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Design Thinking Pedagogy for Cultural and Creative Product Development in Higher Art Education

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Abstract

The study focuses on a common curriculum issue – that while arts and design students are often encouraged to use culturally resonant content, symbols, heritage forms and local stories to inspire products. The study constructs a qualitative pedagogical case-study framework of integration of design thinking in cultural and creative product development in higher art education. Based on design thinking, studio pedagogy, culturally sustaining pedagogy and cultural product design research, the article provides a case of studio case design over 12 weeks that is based on the five-stage process of design thinking: empathise, define, ideate, prototype, and test/reflect. Case analysis yields four pedagogical contributions: design thinking provides structure for cultural inquiry; cultural translation transforms the heritage research into design criteria; prototype critique deepens reflection; and assessment can link cultural value, user value and product value. It presents a transferable teaching model for educators interested in higher art education who want to incorporate cultural interpretation, creative entrepreneurship, ethical design judgement, and iterative product development.

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Introduction

Cultural and creative product development is a significant element of higher art education, because it involves students in making the connection between cultural interpretation and visual language, material exploration, user experience, and product innovation. There is growing demand for students to create products based on heritage items, local handicrafts, museum collections, folklore, festivals, local symbols, calligraphy, architecture, ritual practices and other cultural materials in art and design programmes. This educational expectation is an expression of the increasing importance of cultural and creative industries, which see culture resources as not just an aesthetic reference, but also as an identity, memory, community value, and an economic opportunity carrier (Throsby, 2001; UNCTAD, 2022; UNESCO, 2022; Ma et al., 2024; Mayusoh et al., 2025). However, the learning challenge goes beyond having students decorate products that reflect cultural

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elements. Students need to develop the skill to read culture, select appropriate culture, transcode culture to modern product features, and to assess whether the product artefacts reflect respectful and useful trans-coding. Cultural product design research in fact suggests that, to be successful, cultural product design should be based on the extraction, transformation and application of cultural features rather than the surface placement of visual signs (Leong & Clark, 2003; Lin, 2007; Moalosi, Popovic, & Hickling-Hudson, 2010). Recent research in the field of design science also highlights the need to find cultural carriers, extract cultural elements, translate into design characteristics, and assess the sensitivity with respect to users and culture (Dhadphale, 2024; Xiang, 2025). Within studio education this is of great significance as learning, often, is a process that is based on open-ended project briefs, critique, experimentation with material, and iterative making. Although these practices are valuable, they can be tacit since it is typical for studio learning to rely on demonstration, dialogue and reflective judgement (Schön, 1983, 1987; Shulman, 2005). Students can find pretty pictures or cultural references without having a clearly explicit way to explain the meaning of a symbol, why it is appropriate, how it should be transformed and how the user should experience it (Harrison, 2013; Smith, 2006). This can result in superficially good-looking products that are culturally shallow and ethically questionable (Escobar, 2018; Papanek, 1985). Design thinking is a pedagogical solution that is useful because it provides a framework that is iterative and human-centred to work with complex problems. It is usually linked to empathy, problem framing, ideation, prototyping, feedback and redesign (Brown, 2008; Razzouk & Shute, 2012). In the context of higher education, DT has been associated with problem finding, creative confidence, collaboration, active listening, and reflective learning, transcending disciplinary boundaries (Alvarado, 2025; Lake, Guo, Chen, & McLaughlin, 2024; McLaughlin et al., 2022; Wrigley & Straker, 2017). It is not that it supplants studio pedagogy in higher education of art. Instead, it can help render the process from culture to product development "visible, teachable, and assessable" (Biggs & Tang, 2011; Wiggins & McTighe, 2005). Hence, this article constructs a pedagogical case-study framework in qualitative method of Design Thinking Pedagogy for Cultural and Creative Product Development in Higher Art Education. The article is a contribution to education and teaching. It does not remark on students' answers that have been made up. Rather, it offers a pedagogical case design structure that teachers can use, modify and test for future empirical studies. The intent is to demonstrate the use of design thinking as a "studio-learning scaffold" for culturally responsible product development aligned with the logic of a case study which aims to investigate a bounded educational phenomenon in-depth (Merriam & Tisdell, 2016; Stake, 1995; Yin, 2018).

The study has three main objectives, such as examining how design thinking can support cultural understanding in cultural and creative product development, developing a transferable studio-learning structure that connects cultural inquiry, ideation, prototyping, and critique, and identifying pedagogical principles for ethically transforming cultural resources into contemporary product concepts.

In the study, the contribution relies on making a pedagogical framework visible by way of curriculum design, learning tasks, critique practices and assessment criteria (Biggs & Tang, 2011; Wiggins & McTighe, 2005). Therefore, the study seeks answers to the following research questions.

1. How can design thinking pedagogy support students' cultural understanding in cultural and creative product development?
2. How can the stages of design thinking be translated into higher art education studio activities?
3. What pedagogical principles can guide the responsible transformation of cultural resources into creative product concepts?

Literature Review

Design thinking as an educational approach

Design thinking is a very popular professional design process and teaching philosophy in learning through complex problem solving. Buchanan (1992) linked DT with wicked problems and explained that design

practice is frequently not simply a technical problem but an uncertain, open-ended, and socially situated problem. Fewer and fewer researchers have also noted that designers engage in a way of knowing that is unique, characterized by practical reasoning, representation, and abductive judgement (as in Cross, 2001). These arguments extend the general design theory, which considers the design problems as indeterminate, situated and framing dependent (Dorst, 2011; Lawson, 2006; Rittel & Webber, 1973). These ideas are relevant to art education at the higher level because the development of art products rooted in cultural values and interests often do not have a single right answer, but rather, students need to formulate problems, make interpretive decisions, and provide arguments for design choices. According to Razzouk and Shute (2012), design thinking is an analytic and creative process involving learners to experiment, make models, receive feedback, and redesign. This renders it pedagogically relevant since it can develop problem solving, visualization, creativity and metacognitive awareness. Dym, Agogino, Eris, Frey, and Leifer (2005) also emphasize the need for students in design education to deal with the difficulty of ambiguity, constraints, iteration, and thinking in systems. In this sense, design thinking is more of a learning scaffold that facilitates students' inquiry and action than it is a business innovation method (Henriksen, Richardson, & Mehta, 2017; Kolb, 1984). New studies in higher education show that DT is relevant for teaching in the university. McLaughlin et al. (2022) identified that DT teaching and learning in four universities facilitated structured learning and inter-disciplinary working. Lake et al. (2024) also found that skills of active listening and paying attention to the other person's point of view are considered good design thinking skills, whereas prototyping and experimentation skills might need more support in a pedagogical context. Alvarado (2025) also found that DT is a pedagogically active approach in higher education that has the potential to foster creative problem solving, collaboration, and student engagement. The findings also validate the present research paper's emphasis on making design thinking teachable in studio-based art and design curriculum.

Studio pedagogy and reflective practice in art and design

The studio approach has a strong influence on higher art education. Studio learning is usually project-based learning, material, dialogic, and iterative. Students learn by creating products, receiving feedback and comments on their work, revising their products, and building up their 'disciplinary judgement' (Schön, 1983, 1987; Shulman, 2005). Reflective practice is at the center of Schön's work as it is a description of how professional learning takes place through reflection-in-action and reflection-on-action. Learners in the design studio are not merely applying the rules but making situated judgements as they engage with materials, constraints, users and feedback (Kolb, 1984; Vygotsky, 1978). Such a reflective tradition is very pertinent to cultural and creative product development. Reflections on form and function, as well as meaning, identity, ownership, representation and audience, should be addressed when students work with cultural resources. The social meanings and histories of interpretation that heritage scholarship reveals show that cultural resources are not neutral objects, but rather have claims of belonging (Harrison, 2013; Smith, 2006; UNESCO, 2003). It is therefore necessary that critique sessions don't just question about whether a product is attractive or is marketable. They should consider whether the cultural sources were interpreted appropriately, what was changed, what was retained, what was missing, and whether the design communicated respectfully (Brookfield, 2017; Paris, 2012). These questions can be made explicit at every step of the studio project and can be applied through design thinking to enhance the studio pedagogy.

Cultural and creative product development

Cultural product design literature can be a good connection between cultural heritage and product innovation. Lin (2007) suggested a cross-cultural product design model that transformed cultural features into modern product design by extracting the cultural features from cultural objects. This model is significant because it differentiates between the surface and the deeper cultural significance. When designers are sensitive to cultural aspects, culture-oriented product design also can assist in

conveying culturally embedded meanings (Moalosi, Popovic, and Hickling-Hudson, 2010). Relatively recent is the proposal by Xiang (2025) of a systematic cultural product design, which includes cultural carriers, cultural elements, cultural features, implementation, and evaluation. However, related studies indicated that the creation of cultural product innovation requires cultural research that is based on the context of the user and the process of translation from culture to design concepts (Dhadphale, 2024; Gumulya, 2022; Leong & Clark, 2003; Ma et al., 2024; Mayusoh et al., 2025). These models prove that there is a need to take cultural product design through a rigorous translation process. The pedagogical implication is obvious: in art education, the student must be given structured learning activities to help him or her transition from cultural seeing to product decisions for higher art education. They should record sources, interpret meaning, compare potential interpretations, and consider how cultural elements manifest themselves in form, colour, texture, function, packaging, interaction, or experience of service. In absence of this scaffolding, cultural design is in danger of becoming a decorative borrowing. It can be a means of cultural learning, creative inquiry and responsible product innovation, if supported appropriately (Krippendorff, 2006; Norman, 2013; Sanders & Stappers, 2008).

Culturally responsive and sustaining pedagogy

Ethical sensitivity is also needed for cultural design education. Culturally responsive teaching prioritizes the students' cultural identities and community-engaged knowledge as learning resources instead of minutely details (Gay, 2018; Ladson-Billings, 1995). This is also the case with Paris (2012) who proposes the concept of culturally sustaining pedagogy which, instead of assimilation of learners to the dominant culture, seeks to sustain cultural and linguistic pluralism. While these frameworks are not new to product design, they are very relevant when students are working with heritage, community narratives or culturally specific symbols (Huang & Ycong, 2025; UNESCO, 2003; Smith, 2006). Culturally sustaining pedagogy, as it applies to cultural and creative product development, emphasizes for educators to pay attention to who the culture belongs to, who gains benefits from the design, the accuracy of the representation, and the proper recognition of cultural knowledge. It is not to say that the student is not able to reinterpret tradition. It implies re-interpretation is informed, documented and reflective. This goal can be facilitated by DT, as empathy, definition, prototyping and testing can be refocused to be culturally responsible inquiry, rather than just consumer desirability, (Escobar, 2018; Papanek, 1985; Paris, 2012).

Theoretical Framework

The theoretical foundation draws from four fields of literature: design thinking, studio pedagogy, culturally product design and culturally sustaining pedagogy. The process structure is provided by design thinking, the learning environment of making and critique by studio pedagogy, the translation logic from cultural resource to product feature by cultural product design, and the ethical orientation by culturally sustaining pedagogy (Brown, 2008; Lin, 2007; Paris, 2012; Schön, 1987). The framework also draws on constructive alignment, as the teaching activities, evidence of learning and assessment criteria align with the same educational outcomes (Biggs & Tang, 2011; Wiggins & McTighe, 2005). The framework is based on the premise that the process of cultural and creative product development is not a simple process of converting culture into merchandise. It is a pedagogical process of cultural inquiry, interpretation, making, critique and revision. Students start by exploring cultural contexts and considering future users; they then identify a design opportunity based on cultural meaning; they brainstorm several translations; they prototype; they test the clarity of their design in terms of culture and usability; and they refine their ideas through reflective critique. This series illustrates the iterative logic of design thinking, the reflective cycle of studio learning, and the translation of cultural features to meaningful product attributes in cultural product design (Dym et al., 2005; Kolb, 1984; Moalosi et al., 2010; Xiang, 2025).

Methodology

Research design

The qualitative approach of pedagogical case-study design was used in the article. When the researcher

wants to gain a deeper understanding of a phenomenon in its context that is bounded in an educational setting, a case is appropriate (Merriam & Tisdell, 2016; Stake, 1995; Yin, 2018). The bounded case in this paper is the higher education art education studio module that is being implemented in 12 weeks focused on cultural and creative product development. The case is not statistical but pedagogical in nature; it tells how a course can be designed, analyzed and evaluated using design thinking. This is appropriate as the

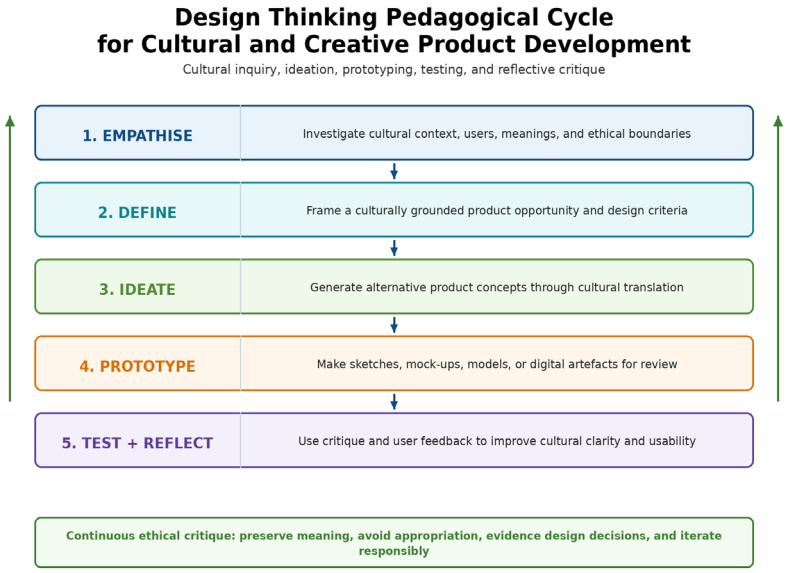

Fig. 1: Design thinking pedagogical cycle for cultural and creative product development. Source: Author-created schematic framework.

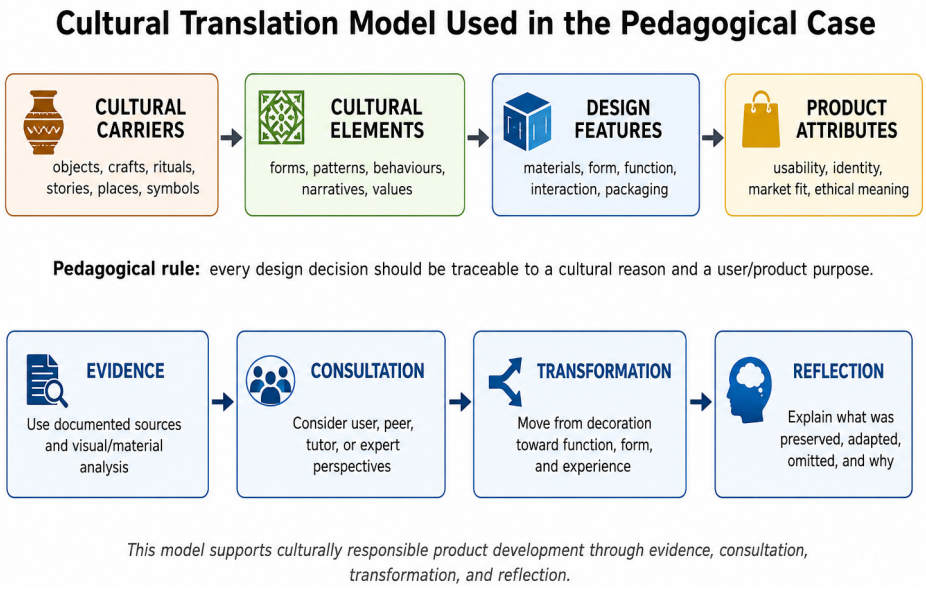

Fig. 2: Cultural translation model used in the pedagogical case. Source: Author-created schematic framework.

intent of the study is to interpret, to understand, and to promote curriculum goals, not to experiment with measurement (Creswell & Poth, 2018). Design-based pedagogical inquiry is also used to inform the article. Design-based approaches in education are useful as they relate theory, curriculum design, enactment and improvement (Barab & Squire, 2004; Brown, 1992; Reeves, 2006). This manuscript is not a finished classroom experiment, but rather a structured case design for the module. Thus, pedagogical alignment, learning tasks, critique points and assessment logic are issues in focus in the analysis. The same framework can be used for empirical data collection during the later implementation of the module at the students' level, such as interviews, observations, portfolios and reflective journals (Creswell & Poth, 2018; Yin, 2018).

Case context and unit of analysis

The case is an undergraduate studio module called Cultural and Creative Product Development. It is aimed at students studying art and design, product design, visual communication, craft design or any other creative programme. Students choose a cultural resource, engage in contextual and user research, identify a product opportunity, and design product concepts, prototype an artefact or product system, and deliver a reflective design rationale. This is analogous to the learning process that occurs in a studio-based design environment, where problem framing, material exploration, critique and reflective iteration are key components of the learning process (Schön, 1987; Shulman, 2005; Wrigley & Straker, 2017). The cultural resource can be local craft techniques, museum objects, regional festivals, traditional patterns, historical stories, intangible heritage practices, food culture, calligraphy, folk symbols or architectural details. Students will need to explain how the image or material is culturally significant and analyse the visual and material aspects of the image, identify potential users and explain how the design develops and changes from the image source, rather than simply copying it. The focus of analysis is therefore the pedagogical structure of the module and the learning evidence that it calls for (Harrison, 2013; Smith, 2006; UNESCO, 2003).

Data sources and analytic procedure

The data sources in this manuscript are teaching documents and designed learning artefacts, as this manuscript is a pedagogical case design and not an outcome of human-participant data. These include the course brief, weekly teaching plan, cultural inquiry prompts, design process map, cultural translation matrix, critique questions, prototype evaluation rubric, and final presentation criteria. These documents provide the article with means to examine the coherence, assessability and ethical responsibility of the recommended pedagogy. Here, the analysis of documents is suitable as curriculum artefacts can serve as sources of information about educational design logic, assumptions, and assessment priorities (Bowen, 2009; Merriam & Tisdell, 2016). The analysis method used is thematic document analysis. Firstly, the module documents are mapped to the five design thinking stages. Second, the type of cultural learning, type of design activity, teacher scaffolding, and evidence of assessment for each stage are examined. Third, pedagogical affordances and risks of each

Table 1: Case-study design overview

Element	Application in this article	Pedagogical purpose
Approach	Qualitative pedagogical case study	To analyse how design thinking structures a cultural product studio module
Case boundary	A 12-week undergraduate studio sequence	To keep the study focused on one transferable higher art education context
Unit of analysis	Teaching design, learning tasks, critique prompts, prototype process, and assessment rubric	To examine pedagogy rather than unsupported statistical outcomes
Analytic outcome	Pedagogical themes, teaching principles, and assessment indicators	To provide an adaptable model for art and design educators

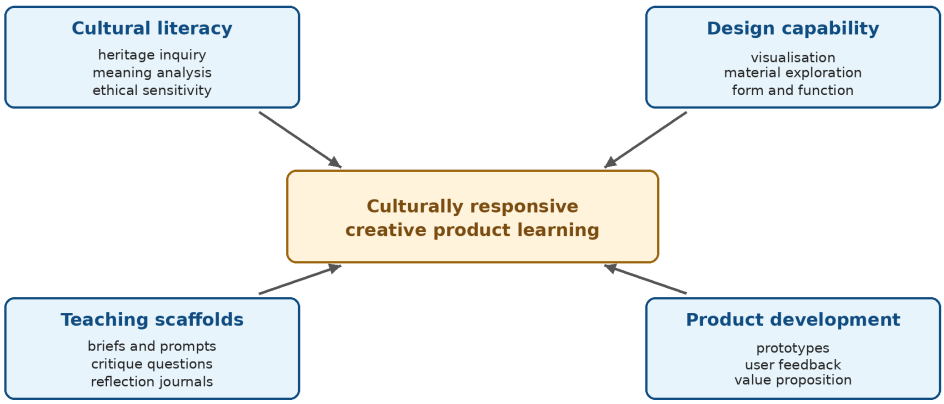

Fig. 3: Four-layer pedagogical alignment for the studio module

stage are analyzed in the light of literature on design thinking, studio pedagogy, cultural product design, and culturally sustaining pedagogy. These themes are cultural inquiry as empathy, cultural translation as problem definition, prototype iteration as reflective learning and critique as ethical evaluation.

Trustworthiness and ethical considerations

Transparent and theoretically aligned design, as well as analytic traceability, serve as indicators of the trustworthiness in this pedagogical case design. The framework provides a clear connection with each teaching stage to a learning activity, a piece of evidence and an assessment purpose. The cultural translation matrix and rubric ensure the reasoning process is transparent and minimise the subjective preference risk in the assessment. The strategies align with qualitative trustworthiness criteria, including credibility, dependability, confirmability, and evidence trails (Lincoln & Guba, 1985; Tracy, 2010). This manuscript does not contain any human-participant data. Thus, it does not feature excerpts from interviews, survey results, classroom observations, or identifiable student portfolios. Where the framework is used in a real course where empirical data is gathered, ethical clearance, informed consent, voluntary participation, anonymisation and secure data storage will be necessary. This is particularly relevant in view of the fact that sensitive personal or communal knowledge may be part of the attributes of cultural identity, student reflections, and design portfolios (BERA, 2018; Creswell & Poth, 2018; UNESCO, 2003).

Findings

Overview of the 12-week studio intervention

The case design is a sequence of 12 weeks in the studio, a translation of the design thinking process. The sequence is designed to prevent students from going from cultural inspiration to product styling. Rather, they transition from inquiring about culture to defining design problems, ideating, prototyping, gathering feedback, and reflecting to refine designs. This staged structure facilitates the process of constructive alignment as the learning activities, the evidence to be collected in the studio, the learning prompts used in the critique and the assessment criteria are deliberately aligned (Biggs & Tang, 2011; Wiggins & McTighe, 2005).

Stage 1: Cultural empathy and contextual inquiry

The first stage has students think about culture instead of using it. Students explore the context, meaning, use, and social context of a culture resource. This stage involves visual documentation, secondary research, site and/or object analysis and, if applicable, consultation with cultural knowledge holders. The goal is to discourage the use of cultural symbols as decorative elements and to promote cultural heritage for the living, situated and socially interpreted knowledge (Harrison, 2013; Smith, 2006; UNESCO, 2003). In this step, design thinking's empathy principle becomes cultural empathy. Students are encouraged to inquire about who created the cultural

Table 2: Twelve-week pedagogical case design

Weeks	Design thinking focus	Student activity	Learning evidence
1-2	Empathise	Select cultural resource; research cultural context, users, and ethical boundaries	Cultural inquiry notes and source map
3-4	Define	Convert cultural findings into a design opportunity and product criteria	Problem statement and design criteria
5-6	Ideate	Generate alternative product concepts and cultural translations	Concept sketches and translation matrix
7-9	Prototype	Develop material, digital, or physical mock-ups	Prototype iterations and critique record
10-11	Test and reflect	Gather peer, tutor, and possible user feedback	Feedback log and redesign decisions
12	Present	Submit final prototype, rationale, and reflective account	Final artefact, presentation, and reflective statement

resource, who it is for, how it is used, if it is sacred or restricted, and how it may be understood by different audiences. From an educational perspective, this phase serves as a cultural level input and an ethics duty (Escobar, 2018; Gay, 2018; Papanek, 1985; Paris, 2012).

Stage 2: Defining the cultural design problem

Students then have to translate research into a design problem in the second stage. It is usually this area that students are most in need of assistance. Culture product projects may turn into a collection of motifs if there is no clear problem to solve. There needs to be a relationship between cultural meaning, user need, product opportunity and educational learning outcome. This is in line with the general design literature on problem framing, which sees designers actively construct the problem prior to developing suitable solutions (Buchanan, 1992; Dorst, 2011; Rittel & Webber, 1973). Students formulate a brief design statement describing the cultural feature to be transformed and the user or context being addressed, the significance of the transformation, and the criteria for judging the effectiveness of the transformation. This phase takes the cultural research from description to design direction and provides for later assessment based on explicit criteria and not subjective taste (Biggs & Tang, 2011; Wiggins & McTighe, 2005).

Stage 3: Ideation through cultural translation

The third stage takes students away from one obvious idea to many alternative translations. Ideation is

Table 3: Cultural translation matrix for student design projects

Cultural layer	Guiding question	Design translation	Evidence required
Physical/material	What visible forms, colours, textures, materials, or techniques are present?	Form, surface, pattern, material, packaging, production method	Visual analysis, sketches, material samples
Social/behavioural	How is the cultural resource used, performed, shared, or experienced?	Function, interaction, scenario, service experience, user journey	Observation notes, user scenario, storyboard
Spiritual/symbolic	What values, stories, beliefs, memories, or identities are carried?	Narrative, identity message, symbolic feature, naming, brand story	Source documentation, reflective explanation, ethical statement

essential, as students could choose the first visual association that they see and end up with a weak cultural product. The studio brief thus calls for the students to develop multiple concepts that involve translating the various cultural layers into features of the product. This can be a craft pattern in one concept, a making process in another and a user interaction in another concept. This is in line with participative and co-creative DT that suggests that a broad spectrum of potential meanings and DT directions are explored in the early stages (Kelley & Kelley, 2013; Sanders & Stappers, 2008). This is a divergent thinking stage with a cultural accountability. Students are asked to describe not just what they created, but why the ideas are a valid transformation of the cultural resource. This enables students to relate the creativity with evidence, and not styling it off-the-cuff. It also links to product design for culture, which emphasizes that designers must interpret the culture into products in a documented manner and not to simply borrow, without interpretation, from the culture (Leong & Clark, 2003; Lin, 2007; Moalosi et al., 2010).

Stage 4: Prototype iteration and material experimentation

The fourth stage renders the project concrete by means of sketch models, digital mock-ups, material tests, packaging drafts, service diagrams or physical prototypes. Prototyping plays a crucial role in design thinking as it brings ideas into the world and makes known the disconnect between what is meant and what is created. In the higher forms of art education, prototyping also enhances knowledge of art materials, and enables students to determine if a cultural meaning is preserved in translation to product form. This process facilitates experiential learning and reflective practice as learners learn by doing, reflecting, doing, and reflecting again (Dym et al., 2005; Kolb, 1984; Schön, 1983). The prototype critique should focus on the cultural clarity, usability, appropriateness of materials, production feasibility and emotional experience. Students record changes between iterations and reasons for the changes. This allows to see iteration as learning, not only as correction. As students need to explain the reasons for design changes in terms of evidence, user response, cultural meaning and function of the product, critical reflection is required here (Brookfield, 2017; Norman, 2013; Schön, 1987).

Stage 5: Testing, critique, and reflective redesign

The last step is Critique and Feedback. Feedback can be from tutors, other students, potential users, cultural experts or external reviewers in a studio course. The key message is that it is important to check both product performance and cultural communication. A product may have a strong functionality but poor culture, or it may have a strong culture but weak functionality for users. Students thus require feedback questions which cover both dimensions. This resonates with design thinking literature in which prototyping, listening, considering the user perspective, and collecting (interdisciplinary) feedback are identified as key, but not always sufficiently addressed aspects of teaching practice (Lake et al., 2024; McLaughlin et al., 2022; Sanders & Stappers, 2008). The design thinking cycle is completed with reflection. Students write a rationale for what cultural meanings were retained, altered, deleted, were used as feedback for redesign, and what limitations exist. This reflective piece is crucial in that it is evidence of cultural reasoning, not just end product of a visual. It also facilitates metacognitive learning as students' design decisions, assumptions, and iterations are visible for assessment (Brookfield, 2017; Kolb, 1984; Schön, 1987).

Case Analysis

Theme 1: Cultural inquiry becomes a structured learning process

The first pedagogical affordance is that design thinking makes learning visible and measurable, which is a form of cultural inquiry. However, in many studio settings, cultural research is not necessarily formal. Student may gather images or background information and not relate research to design decisions. The module's cultural inquiry is located in the empathise phase to encourage students to consider cultural stakeholders, meanings, contexts, sources, and restrictions prior to design. This helps to foster cultural literacy and to limit the risk of superficial appropriation

(Gay, 2018; Harrison, 2013; Paris, 2012; Smith, 2006). The process also helps students to grasp that culture is not simply a repository. Cultural resources are "living, interpreted, contested and transformed. Users and contexts make students realize that a cultural product must negotiate the poles of remembrance and change. This aligns with culturally responsive pedagogy as the culture is treated as an active learning resource, not as filler (Ladson-Billings, 1995; Paris, 2012; UNESCO, 2003).

Theme 2: Cultural translation strengthens problem framing

The second affordance is one of improved problem framing. When design students precisely define their design problem before they engage in ideation, they tend to come up with more cultural product ideas. A cultural design problem is not a problem that asks "How can a product be made to look cultural? It questions the significance of the culture, how to translate the culture into the product experience and with which users to consider. This helps to bridge the gap between cultural inspiration and design criteria that are interpretable (Buchanan, 1992; Dorst, 2011; Rittel & Webber, 1973). Thus, the cultural translation matrix is crucial since it is a linkage between cultural layers and design features. Physical/material culture can be expressed as form, pattern, and material. Social/behavioural culture can be manifested in interaction, use scenario, or service experience. Spiritual/symbolic culture can be expressed as story, identity and emotion. The use of this kind of translation structure can support students to explain their design and make the assessment easier to understand (Lin, 2007; Moalosi et al., 2010; Xiang, 2025).

Theme 3: Prototyping supports reflective and iterative learning

The third affordance is that of the reinforcement of iterative learning. In the development of cultural and creative products, students have the potential to be too attached to a visual idea. Prototyping proposes an alternative to this attachment since it tries to test if it is possible for the idea to work materially, functionally and culturally. A prototype might show that a symbol is ambiguous, a form is "chafing," a material is wrong, or a story is hard for the users to follow. Prototyping is a well known function of design education and experiential learning research (Dym et al., 2005; Kolb, 1984; Razzouk & Shute, 2012). This discovery is consistent with reflective practice as students construct their knowledge by making and remaking, not just by listening and taking explanations. Every prototype is a thinking object. The critique record and feedback log then enable to record the studio discussion as evidence of learning to inform reflection-in-action and reflection-on-action (Brookfield, 2017; Schön, 1983, 1987).

Theme 4: Assessment connects cultural value, user value, and product value

Assessment alignment is the fourth affordance. If the criteria are based on just the visual quality of the product, cultural and creative product projects may be assessed inconsistently. In the proposed rubric, the cultural meaning, design process, user experience, prototype quality and reflective explanation are linked together. This allows pupils to be assessed for both the quality of the artefact created and their understanding of culture and design thinking. The approach is based on the principles of constructive alignment and backward design as learning outcomes, activities, evidence and standards for assessment are connected (Biggs & Tang, 2011; Wiggins & McTighe, 2005). It is important to have a balanced rubric as cultural product development is not just about artistic expression. It will need moral interpreting, viability of products, usability, visual coherence, and awareness of cultural source material. This assessment structure is therefore designed to enable both freedom of creativity and the rigour of academic evaluation, recognising the importance of meaning, values and user experience in the communication of designed products.

Discussion

The adaptation of design thinking as a pedagogical scaffold and not a formula for innovation is found to be useful in cultural and creative product development as described in this article. It's most important benefit is that it makes the studio process visible. A process of cultural inquiry is followed by design

Table 5. Assessment indicators for higher art educators

Criterion	Evidence in student work	Assessment focus
Cultural interpretation	Source map, meaning analysis, ethical statement	Accuracy, depth, sensitivity, and acknowledgement
Design transformation	Translation matrix, concept sketches, prototype iterations	Connection between cultural features and product decisions
User/product value	Scenario, function, usability feedback, value proposition	Usefulness, feasibility, and contemporary relevance
Reflective judgement	Critique record, redesign explanation, final rationale	Evidence-based improvement and learning from feedback

problem framing, ideation, prototyping, critique, and reflective redesign. This promotes cultural literacy, design thinking and creative confidence (Alvarado, 2025; Kelley & Kelley, 2013; Razzouk & Shute, 2012; Wrigley & Straker, 2017). Additionally, the framework addresses a specific gap in cultural product design education: that culture may be considered as visual style, and not as meaning, practice and identity. The model provides for cultural source documentation, translation matrices and ethical reflection, which help students to explain the cultural foundation of their design choices. This aligns with Lin's (2007) argument that the cultural features must be extracted and transformed to product design; Xiang's (2025) emphasis on identifying cultural carriers, and translating cultural elements systematically; and recent culturally oriented product design research that focussed on situated cultural understanding (Dhadphale, 2024; Gumulya, 2022; Moalosi et al., 2010). There are also references to the need for prototyping. Lake et al. (2024) points out that prototyping and experimenting are less well understood in design thinking teaching. The present case aims to tackle this issue by embedding prototype iteration as a key part of the assessment. Students are not required to simply create a final product, but to be able to demonstrate how the design evolved as a result of critique and why the design modifications enhanced cultural clarity, usability, and product value. This emphasis aligns with the theories of experiential and reflective learning which consider action, feedback and revision to be central to the learning process (Dym et al., 2005; Kolb, 1984; Schön, 1987). Lastly, the model places cultural product development in the context of an ethical educational practice. Emphathy should not be just about the consumer's preference in design thinking. Empathy in cultural and creative design needs to be accompanied by cultural sensitivity, source acknowledgement and awareness of representation. Culturally sustaining pedagogy adds to design thinking by reminding teachers that creative transformation should not take away or steal cultural knowledge (Escobar, 2018; Gay, 2018; Papanek, 1985; Paris, 2012).

Conclusion and Suggestions

This article constructed a pedagogical case study framework that was qualitative in nature for the design thinking pedagogy for cultural and creative product development in the field of higher art education. The need for explicit support, when students convert cultural resources into contemporary product concepts, is addressed through the framework. It was posited that design thinking coupled with studio pedagogy, cultural product design theory and culturally sustaining pedagogy can be used to provide structure for cultural inquiry, product ideation, prototype development, critique and reflective redesign. The primary output is a transferable teaching model that consists of five steps: empathise, define, ideate, prototype, and test/reflect. The model offers learning tasks, critique questions, translation means, and assessment indicators that can be used by educators to link cultural value, user value, and product value. It also makes it clear that cultural product development is not limited to visual attractiveness but also needs to be evaluated through cultural interpretation, ethical reasoning, design process, prototype quality and reflective judgement. The framework should be assessed in future classroom

implementation with real students via portfolio analysis, reflective journal, interview, observation, and prototype review. The research would be an empirical study that would give educators the chance to determine if the model enhances students' cultural understanding, creative confidence, and competence with the design process and if it meets the ethical standards for conducting research with students and culturally situated materials.

Higher level art teachers should use cultural research as evidence in art design, not as background information. Requiring students to submit a source map, cultural meaning analysis, ethical note, and evidence of visual or material investigation prior to entering into ideation. This recommendation is to promote cultural resources be interpreted based on documented inquiry and contextual understanding and not superficially aesthetic borrowing (Harrison, 2013; Smith, 2006; UNESCO, 2003).

A cultural translation matrix should be used throughout the process of the studio by course teams. Students should be able to relate the cultural carriers and cultural elements to the specific product characteristics of form, material, function, interaction, packaging, narrative and user experience in the matrix. This practice ensures that all design decisions are driven by cultural and user or product purpose, thereby enhancing creative accountability and transparency in assessment (Lin, 2007; Moalosi et al., 2010; Xiang, 2025).

Assessment should incorporate cultural value, user value, product feasibility, prototype quality and reflective learning. Questions should therefore include critique questions such as the following: What was preserved, what was transformed, what was omitted, why was this, and how did feedback affect the design. This will enable students to practice and develop ethical interpretations, iterative learning and professional design judgements, instead of just a final visual artefact (Biggs & Tang, 2011; Brookfield, 2017; Schön, 1987; Wiggins & McTighe, 2005).

Limitations and Future Research

The main limitation is that this article presents a pedagogical case design rather than findings from a completed classroom intervention. It therefore does not claim measured student learning gains. The framework is theoretically grounded and practically detailed, but it should be implemented and evaluated empirically through ethically approved classroom research, using evidence such as portfolios, reflection journals, critique records, interviews, observations, and rubric-based prototype review.

A second limitation is that cultural and creative product development varies across cultural contexts, institutions, product categories, and design disciplines. The model should therefore be adapted rather than applied mechanically. Future research could compare different cultural resources, such as museum collections, intangible heritage, craft practices, local architecture, or digital cultural narratives. Mixed-methods studies would be especially useful because they could combine portfolio analysis with student surveys on creative confidence and cultural awareness while also examining whether cultural interpretation is preserved in final product outcomes.

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