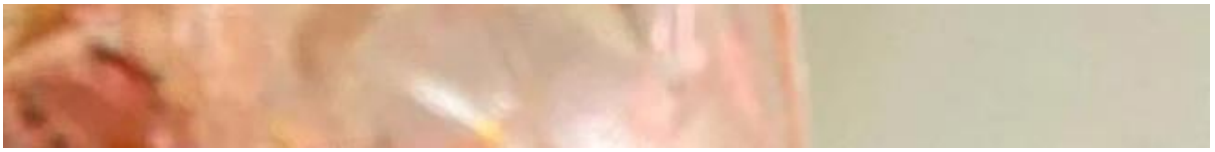

Rooted in Place: Crafting Sustainability Through Locally-Embedded Design Education

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Keywords: Sustainable Educational Practices; Place-based Approaches; Regional Craftsmanship; Material-led Pedagogies; Cultural Heritage

Introduction

This paper addresses the need for alternative educational models that embed sustainability into the core of the learning process. It explores how place-based approaches and material-led pedagogies, which draw on local knowledge and resources, can be powerful tools for fostering sustainability in design education. By integrating Indigenous and Local Ecological Knowledge (ILEK) into the curriculum, educators can create immersive, context-specific learning experiences that not only reduce the environmental impact of long-distance material transport but also foster a deep appreciation for local ecosystems and cultural heritage (Mellegård & Wiebren, 2020).This research aims to illustrate how these approaches can contribute to more equitable, resilient, and sustainable educational practices that transcend geographical boundaries.

I teach on the MA Fashion Artefact, postgraduate program which sits in the School of Design and Technology (SDT) at London College of Fashion. I was invited to develop a low-residency version of the course, which sparked my interest in place-based pedagogies and methods for teaching and learning. This research explores potential alternative educational models incorporating local knowledge, place-based and material-led pedagogies, to foster sustainability in design education to reduce environmental impact.

In the present Anthropocene epoch, which has been characterised by significant ecological changes driven by human activities (Crutzen, 2006), the need to rethink and restructure education, particularly within the design disciplines, has become increasingly urgent. The Anthropocene is not just a geological era but also a call to action—a recognition that how we live, produce, and educate must change to ensure a sustainable future. This paper proposes that material-led low residency studies offer a promising paradigm for sustainable educational practices, integrating ecological, social, and economic dimensions into a holistic learning approach.

The challenge lies in the paradox of our current practices: we utilise elements from nature to sustain our civilisation, yet these same processes contribute to environmental degradation (Bak-Andersen, 2018). This contradiction underscores an urgent need for a transformative approach to the processes and methods by which we teach and make fashion. A re-evaluation of our manufacturing practices is imperative to mitigate their adverse environmental impacts and develop more sustainable production modes. This paradox is especially evident in industries like fashion, where the ecological impact remains exceptionally high despite significant technological advancements and increased awareness of sustainability issues (Lehmann et al., 2019).

Methodology

The research employs a combination of literature review, case studies, and analysis of a range of pedagogical frameworks to provide a nuanced understanding of how these approaches can transform design education and promote sustainability.

Rationale for Method Selection

The selection of methods for this research was driven by the need to capture the complexity and context-specific nature of place-based, material-led design education. Case studies were chosen because they represent examples of implementing these changes or circumstances that can accommodate this type of change to locally embedded design education. The literature review provided insights from existing literature, curricula, project reports, and institutional policies, while thematic analysis helped identify key themes and patterns across different case studies.

Challenges and Limitations

Implementing material-led and place-based approaches in design education comes with several challenges. These include institutional resistance to change, resource constraints, and the difficulty of scaling these approaches to larger educational settings. Additionally, integrating local materials and knowledge into the curriculum may require significant adjustments to existing teaching practices and resources. However, these challenges also present opportunities for innovation and collaboration, particularly in low residency programs where students are embedded in their local communities.

Results: Key Findings

Material-led Pedagogies

Over the past ten years, different versions of a material-focused design approach have been gradually developed by various design professionals and researchers, a process in which the material plays a fundamental role from the beginning of the design process. Most researchers describe this process as material-based, material-driven, or material-led (Karana et al. 2015, Van Bezooyen 2013, Hansen 2010, Oxman 2010, Bak-Andersen, 2018). Material-led pedagogies represent a shift in design education, where the material is not merely a medium but a co-participant in the creative process. This approach aligns with the theoretical framework of New Materialism, which posits that matter has agency and plays a crucial role in shaping human actions and decisions. Mette Bak-Andersen (2018) highlights that material-driven design processes start with the material's properties, potential, and limitations. The designer's role is to explore, manipulate, and understand the material, allowing it to inform the design process from the beginning. Karana et al. describe how 'over time, the designer who takes an MDD (Material Driven Design) approach is expected to become master of a given material: they will know how the material behaves under different circumstances or how it reacts when subjected to different making techniques or manufacturing processes' (Karana et al. 2015).

MDD contrasts sharply with traditional design methodologies, where materials are often selected after the design concept has been fully developed. In a material-led process, the exploration of materials becomes a source of inspiration and innovation. Designers are encouraged to engage in hands-on experimentation, where the material's physical properties

influence the final product's form and function. This iterative process, where design and material interact dynamically, is central to the philosophy of material-led pedagogies.

This approach is taken in the MA Fashion Artefact. I teach on the course to a cohort of mostly international students from a very diverse disciplinary background, such as jewellery, product design, and fashion design among others. Craft is at the core of this designer-maker course, and many MA projects tend to be material-led. Based in a studio environment, students share studio space and have communal access to a series of workshops (jewellery, leatherwork, mould making and casting, etc.). This sharing community is central to the course's essence. Students are often invited to explore, learn and become skilled in specific materials and techniques. According to Richard Sennet (2008), in the traditional workshop environment, 'craft arises out of face-to-face interactions sustained over extended periods in the workshop space, where neophytes can watch and imitate expert craftsmen, receive instruction and correction, and learn by doing'. This kind of learning, what educational psychologists call 'situated cognition', 'occurs when the learner is embedded within a community of practice, such as a workshop, where the embodied practices of the artisan are visible, and learning is based on observation and imitation' (Fowkes, 2020). This process permeates the studio-workshop culture through the shared environment between technical staff and students and between cohorts of first and second-year students.

Therefore, when translating this context to an online low residency program, the shared studio space is not readily available online - meaning less cross-contamination of ideas, techniques and material knowledge happens. I believe this environment can likely be replaced by local communities and their technical expertise that students can connect with if studying in their local environments but supported by online curricula and low residency study pedagogies.

A material-driven design process helps students understand how to approach local materials and create designs based on this knowledge. In "When Matter Leads to Form: Material Driven Design for Sustainability" (2018), Bak-Andersen outlines a three-step process for Material Driven Design (MDD):

1. **Material research**: This includes evaluating circularity, sourcing, composition, historical context, value, and hands-on exploration.
2. **Material manipulation and design**: Materials are adjusted to enhance strengths, address weaknesses, and engage in 3D sketching.
3. **Product development**: Focuses on integrating form and function, culminating in the prototype presentation.

Material-led pedagogies represent a significant shift in design education, emphasising the active role of materials as co-creators in the design process. This approach, rooted in New Materialism, not only redefines the relationship between designer and material but also incorporates a strong sense of place, recognising that materials are deeply embedded within their local contexts. Bak-Andersen's Material Driven Design (MDD) process exemplifies how understanding materials' origins, properties, and cultural significance can lead to more sustainable and innovative design practices. By integrating place-based considerations, this approach encourages designers to explore and manipulate materials with an awareness of their ecological and cultural contexts, thereby fostering a design process that is materially informed and attuned to the local environment. This focus on the interplay between material

and place enriches the educational experience, guiding designers towards creating sustainable, contextually relevant solutions, and deeply connected to the communities and environments from which they arise.

Sustainable Educational Practices

Sustainable educational practices are those that not only teach sustainability as a concept but also embody it in the methods and processes of education itself. This means creating curricula that integrate ecological, social, and economic sustainability into every aspect of the learning experience. In the context of design education, this could involve using sustainable materials, promoting ethical manufacturing practices, and encouraging students to think critically about their work's environmental and social impact.

As Kim and Lee (2022) emphasise in their study, 'Sustainable fashion design education aims to educate students on how to explore fundamental values and possibilities of sustainable development, recognise social issues, and find solutions to problems beyond simply educating how to implement sustainable fashion design.' They argue that a well-rounded education on sustainability holds future-oriented value by fostering a shift in perception among students, who will become tomorrow's design professionals, enhancing both their design skills and their understanding of sustainable practices. The literature increasingly acknowledges that the integration of sustainability into education demands more than superficial adjustments to existing curricula (Junestrand et al., 2024) and that educators have been proactive in integrating *Education for Sustainable Development* (ESD) initiatives into HE fashion education in the last decade (Agarwal, 2020; Armstrong and Le Hew, 2013; Baytar and Ashdown, 2014; Jestratijevic and Hillery, 2023). There is a pressing need for a paradigm shift in educational structures and delivery methods. This shift entails moving away from standardised approaches and adopting models that are context-specific, responsive to local needs, and rooted in the realities of the communities they aim to serve. Burns et al.'s (2019) *Model of Sustainable Pedagogy* emphasises content co-creation, diverse perspectives, participatory processes, and context-specific learning.

Place-Based Education Approaches

Place-Based Education (PBE) is an umbrella term for pedagogical practices that prioritise experiential, community-based, and contextual/ecological learning to cultivate greater connectivity to local contexts, cultures, and environments (Gruenewald, 2003; Smith, 2002; Sobel, 2004; Orr, 2013). It incorporates the meanings and the experiences of place in teaching and learning, which can extend beyond the walls of the school (Yemini et al., 2023).

Place-based education is a pedagogical approach that emphasises the importance of local context in the learning process. It involves teaching students about their local environment, culture, and community and encouraging them to apply this knowledge in their work. Place-based approaches have been shown to foster a deeper connection to the material being studied and a greater sense of responsibility towards the local environment and community.

PBE regained significant attention with the early 2020 outbreak of the COVID-19 pandemic, which caused large-scale school closures globally and forced the rapid adoption of alternative learning environments, including teaching and learning outdoors, and learning from home (Yemini et al., 2023).

In the context of design education, place-based approaches can involve using local materials,

collaborating with local artisans, and studying local craftsmanship traditions. By doing so, students learn valuable skills and develop a greater appreciation for the cultural and environmental significance of the materials and techniques they are working with. This approach also supports the preservation of cultural heritage as students learn to value and maintain traditional practices.

In reviewing the literature on place-based education (PBE), the following relevant points can be gleaned:

PBE is often implemented in various subjects, particularly environmental studies and science, but its application in other areas like arts, literacy, and social studies remains limited (Yemini et al., 2023). The literature also points out that while PBE is often linked to improving students' environmental awareness, its broader impacts, such as fostering social justice, community engagement, and decolonisation, are equally significant but less frequently explored. One key framework for understanding PBE is Ardoin et al.'s (2012) model which categorises PBE into four dimensions: biophysical, psychological, socio-cultural, and political-economic. These dimensions provide a comprehensive view of how place influences education, highlighting that the concept of place goes beyond mere geography, encompassing cultural, social, and economic factors.

This review identifies key challenges in implementing Place-Based Education (PBE), including the significant need for lecturer preparation, resource allocation, and active community involvement. Despite these obstacles, PBE remains a promising approach, fostering connections between students and their local environments, promoting sustainable practices, and enhancing community well-being. A study cited by Structural Learning (Main, 2024) suggests PBE also strengthens ecological integrity by deepening students' appreciation for the natural world. However, existing research primarily focuses on school-level education, with limited exploration of PBE in higher education. This gap warrants further investigation, which exceeds the scope of this paper, where we have only begun to explore PBE's potential.

In design education, incorporating PBE could mean engaging students in projects that utilise local materials, collaborate with local artisans, and explore traditional craftsmanship. This not only enriches students' educational experiences but also supports the preservation of cultural heritage and promotes sustainable design practices deeply rooted in the local context.

The findings of this research highlight the transformative potential of material-led and place-based approaches in design education. The case studies that follow demonstrate how these approaches can intensify students' connection to local materials and craftsmanship while also promoting sustainability and cultural preservation.

Case Study 1: Artefact & Local Identities

In 2018, the MA Fashion Artefact course leader at London College of Fashion, Dai Rees, curated an exhibition titled 'Why-What-Who' as part of the Venice Biennale of Architecture's parallel program Design.Ve - Biennial Design Walks through Venice. The exhibition showcased a wide array of works from MA Fashion Artefact alums, spanning a decade of creative exploration. The exhibition went on to tour China and Argentina. One of the standout projects from the touring exhibition was a commissioned project, a collaborative effort between course alums and local designers, Daniel Ramos Obregón from Bogotá and local designer-maker Juliana García Bello from Tierra del Fuego. Their work (See Figure 1), featured in the exhibition

at the Museo Nacional de Arte Decorativo in Buenos Aires, Argentina, in 2019, profoundly explored cultural identity through speculative objects, weaving a narrative that connected regional craftsmanship and cultural heritage.

Cross-Cultural Dialogue Through Design: The Colombian Poporo and Argentinian Mate

Fig 1. Gonzalo Valenzuela (2018) Speculative objects, Daniel Ramos Óbregon in collaboration with Juliana García Bello for 'Why-What-Who' exhibition at the Museo Decorativo de Buenos Aires, Argentina

Obregón and Bello's collaboration highlighted the power of material-led and place based-design to foster cross-cultural understanding and dialogue. Their project focused on two culturally significant objects: the Colombian *Poporo* and the Argentinian *Mate*. The *Poporo*, an indigenous object associated with the traditions of the Kogi people of Colombia, symbolises maturity and status (Tairona Heritage Trust, 2008). The *Mate*, a traditional vessel used in Argentina to drink the herbal tea known as *Mate*, is a cultural cornerstone that reflects the country's social rituals and communal identity (Sarreal, 2023). By choosing these objects, the designers sought to explore the relationships between their cultural heritages while also addressing the specific regional craftsmanship associated with these artefacts (Rees, 2019). Through this cross-cultural lens, the project illustrated the commonalities and differences between the *Poporo* and the Mate. The designers created hybrid speculative objects that merged elements of both, encouraging an open dialogue about the cultural significance of these artefacts in their respective contexts. This approach allowed them to engage with their cultural identities critically, questioning how material culture and craftsmanship are deeply tied to notions of place and belonging (Rees, 2019).

Locally Embedded Approaches to Design and Making

The success of Obregón and Bello's collaboration was rooted in their locally embedded approach, which was informed by place-based practices and local knowledge and materials. Both designers conducted research within their communities, focusing on the materials and

techniques traditionally used to craft the 'Poporo' and the 'Mate' (Rees, 2019). This emphasis on local research and materiality was integral to the project, as it allowed the designers to ground their work in the specific cultural and environmental contexts from which these objects originated. Obregón and Bello's project also underscored the importance of local materials in design. For instance, they utilised the local *totumos* gourd, a natural material traditionally used in making the *Poporo* (usually in combination with gold), to craft their hybrid artefacts. Using locally sourced materials reinforced the objects' cultural significance and highlighted the environmental sustainability of working within local ecosystems.

Designing Across Distances: Online Collaborations

Obregón and Bello's project required the designers to collaborate online. Despite the remote collaboration, they managed to maintain a strong connection to their respective cultural and geographical contexts. Their ability to share the design process online while focusing on local research and materials demonstrated the potential of digital platforms to support collaborative innovation in a low-residency educational setting. This experience laid the groundwork for the consideration to develop a low-residency version of the MA Fashion Artefact course, illustrating how digital tools can facilitate cross-cultural dialogue and collaboration even when physical travel is restricted. By utilising online communication tools, designers in a low-residency course could continue their exploration of local identities and materials, proving that a locally embedded approach to design education can be sustained, even in a virtual environment.

Implications for Design Practices

Obregón and Bello's project represents a precedent that exemplifies the broader potential of material-led, place-based design practices to foster critical dialogue about cultural identity and sustainability. By focusing on working with locally sourced materials and traditional practices, they created artefacts which reflected their personal and cultural histories and contributed to preserving and revitalising traditional craftsmanship. Their work highlights the importance of integrating local knowledge and materials into design to foster a sense of place and identity. This approach aligns with the principles of locally embedded design education, emphasising the importance of working within the specific contexts of place and community to foster sustainable practices, if you gain a better understanding for your own heritage, culture and the materials around you that might allow for a more ethical and sustainable design (Gruenwald, 2003, my emphasis).

The collaboration between Daniel Ramos Obregón and Juliana García Bello is a compelling case study of how material-led design education can foster cross-cultural understanding and promote sustainable practices. Through their exploration of the *Poporo* and *Mate*, the designers could engage in a critical dialogue about cultural identity and regional craftsmanship, highlighting the importance of local materials and knowledge in design education. Their project also demonstrated the potential of digital platforms to support collaborative innovation in a low residency setting, paving the way for the development of new models of design education that are both locally embedded and globally connected (ahead of Covid).

Case Study 2: Design Across Geographies

These two case studies explore how the fundamental aspects of regional craftsmanship, which are deeply embedded in the original MA Fashion Artefact course, can be preserved and

enhanced within a low-residency format. Central to this exploration is the symbiotic relationship between the creation process and its geographical context, particularly the significance of why an artefact is crafted in a manner consistent with its place of origin. The case study focuses on the academic year 2023-24, highlighting two students, Shiyu Gong and Ruolang Zeng, who exemplified the potential of place-based approaches by exploring their cultural heritage within the current model of the MA Fashion Artefact.

Shiyu Gong: Bamboo Craftsmanship and Heritage

Shiyu Gong's project serves as an example of how regional craftsmanship can be extended through innovation. Gong comes from a third-generation family business in bamboo crafts, a legacy embedded in his cultural heritage. During the Summer of 2023, during his postgraduate study, Gong undertook a two-week residency working closely with a local expert bamboo weaver, Hong-Guang Cai (See Figure 3); she leads a small studio, the only one that specialised in bamboo craft in Dongyang, a city well-known for woodcarving in China (China Design Center, 2019). This hands-on experience allowed him to better understand bamboo's properties, flexibility, and potential applications in contemporary design. Gong aimed for his project to merge this family tradition with leather moulding techniques, not merely an extension of his family's traditional craftsmanship but a reinvention. Gong produced artefacts that married old and new, local and global, integrating bamboo weaving techniques with leather craftsmanship (See Figure 2). His project underscores the value of place-based design education in fostering innovation while maintaining strong ties to cultural roots. The ability to work with local artisans and access regionally specific materials was fundamental to his creative process. By staying connected to the geographical origins of bamboo craftsmanship, Gong could innovate in a way that was respectful of tradition and forward-thinking. This fusion of regional craftsmanship with modern design practices exemplifies the potential of place-based education to preserve cultural heritage while contributing to the evolution of traditional crafts.

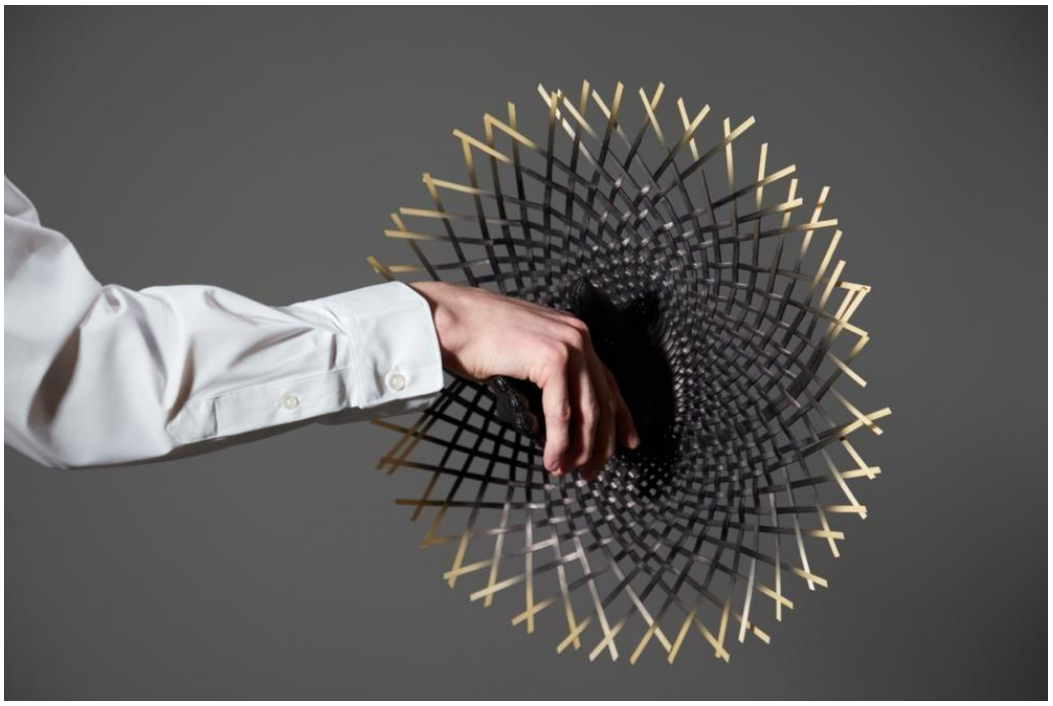

Fig 2. Shiyu Gong (2024) Photography for the Masters project portfolio

Fig 3. Shiyu Gong (2024) Photo of the residency studio in Dongyang

Ruolang Zeng: Jade and Lacquer work

Ruolang Zeng's project centres on the jade seal, a material artefact imbued with profound symbolic and cultural significance in Chinese history. Zeng's engagement with this material was deeply personal, as she sought to explore contemporary power dynamics while reflecting on the broader cultural meanings associated with jade. In executing her project, Zeng researched traditional jade carving techniques but replaced them with the ancient Chinese lacquerware method (see Figure 3). This material-driven approach enabled her to craft a series of artefacts that emulate the appearance of jade through the technique of wiping lacquer ("擦漆"). This process involves applying lacquer to the surface of wood and wiping it off before it fully dries, leaving a thin layer that is repeatedly applied until the desired thickness is achieved, followed by polishing. The technique imparts a gentle gloss to the wooden surfaces, akin to jade's lustrous finish. Zeng's work engages with jade's rich cultural history while also exploring novel ways of representing power relations through materiality. By transforming the Jade Seal—traditionally used to mark documents with a signature—into a performative and artistic artefact that interacts with the body, Zeng suggests a new interpretation of power between individuals. This project exemplifies how place-based education can foster a connection to cultural heritage, while simultaneously encouraging innovation and the expansion of traditional practices.

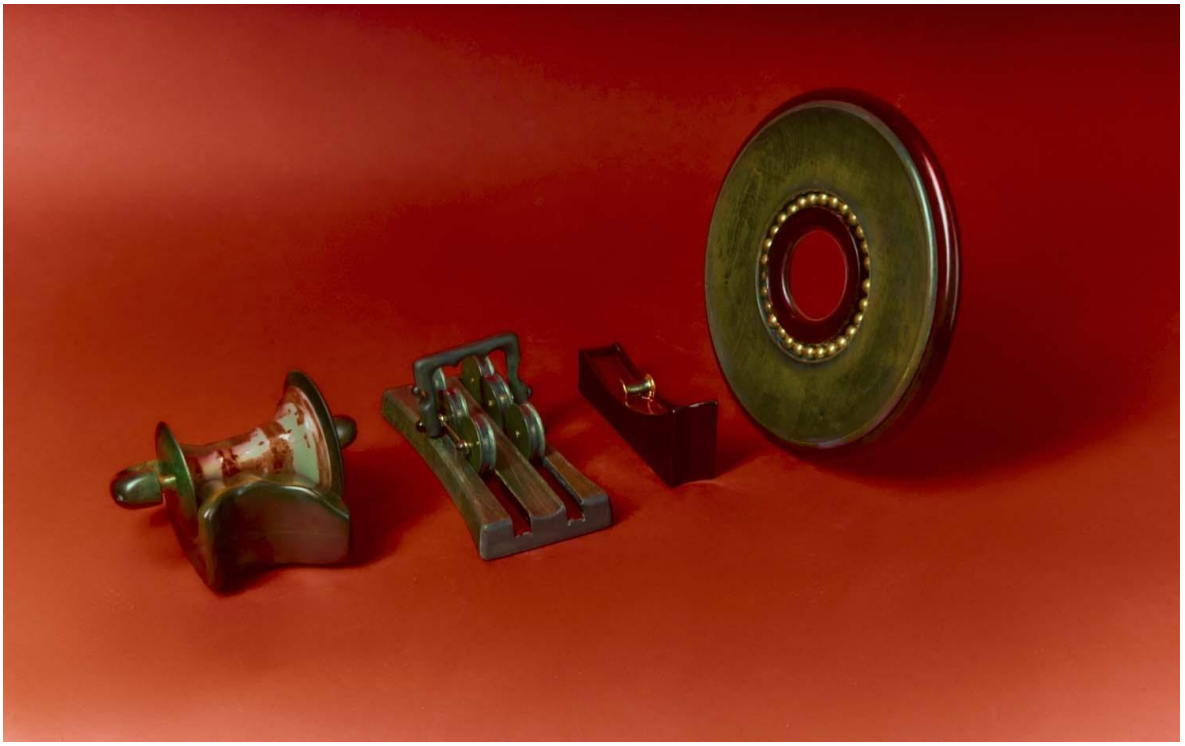

Fig 4. Ruolang Zeng (2024) photography of the final collection of artefacts for the Masters project

Reflections

To be clear, it is crucial to point out that these two student projects were not completed within a low-residency programme, instead in an in-person setting. However, by engaging deeply with geographically bound materials and expertise, they are relevant case studies that can help us understand how local collaborations are beneficial. Their projects exemplify how place-based education can allow students to not only develop their technical skills but also deepen connections to their cultural heritage. During their projects, both students ordered materials from their home countries to be delivered to the United Kingdom, which negatively impacted upon their carbon footprint, a problem that would be mitigated by a low-residency approach. By working with local materials and learning regionally specific techniques, the students were encouraged to consider the ecological impact of their work. This form of education fosters environmental stewardship by emphasising the importance of sustainable practices that are rooted in the local context. If students are not in a low residency setting, however, some of these connections may be weakened, as students cannot always engage as deeply with the local context. Gong and Zeng's projects highlight the potential of place-based, material-led design education to bridge the gap between tradition and innovation. I believe that both projects would have benefitted from more locally embedded design approaches that kept them in closer contact with local artisans and communities, which could be developed within a low residency and place-based programme. Such an approach would allow students to remain connected to their work's geographical and cultural origins, perpetuating craftsmanship traditions while considering local ecologies and the sustainability of their practices.

Discussion

This paper argues that material-led low residency study represents a promising potential paradigm for future ecological, social, and economic dimensions, an education model that has the potential to transform design education and foster global collaboration. The presented case studies illustrate the potential of place-based education to preserve and revitalise traditional craft while fostering innovation. Through the analysed projects, it becomes evident that regional craftsmanship and material-led approaches are essential to maintaining cultural heritage in a contemporary design context. These examples also highlight the importance of geographical context in the design process and the potential challenges posed by low-residency settings in maintaining strong connections to place. Ultimately, this investigation underscores the value of place-based, geographically embedded design education in crafting a sustainable future for traditional crafts.

One of the key contributions of this approach is its emphasis on material literacy, which enables students to make informed decisions about material choices and advocate for sustainable practices in their careers. This knowledge is crucial for addressing the systemic challenges of resource depletion and environmental degradation, particularly in fashion-related industries. Moreover, incorporating local materials and ILEK into the curriculum provides students with a context-specific understanding of sustainability. This approach would reduce the environmental impact of long-distance material transport and foster a deeper appreciation for local ecosystems and cultural heritage. By engaging with place-based approaches and regional resources, students could more easily develop innovative solutions to complex sustainability challenges rooted in their own cultural and ecological contexts. The case studies presented in this paper highlight the potential of material-led design education to foster cross-cultural understanding and collaboration. By engaging with their own cultural heritage and local materials, students can explore the connections between material culture and identity, leading to a deeper understanding of the role of design in shaping cultural narratives. Furthermore, this approach promotes a more equitable and resilient future by empowering students to engage with their communities and contribute to local economies. Material-led low residency programs could help preserve traditional knowledge while promoting sustainable practices deeply embedded in local contexts by fostering collaboration between academic institutions and regional artisans.

In conclusion, this paper has explored how material-led low residency education can offer a robust framework for sustainable educational practices deeply rooted in place-based approaches, regional craftsmanship, and cultural heritage. By integrating theoretical insights with practical examples, this research underscores the transformative potential of a pedagogy that imparts material literacy and fosters a meaningful engagement with the local contexts in which students are embedded. The findings suggest that design education can move towards a more sustainable and equitable future by embracing material-led, place-based approaches. This approach not only equips students with the skills and knowledge they need to succeed in their careers but also instils in them a sense of responsibility towards their communities and the global environment. As educational institutions grapple with the challenges of the Anthropocene, these models offer a promising pathway forward.

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