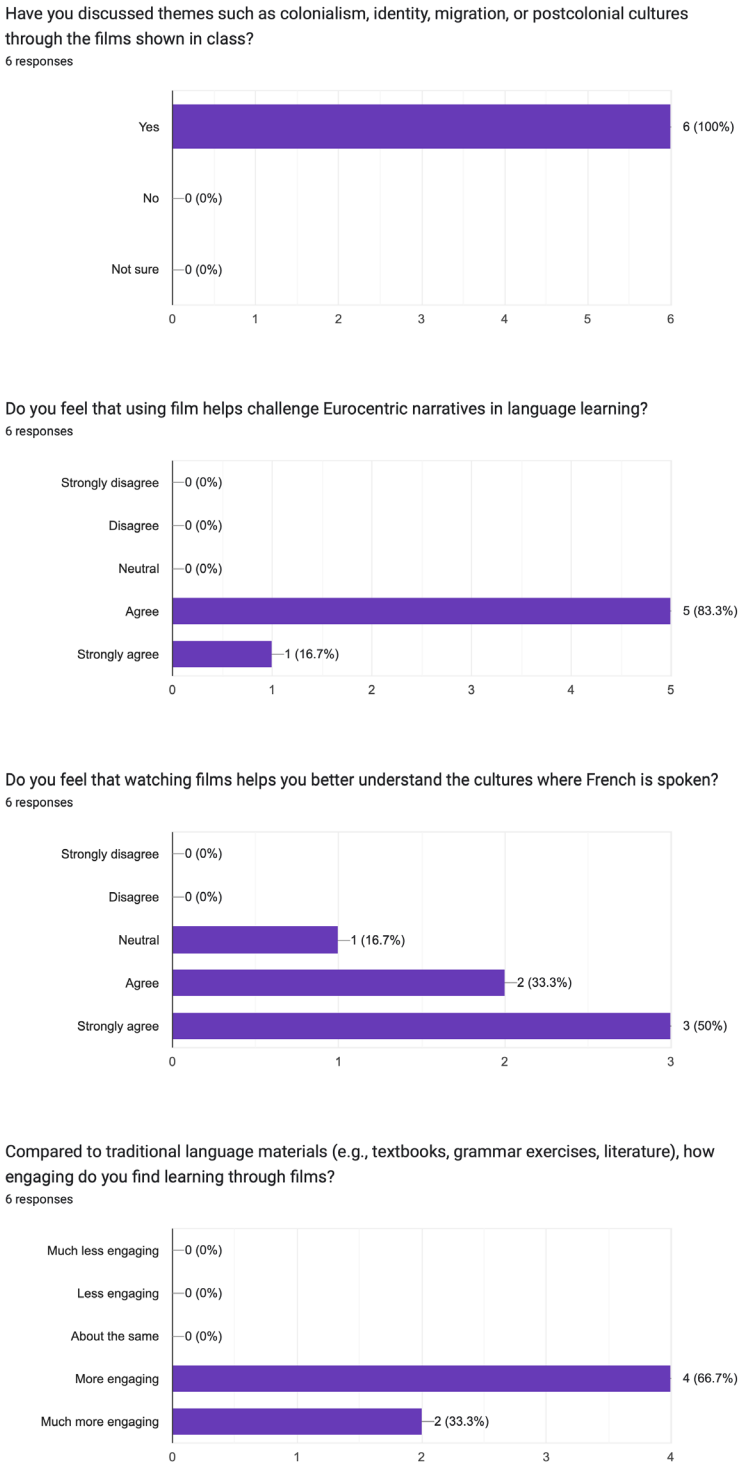

Figure 4. Results from a survey based on 6 randomly selected students.

Film language, emotional engagement, and classroom practice

Through cinematic elements close-ups, non-linear storytelling, multilingual dialogue and vivid depictions of city and country life, the films showed intimacy and emotion and disrupted stereotypes. The classroom techniques were employed through student-led activities which included performing

characters' conflicts, creating alternate versions of scenes, studying multiple language dialogues and developing storylines past the film. Through these educational methods students evolved from passive learners into active creators of meaning and identity.

The classroom activities demonstrated that students acquired a new understanding of French as an active language which African people have taken control of and revitalised through their historical experiences and creative activities. Student motivation toward learning French surged dramatically because they became emotionally and intellectually invested in the material. Film as a learning tool helped students connect language education to their immediate social environment and historical and personal experiences.

Theoretical implications

The research data aligns with essential ideas from postcolonial theory. Through his writing Frantz Fanon[36] explains how colonial languages work to maintain psychological control yet they also serve as tools for resistance. The films created a 'third space' where French acted as a tool to recover subjectivity instead of maintaining subjugation. The classroom stands as a postcolonial intersection according to Achille Mbembe's work because students fight against imitative practices while using language to create their own expressions of power.

The analysis positions Francophone African cinema inside French language education at South African schools to show how postcolonial critique alongside film practice and student-centered learning methods can challenge Eurocentric perspectives while building alternative approaches to understanding the global language. Through this method students can understand how English and Afrikaans history in South Africa relates to linguistic power which leads to cultural evolution and empowering educational practices.

CONCLUSION

The research findings show that the use of Francophone and Mandarin films as a pedagogical tool in language classes provides an effective method to break away from Eurocentric storytelling. The films presented local perspectives which challenged common stereotypes by showing the multifaceted nature of African and Asian experiences. The cultural mirrors functioned to help students identify common colonial and resistance histories alongside identity development which strengthened their emotional and intellectual connections to the target languages. Through this approach French and Mandarin moved from being distant foreign languages to becoming living languages that reflect the diverse cultural and geographical backgrounds, mixed identities and agency of their speakers. Through the film-based teaching approach students learned to recreate scenes while adopting different character viewpoints and trying out multilingual conversations which developed their creative skills and analytical thinking. Students experienced recognition through the learning process because the materials showed them in a more authentic way than traditional textbooks did. The evidence from both quantitative and qualitative data confirmed that students developed new perspectives about the languages and their cultural connections. The classroom evolved into an environment where students transitioned from outside observers to active contributors of an expanded cultural story that included everyone.

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HISTORICAL AND THEORETICAL PERSPECTIVES OF PLAY

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INTRODUCTION

Play is recognized as a vital part of healthy child development by both the education community and healthcare professionals. The American Academy of Pediatrics (AAP) states
that play is essential to the cognitive, physical, social, and emotional well-being of children.
and youth."[1] Children require sufficient time to play for healthy growth and development in all areas. The AAP recommends a "prescription for play" at every well-baby checkup.[2] However, due to the current focus on academic standards in American schools, educators often feel pressured to use more didactic teaching methods with young students in preschool and primary grades instead of providing play-based lessons and adequate time for unstructured free play.[3]

Historical Perspective of the Study of Play

Throughout history, many influential thinkers have discussed the importance of play, including free play and playful learning within formal education systems. From the earliest historical records, scholars and educators have recognized that environments, teachers, and experiences shape children's development, and great minds have explored the meaning of childhood play, especially in the early years.[4]

Ancient Studies of Play

The ancient Greek scholars—Socrates (470-399 BCE), Plato (428-328 BCE), and Aristotle (384-422 BCE)—were among the first to offer a philosophical view of play. Modern educators note their work has endured for more than 70 generations.[5]

Socrates was a renowned scholar, and his Socratic method of questioning is still used in classrooms today. His student, Aristotle, introduced the concept of *eudaimonia,* which translates to human striving.[6] Aristotle's protégé, Plato, was among the first to discuss the education of young children. In this passage from the ancient Greek volume, *Republic,* Plato states, *the beginning is the most important part of any work, especially in the case of a young and tender thing; for that is the time when character is being formed*.[7]

Furthermore, Plato highlighted the impact of play and experiential learning, which he articulated in his writing. He believed that observation of play was central to developing an understanding of human expression.[8] Plato alluded to the significance of play when he said, *you can discover more about a person in an hour of play than in a year of conversation.* [9]

Perspectives of Play During the Age of Enlightenment

The Age of Enlightenment refers to the period between the seventeenth and eighteenth centuries in Europe. It is recognized as an era of progress, marked by innovations in art, philosophy, and politics. The Enlightenment also included educational reform, including ideas about play.[10] Educational scholars from that time include John Amos Comenius, (1592-1670), Jean-Jacques Rousseau (1712-1778), John Locke (1632-1704), Johann Heinrich Pestalozzi (1746-1827), and Friedrich Froebel (1782-1852).[11]

As a scholar in Poland during the Enlightenment era, John Amos Comenius (1592-1670) (Komensky), advocated for universal education to improve society. Due to his significant contributions to the educational system, he became known as the Father of Modern Education.[12] He wrote *The School of Infancy*[13] *Sense Education,*[14] and *Orbis Pictus.*[15] His work has had a lasting impact on the perceptions of the learning process and the field of education.[16]

The French author, Jean-Jacques Rousseau (1712-1778), also helped shape educators' mindsets with his book, *Emile,* which described a boy who could choose activities based on his interests.[17] His educational philosophy in the eighteenth century aligns with many modern ideas about play-based curricula, emergent curriculum, and the project approach.[18]

The English philosopher, John Locke (1632-1704) also contributed to educational reform and the theory of the social benefits of play with his book, *Some Thoughts Concerning Education.*[19] He believed that play was vital to the educational process, as elucidated in the following passage, "they must not be hinder'd from being children, or from playing, or doing as children, but from doing ill; all other liberty is to be allow'd them."[20]

The Swiss educator, Johann Heinrich Pestalozzi (1746-1827), established a school in a Burgdorf castle that offered self-paced learning and free play.[21] Pestalozzi emphasized the importance of recognizing the joy in learning and included playful activities since "play is a natural gift, propensity, or inclination of children, and following its dictates would result in a free-play approach" for successful education.[22]

The philosophy of Pestalozzi is reflected in his influential books: *Leonard and Gertrude* (1781),[23] and *How Gertrude Teachers Her Children* (1801).[24] He uses these stories to offer an alternative to the punitive approach towards discipline that was widely practiced at that time. He suggested that parents and teachers should use love and kindness instead of harsh words and punishments to control children because he believed that children learn best through a balance of the head, heart, and hands.[25]

Friedrich Froebel (1782-1852) was a German educator who studied mathematics, geology, botany, and surveying, but he is best known for his work with young children and for coining the term Kindergarten. Since Froebel believed that children flourish in nature, he sought a name that would align with the idea of a natural setting. Thus, he created the concept of Kindergarten to represent an appropriate environment for young children, a place where they could thrive.[26] During his apprenticeship with Pestalozzi, Froebel studied how children learn and was inspired to bolster their development. From these insights, he developed a set of educational materials and a corresponding curriculum that included songs, chants, hand rhymes, and playful activities.[27] Froebel called his educational materials "gifts" and designed them to be introduced to young children in a specific order to maximize the benefits. By designing a playful curriculum and specific educational materials, he was effectively communicating his belief that all children have the right to play.[28] To ensure proper implementation, he also developed a teacher preparation program for teaching methods that emphasized a specific order for the presentation of the gifts, a gentle approach to guidance, and a respect for the child's instinct to engage in imaginative play.[29]

Additionally, Froebel valued free play and stated, "play at this time is not trivial, it is highly serious and of deep significance."[30] When Friedrich Froebel promoted a playful approach to early education centered on self-directed experiences, he paved the way for educators to implement new methods of teaching. Through his writings, curriculum, and original learning materials, Froebel provided advanced insights into how children think and learn.[31] Froebelian principles have inspired many educational models, including the Montessori Schools, the Waldorf Schools, and American public-school kindergartens [32]

Over a century later, Rudolf Steiner, who was inspired by both Pestalozzi and Froebel, developed the spiritual philosophy of anthroposophy. Steiner believed that anthroposophy represents a harmony of the mind, body, and spiritual aspects of humans, and he used this philosophy as the foundation for his educational vision when founding the original Waldorf School in 1919 in Stuttgart, Germany.[33] Steiner's curriculum model, based on the principles of anthroposophy, is central to Waldorf Schools, and teachers aspire to balance the head, heart, and hands in their daily activities.[34]

COGNITIVE, SOCIAL, AND CULTURAL PERSPECTIVES OF PLAY

In the early twentieth century, German theorist Karl Groos (1861-1946) attracted many scholars studying play by proposing that the playful behaviors of humans and animals share essential similarities. As a philosophy professor at the University of Basel, he initially examined the theories of evolutionary biologist Charles Darwin (1809-1882) and then studied play from an evolutionary perspective. In his two books, *The Play of Animals* (1898) and *The Play of Man* (1901),[35] Groos presented the practice theory of play, which asserts that play serves to develop vital life skills. [36]

Groos described play as a catalyst for innovation and invention because it stimulates the brain to think creatively and encourages the development of new ideas. Additionally, since playful behaviors promote cooperation, children engaged in play can work together to brainstorm ideas.[37] Groos stated that, although play often seems senseless and can even be a drawback because it is noisy, risky, and energy-consuming, it serves adaptive purposes by helping immature creatures develop the skills they will need as adults.[38]

The Italian physician Maria Montessori (1870-1952) was a notable early childhood educator whose influence is reflected in the many schools worldwide that bear her name. Dr. Maria Montessori was the first Italian woman to earn both a medical degree and a doctorate in Anthropology, but she is best known for her work as an educator. Beginning in Rome, Italy, Montessori recognized the learning potential of children who were living on the streets, and, in 1907, she developed a facility and program to meet their needs.[39] Known as Casa Bambini, the original school was founded on the principles of intentional planning, keen observation, and attentive nurturing. Montessori urged teachers to perceive each child as an individual and to value their unique talents and gifts. She believed that every child learns in their own way and interacts with the world with a playful spirit. [40]

Furthermore, Montessori believed in the "horme" of the individual soul, which she identified as an essential part of the universal life force. She lamented the social conformity and rules that dominate traditional schools because they suppressed the child's spirit.[41] Instead, Montessori advocated for children to have the freedom to play, which would enable them to achieve their greatest feat, to develop as human beings. She expressed her belief that an ideal adult version of one's true self results from a happy and productive childhood.[42]

Montessori acknowledged that the ability to focus and stay on task is essential for brain development and success as a student.[43] When she observed traditional schools, she was distressed by the fact that students often experienced interruptions during the school day, which interfered with their ability to concentrate.[44] To address this issue, she created an educational program that facilitates the

development of attentional skills through self-selected activities. Her program includes puzzles, games, and other educational materials that children can enjoy because "the child who concentrates is immensely happy." [45]

The French psychologist, Jean Piaget (1896-1980) was also a cognitive theorist who has contributed to our understanding of the importance of play.[46] As a peer of both Maria Montessori and Albert Einstein, he was influenced by their work and expanded on their theories with his own scholarly endeavors. Piaget is best known for creating the theory of four stages of development in human cognition. The stages, which are known as sensorimotor, preoperational, concrete operational, and formal operational denote distinctive changes in concept formation and skills that align with the developing child's age.[47]

Throughout his work, Piaget expressed his belief in the importance of free play for healthy development across all the domains. He believed that each stage is characterized by specific cognitive abilities and that children develop unique traits during each stage that can be identified by distinctive play behaviors.[48] His interest in the study of play began when he observed how his own child would engage in actions that seemed to have no clear purpose other than play. Piaget took copious notes and from these and many subsequent observations, he developed theories about how children see the world, solve problems, and develop an early sense of morality through play.[49]

Piaget had a playful approach to research and enjoyed finding results to his questions right up to the end of his life. Piaget affirmed Montessori's statement, that "play is the work of the child."[50] Furthermore, he contributed to the trend towards playful learning by inspiring educators from early childhood through high school to integrate hands-on, minds-on activities into their curriculum. The influence of Piaget is seen in many programs, science education curriculum, and LEGO robotics.[51]

Significance of Social Development through Play

The Russian psychologist, Lev Vygotsky (1896-1934) proposed that cognition develops through social connections. In his theory of the social construction of intelligence, he strongly supports playful interactions for optimal development. For example, he stated, "in play a child is always a above his average age, above his daily behavior. In play, it is as though he were a head taller than himself." [52]

Although Vygotsky died in 1934, most of his work was not accessible to American educators until the late 20th century, when it was translated into English by scholars from Harvard University.[53] Since then, Vygotsky's insights on the role of language in cognitive development have significantly influenced the American education system. Scholars influenced by Vygotsky's social learning theories have affirmed the importance of play and playful actions for cognitive development. Consequently, they developed and implemented educational strategies such as joint problem-solving activities, peer-conferencing, and flexible seating arrangements to promote social interaction.[54]

After World War II, the Italian educator Loris Malaguzzi (1920-1994) led a movement to change society. With the support of many citizens in the city of Reggio Emilia, he sought to reframe the traditional approach to early education and replace it with a child-centered program.[55] Malaguzzi became involved with citizens who were responding to the horrors of war by forming a coalition to create an alternative learning environment for their children. They believed that a hands-on, arts-based program would help young, impressionable minds grow into adults who would choose peace over war.[56]

To achieve this goal, members of the Reggio Emilia community collaborated with Malaguzzi to develop a comprehensive approach that would focus on creative activities and peaceful interactions. As Malaguzzi explained, "our image of children no longer considers them as isolated and egocentric.

Instead, our image of the child is rich in potential, strong, powerful, competent, and, most of all, connected to adults and other children."[57]

Even today, children in Reggio Emilia schools are encouraged to ask questions and are prompted to speculate on various aspects of each topic. Teachers carefully monitor their educational journeys by observing, listening, scaffolding, and documenting student progress with a strong emphasis on social collaboration. Parents are welcome to participate and are invited to attend Reggio Emilia workshops. By meticulously recording each child's ongoing narrative -making thoughts visible- the adults effectively guide meaningful experiences for the children and act as co-learners in the process.[58]

John Dewey (1859-1952) was a renowned American psychologist, political activist, educator, philosopher, and scholar whose work with the Chicago Lab School in the early years of the twentieth century influenced American educational practices. Dewey determined that education begins with play and emphasized a natural approach to education, which involves social interaction and experiential learning. Dewey championed play because he believed that it leads to real and conceptual learning. He believed that the purpose of investigative play is to relate cause and effect.[59]

Dewey advocated for reflective practice in all forms of human endeavors and articulated the notion that children develop the skills to engage in thinking through social play. Similarly, he supported play in the early years because the collaborative behaviors that occur during socio-dramatic play prepare children to enter society by fostering negotiation skills. The use of natural learning environments with real life experiences provided meaningful forms of learning for children. [60]

Perspectives of Play

Johan Huizinga (1872-1945) was a Dutch historian and cultural theorist who wrote extensively about play. After observing animals at play, he theorized that "play is older than culture, for culture, however inadequately defined, always presupposes human society, and animals have not waited for man to teach them their playing."[61] Huizinga examined play in all its different forms-as it relates to language, law, war, knowledge, poetry, myth, philosophy, art- to explain the role of play in civilization.[62] In his book, *Homo Ludens, A Study of the Play Element in Culture*, Huizinga asserts that all play is rooted in culture and has been an essential part of every society throughout human history.[63] As he traced the history of play and the influence of man the player through the Middle Ages, the Renaissance, and the early modern era, he provided insights that have greatly improved our current understanding of human play. Huizinga believed that the desire to play is instinctual and therefore central to our achievements in education, philosophy, science, law, the arts, and psychology.[64]

In his most famous work, *Homo Ludens,* Huizinga identified play as the central activity of human society.[65] According to Huizinga, there are five characteristics of play: "it is free, it is not 'ordinary' or 'real life,' it is distinct from 'ordinary life' both in location and duration, it creates order, it relates to no material interest, and no profit can be gained from it." [66]

Another noted play enthusiast from the twentieth century was the British scholar, Brian Sutton-Smith (1924-2015), who perceived that human play is an adaptive response.[67] He noted that various forms of play evolve over time and occur within cultural context because "play was always intended to serve as a healing function, whether for child or adult, making it more worthwhile to defy the depressing and dangerous aspects of life." [68]

In his celebrated book, *The Ambiguity of Play,* Sutton-Smith discussed the rhetorics of play and described them in terms of the following categories: progress, fate, power, identity, imaginary, self, and frivolity.[69] Within each category, he emphasized the variability of play behaviors and how they connect to survival.[70]

The esteemed educator, Vivian Paley (1929-2019) also contributed to the discourse on play in educational settings with prolific musings on the significance of Kindergarten social play. Early childhood educators consider her to be an expert on language in early childhood education because of her ability to articulate the nuances of child talk, and she provided a model for practice that many educators seek to emulate.[71] Beginning with the publication of her first book, *White Teacher*,[72] Paley highlighted the intricacies of her unique approach to interpreting and guiding play and carefully demonstrated how to serve as a skilled facilitator of the narrative.[73]

Paley developed a system for gleaning insight into the inner workings of play behaviors by utilizing storytelling and story acting as tools for interpreting complex interactions. Paley stated that, during class time, she engaged with the children as an actor in collaboration with dramatic events. She encouraged student conversations, recorded their extensive dialogue, and transcribed data that reflected the "dramatic impulses of play."[74] Later, as Paley listened to the recordings, and read the transcripts, she was able to decipher patterns of social connections and behaviors. When Paley collected anecdotes from the classroom experience, she viewed each snippet as critical data, as a vital part of the whole of that learning community, as a social construct. [75]

Throughout a teaching career that spanned four decades, Vivian Paley continued to publish her reflections on the classroom experience and wrote a total of thirteen books that portray both the narratives of her students and her philosophies of teaching, classroom management, and play. She is distinguished for her efforts to portray inclusion in all her books, especially, *You Can't Say You Can't Play*[76] and *Bad Guys Don't Have Birthdays* [77], which are used as models for promoting equity in classrooms worldwide. Vivian Gussin Paley was a recipient of the MacArthur Genius Fellowship Award in 1989, and her work has inspired countless educators who seek to understand how young children think and learn.[78]

Comparison of Three Theoretical Frameworks of Play

Aspect	Johann Huizinga (Cultural Lens)	Jean Piaget (Cognitive Lens)	Lev Vygotsky (Social-Development Lens)
Main Focus	Play as the foundation of culture and civilization.	Play reflects stages of cognitive development.	Play as a key driver of social and cognitive growth within the child's cultural context.
Core Theory	*Homo Ludens*: human culture emerges from play.	Cognitive Development Theory – play changes with each stage (sensorimotor, preoperational, concrete operational).	Sociocultural Theory – learning occurs in the Zone of Proximal Development (ZPD) through social interaction, mostly during play.
Definition of Play	Voluntary, separate from "ordinary" life, rule-bound, absorbing, non-material in aim.	A natural activity that evolves with age, supporting problem-solving and symbolic thinking.	An imaginative activity that allows children to take on roles and practice real-life scenarios with guidance or peers.
Primary Benefits	Creates shared meaning, rituals, traditions; fosters creativity, identity, and cultural continuity.	Builds logical thinking, symbolic representation, and problem-solving skills.	Develops language, self-regulation, and higher mental functions through social interaction.
Role of Adults	Cultural facilitators and participants in traditions and games.	Provide age-appropriate play opportunities that match developmental stage.	Scaffold play to extend learning and support skill mastery within the child's ZPD.
View on Lifespan	Play is lifelong; adults engage in "serious play" in art, politics, law, and religion.	Play is most crucial in early and middle childhood, changing in form as cognition matures.	Play evolves but remains important whenever social learning occurs, even in adulthood.
Key Work	*Homo Ludens* (1938)[79]	*Play, Dreams and Imitation in Childhood* (1945)[80]	*Mind in Society* (1978)[81]

Table 1.

CONCLUSION

Evidence of the value of play has been reported across generations, and many theorists and scholars highlight the importance of play in healthy child development. However, the widespread popularity of passive activities like video games and other forms of screen time threaten the occurrence of unencumbered free play. Since the emphasis on testing and test preparation has reduced playfulness and creativity in learning in many public schools, educators and policymakers must emphasize the value of play.[82]

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PLAYING IN THE RUINS

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INTRODUCTION

Next year will be the 30th anniversary of Bill Readings' *The University in Ruins*, a book that offers a compelling structural diagnosis of the changing social roles of universities at the end of the twentieth century due to the decline of the nation-state and influences from market capitalism and globalisation.[1] Put bluntly, Readings evidences these changes in the overbearing corporate discourses of "excellence" and the increased use of profit as a yardstick of success – sociologist Sheila Slaughter would go on, only a year later, to call this same cultural shift "academic capitalism."[2] This paper specifically focuses on the strained pedagogical culture of the humanities in UK universities. In the context of the sustained, ruinous state of universities, this paper proposes that "play" – as a ludic means of resilience and resistance – offers valuable alternatives to the current state of further higher education in art and design specifically. It concludes with a case study of playful practices at a private British-accredited university in central Europe.

The Ruins

Over recent years it has been commonplace to read reports of mass voluntary severances, redundancies, and substantial budget cuts in UK universities. These range from relatively small to much larger institutes with long-standing histories and international reputations. Recently, The Guardian reported that "[n]early one in four leading UK universities are slashing staff numbers and cutting budgets."[3] Priyamvada Gopal, a Professor of postcolonial studies at the University of Cambridge, describes these questionable management choices as "cultural and social vandalism, one which will devastate the study and teaching of the humanities."[4]

The humanities are specifically at risk because the success of courses and departments are currently evaluated based on the metrics of the number of students enrolled, the cost per student, and the amount a graduate earns after leaving university. Considering that courses in the humanities and the arts often require a time consuming pastoral-style of teaching, specialist equipment, studio space, and are frequently ranked as having some of the lowest paid graduates, it is unsurprising that these courses are in jeopardy. Then Prime Minister, Rishi Sunak described them as "poor-quality" and "rip-off" university courses because they do not "offer the prospect of a decent job at the end of it."[5]

Framing humanities courses as bad investments, as Education Secretary Gillian Keegan did, reduces studentship to a pernicious kind of consumerism.[6] The consequence is not only the closure of courses and subsequent losses of jobs (academic jobs and prospective graduate jobs) but also a cultural shift in

attitudes towards these kinds of creative courses as a poor use of taxpayers' money and public resources. This overwhelmingly instrumental pretence of education has naturalised the neoliberal impression that courses which fail to compete lack competence and contemporary, material value. Frustratingly, this holds the rhetoric of studentship tightly to concerns about value for money, which is starkly different from concerns about access to quality education; the former concerns the cost of a commodified credential, the latter the cultural value of knowledge.

As such, the predominantly qualitative culture of the humanities is being contorted into something more readily quantifiable, which is not merely a devaluation of the history of the humanities but also a misrepresentation of its value. There are countless instances of this in recent years, perhaps most infamously was the poorly thought out Tory campaign designed to encourage those (implicitly struggling) in the arts to re-skill in "cyber" for a more lucrative career.[7] The campaign was released when public funding for the arts was continuing to be cut whilst at the same time cash incentives were offered to those choosing to study and teach STEM subjects such as Maths, Construction, and Engineering.[8]

Dissent

The persistent hand-wringing of universities claiming to be on a "razor's edge" or at the "brink" or else "near collapse" is insincere doomsaying arguably designed to draw out the state of precarity and therefore deter creative thinking and undermine more left-field approaches to solving this destructive problem. It can not be a coincidence that all the proffered solutions and reforms pursued by well-monied vice-chancellors are so readily compatible with the existing, failing state of the institute: redundancies, severances, (supposedly) new funding models, international franchising of degrees, and so on. This grim reality of university institutes is only possible because risk-averse, market success is the necessary (and seemingly exclusive) alibi lauded by stakeholders. However, since no British public university has ever been forced into closure it is not obvious what would actually happen – thinking of the students in the middle of their degrees, all the academic staff, the half-finished new-builds, and so on. Perhaps it is time to pull back from this dilemma of precarity and think of the state universities are in as an unusual condition of radical possibilities.[9]

If we are to take Bill Readings seriously, we need dissensus. Suspiciously, though, contemporary agonistic oppositions to this dominant perspective are often branded as tweedy idealisms with romantically nostalgic pretentious – qualities Readings adamantly warns against.[10] But with a historical focus we can find playful dissensus recorded in *Radical Pedagogies*, a sprawling archive of alternative modes of education in Architecture.[11] More recently it has also been played out in a critical tone in *Alternative Pedagogical Spaces From Utopia to Institutionalization*.[12] But in a quieter, less radical way, there are also ongoing para-institutes like the Center for Other Worlds in Lisbon, and cottage industry-like satirical organisations like Penny Academy, in Eindhoven that have a more seriously playful bent. These are not replacements for universities, but rather demonstrations that viable alternatives to how knowledge is created, challenged, disseminated and conserved are possible. The qualities they all share is an embracing of and thriving in what would be considered the fallout qualities of a failing education system: the contingent, ad hoc, make-do, DIY, improvisational, dynamic, reactive, self-initiated, and so on. The following section addresses these qualities in more theoretical terms with a specific focus on play in the humanities courses of art and design.

THEORIZING PLAY

This paper argues for the introduction of methods that support play as a way to tackle the ever changing technological and economic landscape of art and design in further higher education. Play is a way to encourage students to explore the affordances and creative potentials of new (and old) tools while still fostering the development of essential work experiences and practical skills, however "play" is a slippery term to define.

In the context of arts education, sociologist Pascal Gielen theorizes play in a social and cultural sense as a liminal zone which creates space for interaction, whether this be with other players or objects, with the rules of play forming through the interaction itself: "the isolated fictional space of play is one of the laboratories of our society, the experimental garden of the social, in which subjects are shaped also, personalities evolve, and roles are distributed."[13] A culture that is open to change and new ideas requires that we question and test the validity of the given rules by interacting in the playful spirit of the game. Approaching education in the arts as a space for play individuates and generates subjectivity rather than pushing us to be a mere cog in the machine, a "dividual" as Deleuze would phrase it. This is especially important since today the "subjectifying" interplay with and against laws, rules and norms occurs alongside "subjugating" algorithms and mechanized interactions which assaults us with stimuli that push us to interact with "content" and other users as a formulaic automated reflex rather than as a reflexive act of responsive social communication.

Gielen considers how the values of play align with three functions of "good education" as outlined by Gert Biesta in *Good Education in an Age of Measurement*, namely, 1) to teach knowledge and skills as a qualification, 2) to introduce students to a set of social, cultural and and political orders of the field and 3) shaping critical and independent thinking.[14] These values have emerged in addition to the more traditional task of art education, to acquaint students with the history of art and aesthetics, to develop the skills to make and exhibit art, or share artistic methods for their cognitive or therapeutic benefits. Aligned with artist and educator Luis Camnitzer's position, art is a search for the "unknown", as such the spirit of the avant-garde introduces "dismeasure" into a culture obsessed with measurement and accuracy.[15] Camnitzer goes on: "[i]n art, pure discovery leads to amateurism, while pure training leads to empty professionalism—good preparation ultimately seeks a balance between them." As such, the unconventional and critical way artists introduce new ideas and perspectives has become the distinctive quality of contemporary art practice which is often valued above technical skills.

Yet while the ideas above offer a sense of how play is entangled in the evolution of forms and expectations of arts education, it also brings us into the midst of the present dilemma: how can arts education fit within the strictures of a global, increasingly monetized and competitive academic system, yet also be expected to bring forth new and innovative perspectives on the world in the avant-garde spirit of dismeasure under current pressures to quantifiably prove their worth? In response to this, Camnizter tells us to seek an ideal orderly balance whilst Gielen shows us the trajectory of what has come before but neither addresses the practical dilemmas associated with less resources in conjunction with a greater push towards efficacy and productivity, as is faced by the vast majority teaching in art and design today.

Play as Method

One open and playful, yet still methodologically coherent, way to encourage students to play as an enrichment of the exploratory journey of art education is abductive pedagogy. Developed by Charles Sanders Pierce, abductive processes seek to create linkages between entities based on resonances which may enable new connections and new unified wholes to emerge.[16]

In the abductive classroom there are no set goals, ideal models, or correct answers. Teachers bring materials, concepts, and methods that are imbued with potential and give students the time, space, and support to explore and find new connections between materials, and the students' own explicit and tacit knowledge is foregrounded. Here, Feyerabend's anarchist principle of "anything goes" — that there are no fixed methodological rules for progress — offers a way for us as teachers to guide students toward new discovery without directing them to adopt already obsolete approaches from the past or to "waste" their time at university ticking off a redundant list of "professional" competencies, merely formalising the ability to demonstrate skills on a surface level rather than deepening knowledge or learning.[17]

To encourage play in higher art education guides students to a path of open-ended discovery where accidents and failure as well as surprises and success guide the process of making, taking artistic thinking in experimental and critical new directions. Play as a method can help spur students to adopt a subjunctive mood of "what if" and make new connections instead of replicating obsolete models that are rooted in problems from the past rather than current challenges.

For art educators the challenge is two-fold, since we must also recognise and challenge the protocols which have been instilled in us through our own art educational journey, and playfully resist the way institutions push us to uphold hierarchical structures and competition within the academic system. Universities praise critical thinking and innovative ideas, however do so within a model that replicates existing social, cultural, and political orders. If one of the roles of art is to question, disrupt, and introduce dismeasure into the status quo, how can we recognise the need for play and make room in our heavy syllabi to playfully break them with abductive approaches? The following section takes Prague City University (PCU) as an example of a university that insists on play.

THE PRACTICAL NECESSITY OF PLAY

Established in 2004, PCU is a private, English-language higher education institution offering British and Czech-accredited programmes across three schools. For this paper, the School of Art, Design and Media (SoADM) takes central focus. Despite its bright public image, SoADM – like many other smaller, private university schools – has a real-world fragility due to its reliance on part-time teaching staff employed on precarious contracts, its year-on-year financial uncertainty, and the external pressures of offering art and design courses in a market-minded version of education. Despite (or perhaps because of) this, SoADM prizes a time-costly style of pastoral teaching, whereby students' academic progress extends beyond equipment-dependent skills transfer to also include the nurturing of social and emotional development.

With exceptionally low staff-to-student ratios as well as high contact hours, there seems to be an abundance of time on SoADM courses, however, space for studio work, exhibitions, and classes is a recurring concern. Students who both desire and are expected to work creatively and collaboratively to cultivate their artistic voices and present outcomes of this process publicly are often met with a scarcity of space. In response, educators independently embrace para-institutional, ad hoc strategies to compensate for these shortcomings. To be clear, this is a necessity, not an obligation. There are instances of curricula being designed around intensive self-initiated workshops interwoven with periods of collective rest, guided critical reflection, and independent planning. It is not idealistic to say that this way of working enables lecturers and students to connect at a level beyond the more familiar "content provider" and "consumer" roles seen in other, less-playful institutes.

In the absence of dependable, institutional structures, interpersonal relations become vital to maintain a contemporaneous relevance for the courses. For instance, lecturers' professional networks are leveraged to design curricula with local workshops, neighbouring institutions, and broader cultural

events to compensate for the lack of space, equipment, and financial support. This playful format demands a high degree of self-organization but transforms the university into a continuously evolving, open-ended, decentralized structure that relies on improvised and temporary solutions (read: the spirit of play). Another example of this is the lack of availability of resources commonly expected on most university-level art and design courses. Traditionally, these are supposed to be resources that mirror the "industry standard" to help further train students for the workplace. However, at this small private institution, there is not a vast catalogue of equipment – from cameras and printers to books and study rooms. Instead, resources are often limited to what is already at hand or privately owned by students and lecturers. Gert Biesta offers an applicable question for this circumstance: "How can we put our desires in dialogue with the reality that exists outside of ourselves?" This question should not justify the lack of resources or be a call for inaction, but rather a catalyst for more meaningful, conscious bonds between our desires and the reality of a university that cannot offer more than the ambiguous qualities of slowness (time abundance), confusion (disorderly blends with informal partners outside of the university), and the unknown (open endedness).

Consequently, the relationship between lecturer and student loses its common hierarchical order and is redistributed as a structure that is more anarchically flat. In this horizontal way, a sense of co-dependence is developed between lecturers and students in which the role of the university is to define the limits of "free activity standing quite consciously outside 'ordinary' life."[18] In this context, play – aside from being a pedagogical tool of resilience – also serves as a way of resisting academic capitalism. Such an approach pushes against the colonizing and capitalist qualities of contemporary education and resonates with broader pedagogical critiques of accelerated learning.

CONCLUSION

As uncomfortable as it may be for lecturers and students to function in a continuous mode of DIY or Provide-It-Yourself, there is an arguable educational value in working with scarcity. In the context of PCU, the dilemma of scarcity becomes a condition for play; for lecturers, whose creativity and patience are now tested to create curricula around what is available so that the lack is not felt as a disadvantage; and for students, who need to share, talk, collaborate, and move away from the "ego-logical" – this is a term used by Biesta to describe the risk of student-centred education – which embraces functioning according to the logic of the ego and its desires. When traditional resources are missing, play fosters relations that create and sustain creative communities and helps to foreground nonmaterial elements that institutions often overlook because they are non-quantifiable: time, attention, care, compassion. At PCU these are necessary parts of a style of pedagogy built around play.

Facing the increasing corporatization of higher education, the tenacity of play at PCU is not a sign of naivety, but of strategic, affective resistance. As resources become increasingly scarce, lecturers are reimaging the classroom by catalyzing new forms of collaboration and self-organization and are embracing slowness and the unknown. Some decide that pedagogical care does not need to be abandoned in the face of systemic constraints. Instead, it can be rearticulated into playful formats that challenge the fractured status quo. Reclaiming play is thus a practical and critical necessity. It demands slowness in a system that accelerates, attentiveness in a culture of distraction and feeling in a world that often privileges detachment. In this way, the university becomes a laboratory for reimagining what education can be: a site for learning and existing differently with each other and with the world we are shaping together.

NOTES

[1] Bill Readings, *The University in Ruins* (Harvard University Press, 1996).
[2] Sheila Slaughter, *Academic Capitalism: Politics, Policies, and the Entrepreneurial University* (Johns Hopkins University Press, 1997).
[3] "Quarter of leading UK universities cutting staff due to budget shortfalls," *The Guardian*, accessed May 20, 2025, https://www.theguardian.com/education/2025/feb/01/quarter-of-leading-uk-universities-cutting-staff-due-to-budget-shortfalls.
[4] "'Cultural and social vandalism': job cut plans at Goldsmiths attacked," *The Guardian*, accessed February 1, 2025, https://www.theguardian.com/education/2024/mar/27/goldsmiths-university-of-london-redundancy-plans.
[5] "Crackdown on rip-off university degrees," *Gov.UK*, accessed February 1, 2025, https://www.gov.uk/government/news/crackdown-on-rip-off-university-degrees.
[6] *Gov.UK*, "Crackdown on rip-off university degrees."
[7] "Government scraps ballet dancer reskilling ad criticised as 'crass'," *The Guardian*, accessed March 25, 2025, https://www.theguardian.com/politics/2020/oct/12/ballet-dancer-could-reskill-with-job-in-cyber-security-suggests-uk-government-ad.
[8] "Local government funding for culture and leisure down £2.3bn since 2010," *Museum Association*, accessed February 15, 2025, https://www.museumsassociation.org/museums-journal/news/2024/08/local-government-funding-for-culture-and-leisure-down-2-3bn-since-2010; "Teachers to get up to £6000 extra to teach vital subjects," *Gov.UK*, accessed February 20, 2025, https://www.gov.uk/government/news/teachers-to-get-up-to-6000-extra-to-teach-vital-subjects.
[9] "Radical" is used here in its etymological sense—relating to roots—not as a synonym for "extreme"; and play as something that begins and continues to form the *radic*.
[10] Readings, *University in Ruins*, 169.
[11] Beatriz Colomina, Ignacio G. Galán, Evangelos Kotsioris, Anna-Maria Meister, *Radical Pedagogies* (MIT Press, 2022).
[12] Anna Collin, *Alternative Pedagogical Spaces From Utopia to Institutionalization* (Sternberg Press, 2025).
[13] Pascal Gielen, "Playing with the Rules of Play: The Spirit of the Avant-Garde in Arts Education," *Journal of Aesthetic Education* 52, no. 4 (2018): 69–82. https://doi.org/10.5406/jaesteduc.52.4.0069.
[14] Gert Biesta, *Good Education in an Age of Measurement: Ethics, Politics, Democracy* (Paradigm Publishers, 2011).
[15] Luis Camnitzer, Betty Marín, Pablo Helguera, *Art and Education* (Publication Studio, 2014): 19.
[16] Thomas Martine and François Cooren, "The Voice of the Work to Be Made: Abductive Communication and Creativity," *Discourse & Communication* 17, no. 1 (2023): 23–39. https://doi.org/10.1177/17504813221123847.
[17] Paul Feyerabend, *Against Method: Outline of an Anarchistic Theory of Knowledge* (New Left Books, 1975).
[18] Johan Huizinga, *Homo Ludens: A Study of the Play-Element in Culture* (Routledge & Kegan Paul, 1949).

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ORGANIC NARRATIVES: TEACHING DESIGN STUDENTS THE ART OF CONCEPTUAL FOUNDATIONS

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INTRODUCTION

This article explores the importance of teaching design students to establish a solid conceptual foundation, with nature serving as a conceptual trigger. We consider that a coherent concept and a clear narrative are interdependent elements that provide a guiding framework for design decisions, ensuring consistency and innovation.

To contextualize the role and importance of narrative, we refer to the perspective of Pat Sikes and Ken Gale, who describe human beings as storytelling creatures, who perceive the world through the construction of narratives to explain and interpret events both for themselves and for others.[1] In this sense, narrative allows people to go beyond the immediate reality, leading him to a universe of ideas, images and visions that awaken dreaming and enchantment, offering an alternative to the "raw" experience of the present.

The capacity to imagine and dream is fundamental to the practice of design. Establishing a clear conceptual basis that integrates both concept and narrative is essential to achieve successful results. Michael Erlhoff and Tim Marshall mention that conceptual design is a practice that "(…) speculate with form in ways that 'push the boundaries' of what is understood to be acceptable in design." [2]

Conceptual design is not a specific category of design, but rather an approach that can inform several areas of activity. Although important, addressing this stage effectively in the classroom presents significant challenges. Based on our experience, supported by literature and discussions with colleagues, there is a shared understanding that teaching something abstract, immaterial and intangible presents particular difficulties. It is common, in academic context, for students to interpret the process of defining a concept as abstract, confusing it with the articulation of project intentions. In this sense, it is important to build effective teaching strategies to make this process more tangible and accessible.

Given its importance, this stage of the design process must be intentionally addressed in design education, being widely explored in the training of future designers through strategies that integrate the definition of concept and narrative from the beginning, demonstrating their symbiosis.

This article underlines the critical role of conceptual and narrative design in the early phases of each design project, highlighting its implications for the definition of pedagogical and methodological strategies in design education.

For this purpose, we present the development and the results of a pedagogical exercise implemented in two different academic years, with different groups of university students of the Arts and Design course at the School of Education, Polytechnic University of Coimbra. The exercise was conceived to support students in understanding the nature and purpose of concept formulation, particularly in product design. The aim was to bridge the gap between abstract theoretical notions and creative practice, fostering a deeper involvement with the conceptual dimension of the design process.
The structure followed in this article includes a theoretical framework that examines the interdependent relationship between concept and narrative in design and discusses their role in ensuring coherence in creative projects. It also addresses the use of nature as metaphor and didactic tool, providing a brief framework on biomimicry and natural analogies, as well as references to pedagogical approaches based on observation and interpretation of natural systems. Finally, it presents the methodology applied, the results obtained, and the critical reflection.

THEORETICAL FRAMEWORK

The Importance of Concept and Narrative Definition in the Design Process

In a simplified way, concept can be defined as the fundamental idea that establishes the thematic and structural direction of a project, frequently associated with metaphors. As noted in the Design Dictionary, any formal design process requires stages of idea generation and conceptual analysis, with concepts potentially challenging or transcending expected material or commercial considerations.[3] Narrative, on the other hand, can be understood as the art of telling stories. In design education, this is often aligned with its broader definition as a story, conceived as a sequence of events involving characters.[4] Within the design process, concept and narrative should not be treated as separate stages; rather, the concept provides the underlying idea and thematic orientation, while the narrative structures and communicates how that idea unfolds. Together, they operate as interdependent elements that mutually reinforce each other.
This interdependence is evident in Stephanie Brandt's observation that "It is often through manipulating the aesthetics and formal keys that intangible narratives are made tangible,"[5] highlighting how narrative mediates between abstraction and materialization in design practice. Nigel Cross reinforces this point, noting that "the crucial factor, often regarded as a 'creative leap', is the bridging of these two partial models by the articulation of a concept that enables the models to be mapped onto each other," adding that recognition of such a concept often provides the "flash of insight."[6] Both perspectives emphasize that conceptual coherence and depth are essential outcomes of a well-articulated concept that consistently links narrative development with practical decisions.
From an educational perspective, this underscores why early engagement with concept and narrative is critical for students. One of the main challenges in design education is that many perceive conceptual development as abstract and difficult, often confusing it with the simple articulation of project intentions. As Klaus Krippendorff states, "design is foremost conceptual and creative of future conditions. (…) Designers are bound to fail when they do not act on the premise that their conceptualizations must make sense to those that matter,"[7] underlining that conceptual clarity is indispensable for the relevance of the final outcome.

Nature as Metaphor, Didactic Tool, and Pedagogical Strategy

As Ezio Manzini points out, humanity has long observed nature in order to derive images, metaphors and analogies that have been transferred into culture[8]. In design education, this relation acquires a particular role, since nature stands out as one of the richest and most complex systems of inspiration, constituting an inexhaustible source of visual, structural, functional, and behavioral stimuli, the result

of millions of years of evolution. Historically, the rhythms and balances of nature have exerted significant influence in shaping human sensibility, both at the aesthetic and cognitive level, favoring specific ways of imagining and creating. In the same way, the analysis of these systems shows principles of coherence, adaptability and systemic intelligence, which can be methodologically appropriated and applied in design processes. In this sense, Janine Benyus observes that, "(…) nature, imaginative by necessity, has already solved the problems we are struggling to solve",[9] positioning it not only as an aesthetic source but also as a repository of strategies for problem solving.

Based on this perspective, nature was explored as a didactic tool, serving as metaphor and as an inspiring resource to stimulate the construction of concepts and narratives in the creative process. Beyond this role, it was also integrated as a pedagogical strategy, and the proposed exercise was grounded in approaches in which knowledge emerges from analysis and observation, as a preparatory stage, and from experience applied in real context.

Regarding observation, this does not reduce itself to passive collection of facts but implies active involvement with the environment. As Ingold states, "(…) by the very fact of their presence, [anthropologists] cannot help but participate in the situations they observe",[10] underlining that observing means participating and interacting with the contexts in which knowledge is constructed. Although direct observation in natural environments was encouraged, in practice most students relied mainly on online research and on the analysis of visual references, which were later reinterpreted and applied in project development.

In the field of experience, the framework approaches the model of experiential learning proposed by Kolb, for whom "Learning is the process whereby knowledge is created through the transformation of experience"[11] In convergence with this perspective, Kuo, Barnes and Jordan conclude that "Hundreds of studies now bear on this question, and converging evidence strongly suggests that experiences of nature boost academic learning, personal development, and environmental stewardship."[12] Learning was therefore materialized both in practice in real contexts, even when frequently mediated by indirect research, and in critical reflection on this experience transposed into design.

The pedagogical strategy adopted combined moments of observation and analysis of natural patterns with practical application activities, seeking to ensure that contact with nature, direct or indirect, could be transformed into effective knowledge and creative capacity for design. Echoing the perspectives of Kolb, Kuo, Barnes, and Jordan, nature offers a fertile ground for experiential and observational learning, inspiring processes that integrate observation, interpretation, and creative transposition for the development of concepts and narratives in design. These principles were reinforced in the initial briefing of the exercise, in which examples and case studies of nature-inspired design helped to translate theoretical concepts into practical applications and to establish a solid basis for the adopted methodology.

METHODOLOGY

Starting from described theoretical framework, the exercise was structured as a pedagogical experience oriented to observation, experimentation, and application in design. The methodology aimed to create an environment where students could transpose concepts inspired by nature into design proposals, articulating phases of analysis, ideation, and development.

Objectives

The exercise was conceived to develop in students the ability to formulate clear concepts and consistent narratives. The intention was to stimulate conceptual thinking as a structuring foundation for design decisions and to promote innovative proposals. By introducing direct references to nature,

students were encouraged to make critical observation, to interpret complex systems, and to translate natural principles into creative solutions. The students were challenged to create a concept and a narrative inspired by nature and to design a product for domestic use that would promote one of these actions: socializing (talking, playing, etc.) or performing tasks (cooking, cleaning, etc.).

Briefing

During the preparatory session, a set of examples was presented to illustrate how nature has been a source of inspiration in design. Iconic cases of biomimicry were highlighted, such as Velcro, inspired by the adherence of the burdock plant to animal fur; the Japanese bullet train, whose nose was redesigned based on the beak of the kingfisher, reducing noise and increasing energy efficiency; the internal structure of the boxfish, which inspired a more aerodynamic and stable car concept; and the desert beetle, whose ability to collect water guided the development of portable containers.

Figure 1. Examples of biomimicry:
(a) Burdock seeds (Nature Journals, accessed August 20, 2025) and Velcro fastener (from Economic Times, accessed July 10, 2025);
(b) Yellow boxfish (from Reddit/r/Damnthatsinteresting, accessed July 10, 2025) and Mercedes-Benz Bionic Car (from Revista Planeta, published June 1, 2016, accessed July 10, 2025);
(c) Namib fog-basking beetle (from ResearchGate, Iuliana Durnova, conference paper, March 2022, accessed July 10, 2025) and water-collecting bench ("banco de rocío") (from 20 minutos, published [publication date if available], accessed July 10, 2025);
(d) Shinkansen bullet train (from MSN, accessed August 30, 2025) and kingfisher (from Facebook, accessed August 30, 2025).

Case studies of designer Ross Lovegrove were also presented, recognized for the concept of *Organic Essentialism* and for the consistent application of natural principles in commercial products. Among the examples were: the Go stacking chair, inspired by bone structure; the Apple Ammonite laptop concept, based on the organic form of a stone; and the Ty Nant water bottle, designed to evoke the fluidity of moving water.

Figure 2. Works by Ross Lovegrove: Go stacking chair, Apple Ammonite, and Ty Nant bottle. Images from Ross Lovegrove official website (https://www.rosslovegrove.com/), accessed August 20, 2025. Figure composition by the author.

In addition, projects from the Biodesigns Lab at the Federal University of Pernambuco (Brazil), directed by Professor Amilton Arruda, were shown, as well as the philosophy of the Biomimicry Institute and the platform AskNature.org, presented as practical and inspiring resources.

Figure 3. Examples of bionic studies developed at the Biodesign Laboratory, UFPE, Brazil, coordinated by Professor Amilton Arruda.

The initial presentation aimed not only to inspire students but also to provide a clear mental framework of how natural principles can be translated into conceptual strategies applicable to product design. This preparation allowed students to work with a stronger visual and conceptual repertoire throughout the exercise, helping them to be able to support well-grounded design decisions.
The three working phases - observation and analysis, concept and narrative formulation, and initial formal development - were accompanied by moments of individualized feedback in order to refine ideas and to guarantee coherence between concept, narrative, and formal proposal.

Class and Academic Context

The exercise was implemented in the undergraduate course of Arts and Design (School of Education, Polytechnic University of Coimbra), in the 2nd year of the curriculum, involving 66 students. It was carried out in the subject *Design II*, individually or in pairs, during the 2nd semester of 2020/21 (25 projects) and 2021/22 (18 projects), with a duration of 4 weeks.

Preparation and Start

In the initial phase, students were presented with guidelines and expected deliverables: a project book documenting the process, two posters (one about the study of nature and another about concept, narrative and final project), and a prototype or functional mockup.

Figure 4. Posters designed by students Maria Queirós and Silvia Azenha, Art & Design degree, ESEC-IPC, 2020/21.

To stimulate research and the building of references, students were encouraged to use multiple sources: lectures (TED Talks and conferences on biodesign), detailed internet research, consultation of specialized bibliography, and direct observation in natural environments. Although, in practice, many of them relied mainly on online research.

It was emphasized that the focus of the exercise was on the development of the concept and narrative from the very first stage of exploration. To guide the research, three axes of observation of nature were suggested: form, structure, and behavior.

Observation and Analysis

The first practical stage consisted of the observation and analysis of selected natural elements, recorded mainly through drawings. Very diverse references appeared: from intangible phenomena (shadows, wind) to living organisms (animals, plants, fruits), as well as inanimate elements (stones, shells). This diversity illustrated the students' effort to explore nature in its multiple manifestations, engaging with its rhythms, structures, and behaviors in a curious and interpretative way.

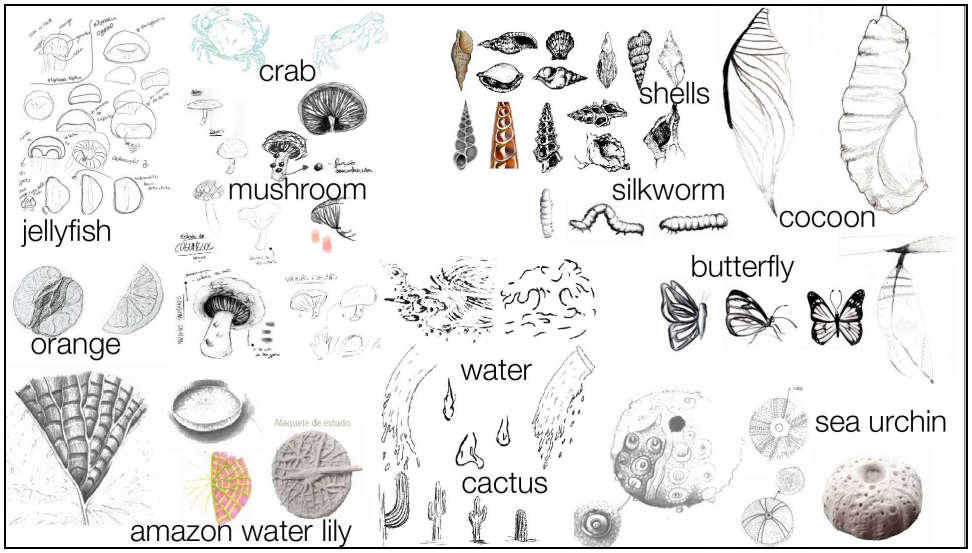

Figure 5. Drawings by students resulting from observation and analysis of natural elements.

Translation into Narratives and Concepts

In the following stage, students translated their observations into concepts and narratives applied to design concepts. Among the developed examples were: a knife inspired by the structural efficiency and lightness of human bones, resulting in a more elegant object with reduced use of material; a hanging salt shaker derived from the behavior of honey ants, which store food in dilated abdomens; a lamp that reinterpreted the way sunlight passes through tree canopies, creating controlled shadow patterns; and a portable wine cellar of sculptural character, conceived from the asymmetrical curves of shells and cowries.

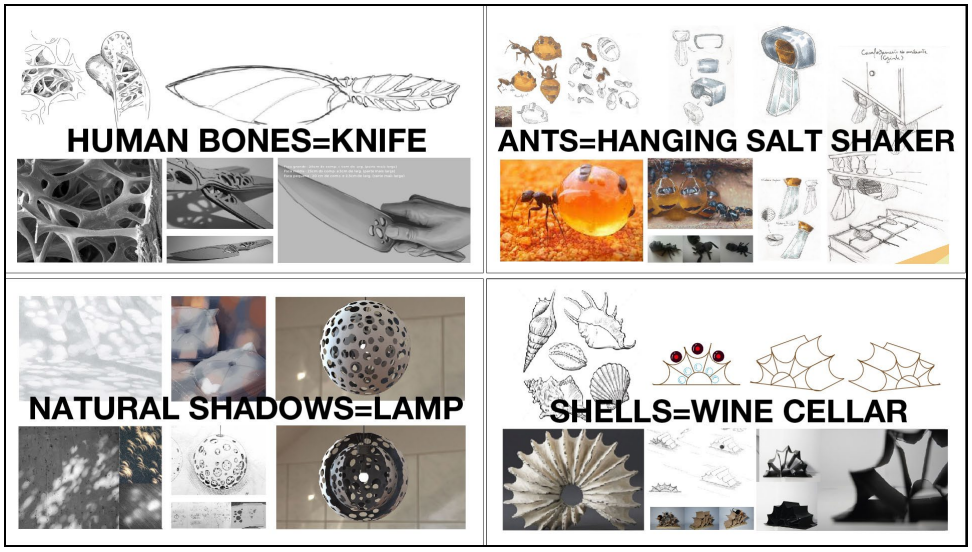

Figure 6. Projects by students Maria Queirós and Silvia Azenha (knife), José Rodrigues (salt shaker), Rafael Pereira (lamp), and Mariana Mendes with Mariana Santos (wine cellar), developed in the Art & Design degree, ESEC-IPC, academic years 2020/21–2021/22.

Throughout this phase, students were encouraged to establish clear connections between the natural reference and the design concept, ensuring narrative coherence and functional relevance.

RESULTS AND DISCUSSION

The results obtained were clearly positive, confirming the pedagogical potential of the adopted methodology. Students showed evident progress in the formulation and communication of design concepts, presenting more consistent narratives and projects. There were also advances in intentional clarity and in the alignment between concept, form, function and emotion. The diversity of developed solutions demonstrated the richness of possible interpretations from the same thematic framework and confirmed the effectiveness of nature as a conceptual trigger. Many projects stood out for their capacity to transpose natural observations - patterns, structures, behaviors, or intangible phenomena - into functional and expressive design solutions.

Among the main gains, it is possible to highlight greater conceptual clarity, expressed in a sharper distinction between central idea, intention, and formal language; a stronger narrative coherence, visible in the alignment between narrative, form, function and emotion; better creative autonomy, revealed in the critical and intentional exploration of natural references; and a more active involvement of students from the early stages of the process.

This methodology proved to be more motivating than conventional approaches centered only on the abstract definition of concepts. By integrating inspiring examples and encouraging research in sources such as AskNature.org, it promoted a more concrete connection between theory and practice, reducing the initial abstraction of this stage. On the other hand, there was a tendency among some students to reproduce natural forms in a literal way, without deeper reflection on the principles that sustain them. This aspect suggests the need to reinforce the distinction between inspiration and imitation, as well as to integrate criteria of technical feasibility already in the first phases of the exercise.

In summary, the implemented methodology contributed to improving the understanding and formulation of concepts and narrative, making the process more motivating and more aligned with contemporary practices of design education. The results support the discussion on pedagogical implications and indicate potential for replication and adaptation of this approach in other academic contexts.

CONCLUSIONS AND RECOMMENDATIONS

This study showed that integrating nature as a conceptual trigger constitutes a relevant contribution to design education, allowing students to understand concept and narrative as a structuring basis of the whole creative process. When contrasted with earlier exercises that gave little emphasis to concept and narrative generation, the proposed approach proved effective in increasing conceptual clarity, narrative cohesion, and student involvement from the early stages. Early conceptual definition, combined with a solid narrative, was revealed as fundamental to guide formal and functional decisions. This guiding thread, flexible but consistent, guarantees that the final result comes from a grounded process, and not from random or merely aesthetic choices. At the same time, it allows adaptations during the process without losing coherence.

The use of nature as a pedagogical reference proved to be particularly fruitful. The observation and interpretation of natural forms, structures, and behaviors opened a fertile ground to stimulate creativity, foster reflection, and develop research competences applied to design. By bringing the creative process closer to an investigative logic, this methodology contributes to more meaningful teaching, aligned with contemporary practices.

It is recommended to replicate and adapt this approach in other academic contexts, adjusting the complexity to the maturity of students and to the profile of the disciplines. Future investigations could explore its application in different design areas and analyze the long-term impact on students' creative autonomy. It is also suggested to test other conceptual triggers and to reinforce strategies that prevent

literal imitation of natural elements, promoting creative interpretations that preserve narrative coherence and innovative potential.
In summary, the presented methodology promoted deeper and more engaging learning, offering teachers a practical and flexible tool to integrate conceptual thinking and natural inspiration in design education, in line with contemporary pedagogical practices.

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SLOW AND EMBODIED WALKABILITY: A METHODOLOGICAL FRAMEWORK FOR PEDAGOGY IN EXPERIENTIAL LEARNING

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INTRODUCTION

This paper presents an interdisciplinary approach to explore the interplay between walkability, memory, embodied experience, imagination, and material surroundings. This approach is explored through the workshop, *Walkability Between Past and Present*, a pedagogical and research experiment that investigated embodied practices in the historic center of Prague. During this four-day creative mapping workshop, the research approach embraced the 'Slow Memory' concept[1] emphasizing deceleration as a way for critically engaging with embodied analyses of walkability, navigating slow-moving memory and urban change. The workshop's activities focused on uncovering overlooked or forgotten memory pathways—shaped by individual experiences, collectively shared, and spatially stimulated. These included lectures, exploratory walks, and hands-on sessions in bodily awareness, creative writing and digital mapping, guiding participants to be present in an immersive experience of how memories and emotions are awakened within a rapidly transforming historic urban landscape. The outcomes materialized through digital maps and analog impressions within The Walking Journal, a specialized guiding tool developed for this project that captured participants' reflections, observations, and sensory engagements. This paper discusses the conceptual framework, methodologies, and outcomes of the workshop, addressing its pedagogical and research challenges, as well as its potential contributions to cross disciplinary thinking in architectural, urban and memory studies. It ultimately highlights the value of slow, embodied practices as vital research methods for deep understanding the spatio-temporal dynamics in rapidly changing material realities to counterbalance the pressures of urgency that characterize contemporary academic research.

Reframing Walkability in Urban Design Research

Walkability now figures prominently in urban agendas, design and planning scholarship, increasingly valued as a lever for climate resilience, public health, and spatial justice. Yet it is often reduced to technocratic checklists and indices that presume pedestrian infrastructure exists independently of the people who animate it, flattening lived complexity.[2] The polysemic nature of walkability demands readings that braid tangible qualities of the built environment with the intangible—affect, memory, symbolic meaning and cultural context[3]—acknowledging differentiated spatio-temporal, embodied, and social experiences on foot.[4] Recognizing walking as both an everyday tactic and an embodied

practice through which urban space is sensed, remembered, and negotiated necessitates a shift from viewing walkability through infrastructure to walkability as a complex interplay of embodied encounters, memory lanes, and claims to the city.[5] Historic urban cores crystallize these dynamics: living palimpsests where layers of transformation, crisis, and resilience are continually renegotiated. In such settings, past and present converge within dense fields of heritage, conflict, and claim-making, making them critical sites for examining how memory shapes walkability and how slow urban transformations reconfigure everyday footpaths. This paper takes that complexity as its point of departure and discusses how an educational-research experiment employed interdisciplinary, embodied methods to surface, trace, and interpret walkability's mnemonic and spatial dimensions in the historic center of Prague.

Integrating the concept of Slow Memory

Addressing walkability's mnemonic dimensions requires attending to the temporal layering and non-linear interplay of temporalities in urban life. In this context, slow memory offers critical analytics for observing unacknowledged forms of remembrance that accrete gradually, circulate in everyday settings, and often elude formal commemoration of the past.[6] It foregrounds slow-moving, "multi-sited" and often "eventless" pasts, beyond a single date, location, or momentous event or transformation. It attends to memory residues that persist in the everyday and seep through materialities when bodies and spaces come into contact—revealing what resists erasure within ordinary geographies. In this frame, slow memory engages with subtle, ongoing processes—including "slow violence" such as deindustrialization or climate change—that remain latent as "potential memories," ready to be recharged into the present.[7] Following Wüstenberg's development of slow memory, emphasis shifts from official narratives and monuments to the everyday milieu, where gradual traces contour experience and where past and present remain in negotiation; time is treated as open and generative rather than closed and linear.[8] Methodologically, slow memory invites a deliberate deceleration of research that "honours the complexities of human experience".[9] This decelerated stance also operates as a measured response to accelerationist knowledge systems, which often prioritize speed over depth. Working slowly enables inquiry to register subtle traces that would otherwise be missed—what might be described as the palimpsest of everyday footpaths, where multiple temporal layers intersect in the present. The slow memory approach further entails ethical and affective attention, creating room to process memory-laden encounters and to handle them with care. In sum, slowness functions as both method and mindset: it supports relational ways of knowing that value depth, care, and inclusivity over quick conclusions. Taken together, slow memory provides a complementary practical frame for a decelerated, interdisciplinary approach to walkability, attuning inquiry to slow-moving historical, cultural and urban processes, and linking embodied walking experiences with subtle constraints, affordances, and latent traces.

Workshop Objectives

Developing on this interdisciplinary inquiry into walkability, a four-day educational–research workshop was convened in September 2024 in Prague's historic center, hosted by the Czech Technical University in Prague, Faculty of Architecture, Department of Urban Design.[10] The workshop assembled 23 participants, including architecture students from the hosting university, scholars and PhD students from the Research Center for Memory Studies at Charles University and members from the Slow Memory COST Action. The workshop aimed to explore a slow-memory–informed perspective on walkability through embodied research practices, seeking to capture situated knowledge of how walkability is sensed, remembered, and negotiated in a dense historic milieu. The

aim was to observe contradictions and disruptions within contemporary urban change, offering insights into how walkability intertwines with history, memory, and the evolving urban landscape. In particular, the objectives of the workshop were threefold:

a. Interdisciplinary framing: Develop an approach to walkability that complements prevailing indices and infrastructural audits by foregrounding embodied, mnemonic, and socio-spatial dimensions of everyday walkability.

b. Multi-modal methods: Explore multi-modal methods that foreground the embodied experience in examining and mapping walkability in a historical urban centre.

c. Situated case exploration: Examine Prague's historic core by linking personal observations and encounters with cultural memory and current urban conditions, producing creative outputs for critique and discussion.

WORKSHOP DESIGN

The workshop unfolded over four days, integrating lectures, exploratory walks, creative movement, creative writing session, and hands-on digital mapping training – as illustrated in Figure 1. At the core of this experiential pedagogy, walking was treated as a research and speculative method: consciously putting the body in motion to "sense, sift, and assimilate" data in the urban landscape.[11] By situating inquiry outside the classroom, walking activates sensory and affective attention, enabling attunement to a fuller range of urban 'frequencies'.[12] From a wayfaring perspective, walking was approached as sense-making,[13] moving the analytic focus to rhythms of the participants' explorations—detours, pauses, hesitations – through which knowledge accrues along the way, thereby surfacing the (in)visible traces of history and places that carry personal and collective significance. In this register, walking can "contest, reorder, and disorder" dominant memories in space,[14] questioning what is remembered or forgotten.

Throughout the four days, multiple modes of walking were employed—guided, individual drifting, and collective mapping. Repetition through revisiting and retracing routes fostered the entanglement of individual reflection and collaborative discovery. For example, a walking route might be revisited at different times of day to notice changes, or participants might spend several minutes silently observing a single site to fully absorb its atmosphere. Emphasis on bodily perception and sensory mapping foregrounded the complexity of walkability experiences in Prague's historic center, while their integration with lectures, creative movement, writing, and digital mapping enabled participants to compare perspectives across modalities and to critically reflect on—rather than simply record—their walking experiences.

The Walking Journal

Guiding participants on their experiential journey, The Walking Journal was developed as central research and learning companion during the intensive four day workshop. The aim of this dynamic curated resource includes inspirational literary texts, sensory prompts, and instructions, as a means for participants to engage in personal memory mapping throughout the different activities. By capturing observations through sketches, tracings, and descriptive notes, the Walking Journal became an integral part of participants' data collection and creative engagement with the study area.

Day One

The opening day established the conceptual terrain on several topics from the interdisciplinary approach to walkability, the concept of slow memory, to an introduction on digital mapping methods in Digital Humanities. A lecture by Dr. Vjeran Pavlaković, explored the concept of slow memory

through traces of conflict and political change that persist in the urban fabric through visual culture, notably graffiti and murals as contested sites of remembrance and identity in post-conflict settings. A second lecture introduced digital humanities approaches (by Dr. Najla Jarkas), surveying open-access platforms for multimodal documentation and non-linear storytelling digital maps, setting an inspiration for participants in considering their group project. These introductory lectures were followed by a semi-guided walk through Prague's historic center grounding participants in the city. The walk, curated and guided by Dr. Mourni Sabeh Affaki, threaded between canonical landmarks and everyday foothpaths, foregrounding layered histories—from WWII ruptures to post-socialist transformations—and prompting students to attend to minor details, frictions, and rhythms that shape walkability. Participants recorded their first impressions in the field, initiating attuned observations that would inform subsequent work.

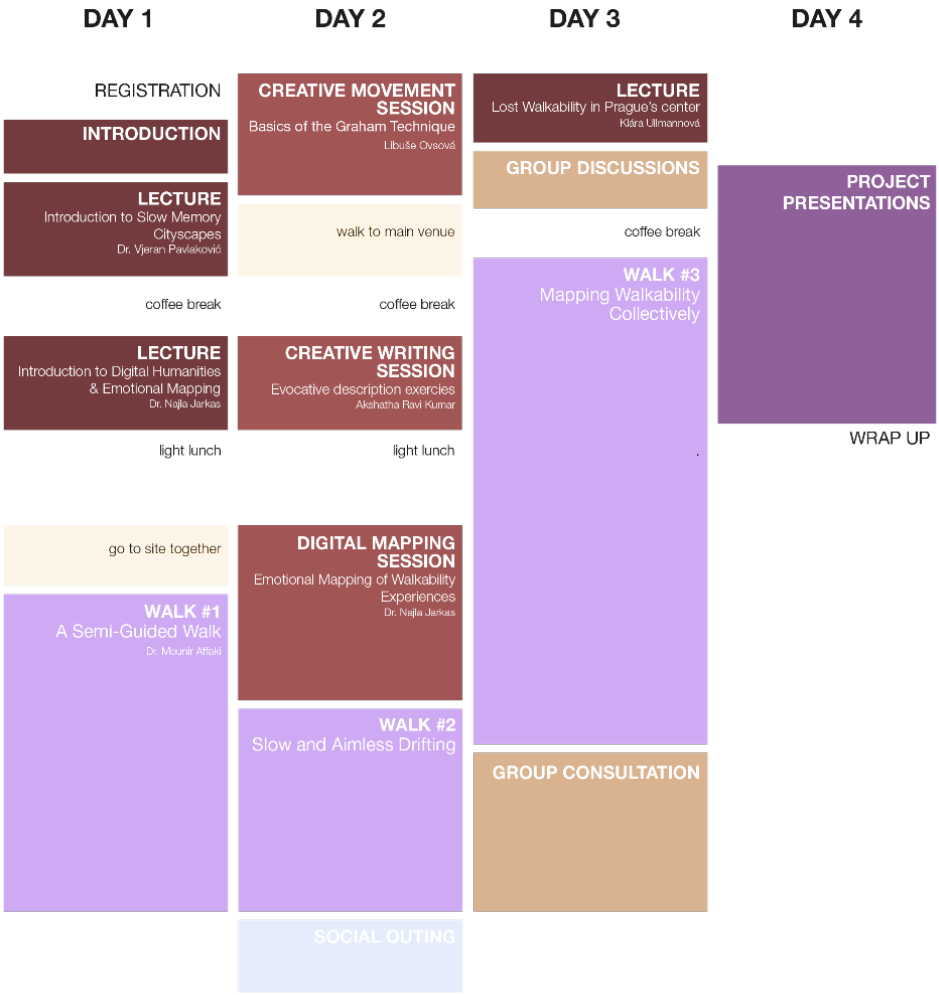

Figure 1. Workshop program: Walkability Between Past and Present, Prague, September 2024.

Day Two

The second day revolved around three trainings—creative movement, short-form writing, and digital mapping—designed to heighten sensitivity to embodiment, spatial experience, and their entanglement with memory and environment. We often take our bodies—and how they move—for granted; in public space, however, movement is never neutral. To shift attention from thinking about movement

in space to thinking through it, the workshop introduced dance-based training. The creative movement session, led by Libuše Ovsová, drew on Martha Graham's technique—contraction, release, and spiral—to cultivate visceral awareness of weight, balance, and intentionality, and to explore how bodies register movement and interact with other bodies. In Graham's method, the body is a site of knowledge and memory, foregrounding emotional and mnemonic registers of action, including what she termed "blood memory": the idea that embodied histories—formed through experience, trauma, and gesture—are carried in the body. Engaging in this practice offered a counter-experience: it interrupted habitual postures, invited participants to "unlearn" walking, and sharpened perception of how bodies move and react differently across urban settings and temporalities. The subsequent short writing session, led by Akshatha Ravi Kumar, translated these sensory encounters into language. Writing was framed as a technique for sequencing perception—linking moments, textures, and affects into narrative—thus bridging experience and analysis.

The afternoon delivered a hands-on digital-mapping session led by Dr. Jarkas, using an accessible platform (Google My Maps) to assemble text, images, and routes into interactive maps. Emphasis fell on juxtaposing original and external media—including extracts from participants' Walking Journals (sketches, photos, texts) alongside supplemental multimedia—while plotting relations among them to link embodied insight with the city's cultural–historical layering through representational practice. The session prepared participants for the next day's group assignment: producing an interactive map that traces a walking route aligned with a selected walkability theme or experience. The day concluded with a second city walk inviting slow, purposeful drifting in the Situationist sense of the dérive: an open-ended, unguided exploration attentive to atmospheres, attractors, and thresholds. Rain reframed perception and practice: with fewer tourists and proliferating puddle traps, bodies jumped, hurried, and fatigued; participants alternately missed and discovered niches of the urban landscape. This second walk encouraged revisiting the study area without fixed aims—balancing passive noticing with active reflection—and was intentionally contrasted with the first to enable subtle discoveries.

Day Three and Four

The third day shifted scale from individual noticing to collective synthesis. It opened with a lecture by Klára Ullmannová tracing historical disruptions, incomplete projects, and planning decisions that continue to reconfigure walkability in Prague's historic center. A facilitated brainstorming session followed, enabling participants to exchange observations and refine themes for collective exploration; through discussion and reflection, they consolidated insights into the conceptual foundations of their final projects.

Participants then formed groups of three to five to define a theme, negotiate an approach, and assign roles for data collection on the final walk: memory note-takers (personal and historical narratives), spatial note-takers (photography, sketching), creative writers (sensory descriptions and research-informed vignettes), and digital mappers (post-walk assembly and visualization). The subsequent collective mapping walk combined observation with situated debate—where to pause, what to foreground, and how to connect lived impressions with archival, cultural, or contemporary urban references. The exercise asked each group to hold together bodily experience, representational practice, and everyday use of space within a single shared artifact.

Drawing on both original and external media, participants documented walkability experiences and culminated in interactive maps (Google My Maps). These map-based assemblages functioned as living archives, registering spatial relations among personal recollections, hopes and frustrations, tourist layers, and the historic fabric—making visible how walkability is shaped by layered

temporalities and competing claims to space. On the morning of Day Four, groups presented their interactive maps and discussed methods and key findings.

Figure 2. Snippets from the workshop: Walkability Between Past and Present, Prague, September 2024.

WORKSHOP OUTCOMES AND REFLECTIONS

The final projects cultivated a situated understanding of Prague's historic center. Each group produced an interactive digital map organized around a specific walkability theme, reclaiming memory pathways that were individually experienced, collectively discussed, and spatially evoked. The topics highlighted the contested spatio-temporal experience of walking—juxtaposing shared frustrations with overtourism against the delight of discovering local textures. For example, one group mapped the proliferation of ATMs around Charles Bridge, questioning their necessity and experiential impact; another group scavenged local pubs serving pickled cheese, assembling cultural memories tied to those places and sketching a quieter route that slipped past the crowds. As digital deliverables, the maps functioned as living archives, correlating personal recollections and sensory cues with the historic fabric to reveal how walkability is inflicted by layered pasts and present urban conditions.

Workshop as a method – interdisciplinarity in short-form practice

Interdisciplinarity functioned as both a challenge and bridge. Architecture students stepped beyond familiar studio habits by the dance session, creative writing and theoretical approach from memory studies. Conversely, non-architecture participants found sketching and digital mapping less intuitive. This productive discomfort helped surface tacit assumptions within each field and opened blurred

lines of collaboration rather than reinforcing disciplinary silos. The representational range at final review, using Google My Maps, has demonstrated that an easy, open-access, digital multi-media platform can validly communicate embodied findings without collapsing them into a single cartographic grammar. In this sense, the workshop's contribution to cross-disciplinary thinking lay in sustaining a common investigative arc while allowing each discipline to bring its own strengths to different moments along the way.

Time, too, had a discernible texture. The four-day cadence invited deceleration even as it required decisions. We found that the schedule's transitions generally held, yet there were moments when lingering a little longer would have allowed experience to settle before being shaped. As such, we learnt that extending temporal buffers would have supported the full experiential cycle from encounter to reflection, abstraction, and testing[15]. One lesson concerned the passage from analog to digital: the Walking Journal accumulated rich sketches and notes, and while many informed the maps, some inevitably remained on paper. Rather than a failure, this became a reminder that translation itself needs time—quiet intervals for selecting, scanning, and situating materials so that what is felt in the field can be carried, with care, into shared representations.

Developing a Methodological Framework

The workshop served as a method-testing for putting together different modes of inquiry and learning to engage with critical thinking about walkability. Beyond utilizing walking as a research and speculative tool, the workshop was a basis to developing a methodological framework that intersected three analytical layers and modes of thinking, researching and learning (embodiment, narrative and representation) for a decelerated, interdisciplinary approach to walkability. Embodiment is explored through walking and creative movement that foreground bodily knowledge to engage with how walkability and memory are interlaced in urban spaces. Narrative functioned as both object and practice: through local literature, overlooked stories, and short-form writing, it brought personal and collective memories to the surface. Representation gave form to these relations through mapping and visual assemblage, enabling critical re-imagination of spatial memory. Taken together, these layers operate as a mutually reinforcing apparatus for examining walkability in times of disruption.[16] As cities undergo accelerating change, the capacity to slow down, observe, and document becomes indispensable.

CONCLUSION

This paper has presented and reflected on a pilot research and educational workshop, titled *Walkability Between Past and Present*, which explores a dynamic interdisciplinary examination on walkability at the intersection of memory, sensory experience, corporeality, material surroundings, and imagination.

Through embodied research, creative expression, and digital mapping, the workshop integrated slow memory, architecture, and urban design research, for a multidimensional understanding of walkability that extends beyond its physical dimensions, engaging with the lived sensory experiences of walking shaped by how we perceive, inhabit, and remember the spaces we traverse. Through the interlinked layers of embodiment, narrative, and representation, the workshop advanced an experiential pedagogy that treats deceleration as an epistemic stance - casting walking as remembrance-in-practice and inquiry-in-motion, capable of generating disciplined, communicable insight into how cities are lived, remembered, and continually renegotiated.

NOTES

[1] Jenny Wüstenberg, "Towards a Slow Memory Studies," in *Critical Memory Studies: New Approaches*, 1st ed, ed. Brett Ashley Kaplan (London: Bloomsbury Academic, 2023), https://doi.org/10.5040/9781350233164.
[2] Diana Salahieh, Layla Zibar, and Irena Fialova, "Exploring Narrative Research Methods for an Embodied Reading of Prague's Walkability," in *IN-PRESENCE / THE BODY AND THE SPACE The Role of Corporeity in the Era of Virtualization*, ed. Marco Bovati, Anna Moro, and Daniele Villa (PUBLICA, 2024), https://www.publicapress.it/wp-content/uploads/2024/10/EURAU.pdf; Rob Shields et al., "Walkability: A Review of Trends," *Journal of Urbanism: International Research on Placemaking and Urban Sustainability* 16, no. 1 (2021): 19–41, https://doi.org/10.1080/17549175.2021.1936601; Jennie Middleton, *The Walkable City: Dimensions of Walking and Overlapping Walks of Life*, 1st ed. (London: Routledge, 2021), https://doi.org/10.4324/9781315519210; Kim Dovey and Elek Pafka, "What Is Walkability? The Urban DMA," *Urban Studies* 57, no. 1 (January 2020): 93–108, https://doi.org/10.1177/0042098018819727.
[3] Aniss M Mezoued et al., *The Walkability of the Metropolitan City Centre as Lever For Brussels's Mobility Transition*, 2020, 27.
[4] Middleton, *The Walkable City*.
[5] Diana Salahieh and Layla Zibar, "Tracing Walkability Through Disruption Assemblages in Aleppo's (Post-)Conflict Historic Core," *Urban Planning* 10 (June 2025), https://doi.org/10.17645/up.9605.
[6] Wüstenberg, "Towards a Slow Memory Studies."
[7] Alice Semedo and Fabiana Dicuonzo, "Cultivating Slow Curating in Times of Acceleration," *Land* 14, no. 1 (January 2025): 101, https://doi.org/10.3390/land14010101. p 4.
[8] Semedo and Dicuonzo.
[9] Semedo and Dicuonzo. p 4.
[10] The workshop was organized by Diana Salahieh, Layla Zibar, Najla Jarkas, Akshatha Ravi Kumar and Irena Fialova; in collaboration with Prof. PhDr. Katherina Kralova from the Research Center for Memory Studies at Charles University. The workshop was funded and supported by both the Slow Memory COST Action (CA20105) and by the Academic Competition at the Faculty of Architecture at the Czech Technical University in Prague.
[11] Alice Twemlow and Tânia A. Cardoso, "Introduction The 'Walking as Research Practice' (WARP) Group and the Path to, and beyond, a Conference," *Soapbox Journal*, Walking as a Research Practice, 2023, https://www.soapboxjournal.net/editorial-collaborations/warp-walking-practices.
[12] Twemlow and Cardoso.
[13] Tim Ingold and Jo Lee Vergunst, *Ways of Walking: Ethnography and Practice on Foot*, Anthropological Studies of Creativity and Perception (Aldershot: Ashgated, 2008).
[14] Tim Edensor, "The Ghosts of Industrial Ruins: Ordering and Disordering Memory in Excessive Space," *Environment and Planning D: Society and Space* 23, no. 6 (December 2005): 829–49, https://doi.org/10.1068/d58j.
[15] David A. Kolb, *Experiential Learning: Experience as the Source of Learning and Development*, Second edition (Upper Saddle River, New Jersey: Pearson Education, Inc, 2015).
[16] For more information on the development of this methodological framework, visit the website Poetics of Walkability, www.poeticsofwalkability.com/

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