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An Integrated Human-Centered Framework as a Pedagogical Approach in Design Education



DOI : <https://doi.org/10.46245/ijorer>

Sections Info

Article history:

Submitted: November 23, 2022

Final Revised: January 11, 2023

Accepted: January 16, 2023

Published: January 31, 2023

Keywords:

Human-Centered,
Design Education
Affective Engagement
Reflective Learning
Meaning-Making
Design Pedagogy



ABSTRACT (9 pt)

Objective: This study examined how an integrated human-centered pedagogical framework shapes students' learning experiences in design education, with particular attention paid to the interaction between affective engagement, reflective interpretation, and meaning-making. This research responds to the growing need for design education approaches that move beyond a primary focus on technical skills toward more holistic and interpretive learning processes.

Method: A qualitative approach was employed, involving 60 students enrolled in the *Commercial and Service Design* course within the Visual Communication Design program at Universitas Ciputra. Learning activities were implemented through project-based tasks grounded in human-centered design principles. Data were collected from students' reflective writing and documentation of their design processes throughout the course. Interpretive thematic analysis was conducted to identify patterns related to affective engagement, reflective interpretation, and meaning-making within students' learning experiences.

Results: The findings indicated that students experienced the learning process as an integrated interaction between emotional engagement, reflection, and contextual interpretation. Emotional responses, such as curiosity, uncertainty, and empathy, encouraged deeper involvement in the design process and stimulated reflective thinking. Through reflection, students articulated the reasoning behind their design decisions and connected contextual understanding with visual problem-solving. Students also demonstrated a shift in perspective, increasingly recognizing visual communication as a contextual and meaning-oriented practice rather than as a purely aesthetic activity.

Novelty: Although this study does not propose a new pedagogical model, it provides empirical evidence explaining how affective engagement, reflection, and meaning-making interact within human-centered design learning environments to support experiential and interpretive learning in design education.

INTRODUCTION

To respond to the complex changes occurring in professional practice, technology and society, Design Education in higher education must increasingly adapt to the demands of those evolving areas.

Contemporary Design Education has transitioned away from solely focusing on developing technical skills and has now shifted its focus towards producing reflective, interpretive, and context-sensitive designers who can engage with real-world problems. Recent studies in Design Education indicate that there is a need for more learner-centered, experiential pedagogies that enable learners to actively participate in the

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construction of meaning through the iterative design process rather than passively receiving knowledge from others (Selvalakshmi et al., 2021; Sandri et al., 2021; Ruge et al., 2020).

Design education is increasingly focusing on human-centered design approaches that prioritize empathy towards users, understanding user needs, and being aware of the context in which all design occurs. The current literature supports this concept using data collected from studies that support deeper connections with social contexts, users' points of view, and ethical implications through the human-centered process incorporated into learning activities (McLaughlin et al., 2019; Garcia-López et al., 2020; Higgins et al., 2024). However, these studies show that although human-centered design is often taught in a procedural format, there is limited research examining how students internally interpret and connect with their emotions when working through the human-centered design process (Karakaya, 2020; Qian, 2023).

A key part of the learning process in visual communication design is how meaning is created by students through the translation of abstract ideas, narratives, and contextual values into visual formats. Interpretation of visual signs, symbols, and multimodal elements in specific culture and/or social contexts create the meaning of design, as shown by the previous studies of visual literacy and semiotics (Serafini, 2017; Mnguni, 2019; Hurley, 2021). An interpretive learning experience provides students the opportunity to explain the rationale behind their visual design choices and to understand how the design outcomes express the intended meaning (Karakaya, 2020; Qian, 2023).

Creating meaning is a primary aspect of learning about visual communication through design, especially when learners have to convert the essence of something abstract, whether it be an idea or event, as well as its related context and culture, into a visual representation or point of reference. The field of visual literacy, along with semiotics, supports the idea that the meaning of design is constructed based on how individuals make sense of the various forms of visual imagery (e.g., signs, symbols, and/or combinations of multiple modes) in their particular cultures and/or societies (Serafini, 2017; Mnguni, 2019; Hurley, 2021). Within design education, interpretive learning not only enables students to explain the reasons they choose to provide visual representation, it also enables them to fully understand how the meanings attributed to visual representations are created and conveyed through the final outcome of the design (Rod et al., 2021; Dziwa, 2018).

In addition to interpretive means of doing, there is an emotional aspect to learning that assists students' engagement and overall experience while engaged in the learning process. Educational research demonstrates that emotions impact how students view the tasks they are to complete, their level of motivation toward completing the tasks, and their engagement in the learning environment (Dewaele et al., 2019; Froiland et al., 2016; Fredricks et al., 2004). Research conducted on higher education has shown that being affectively engaged promotes a deeper level of engagement, especially in experiential and project-based learning experiences, where students perceive that there is meaning in their learning activity (Perander et al., 2020; Mais-Thompson et al., 2024). These findings suggest that learning in design education cannot be fully understood without considering students' emotional responses alongside cognitive processes.

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A major part of Experiential Learning Theory is Reflective Practice. It allows students to learn from their personal experiences, supports them in examining what happened during their learning, challenges their assumptions, and constructs their own understanding of their experience, linking action to understanding (Hussein, 2018; Jonck et al., 2018; Karaca et al., 2016). In Design Education, Reflective Writing and Reflection-in-Action help students to comprehend their Design Choices and Design Learning Experiences, facilitating the development of interpretive awareness and professional reasoning (Kostiainen et al., 2018; Asadpour, 2021).

Despite the increased interest in human-centered design, affective learning, reflective practice, and meaning-making, much of the research has treated these areas as separate from each other. Little consideration has been given to how Affective Engagement, Affective Reflection and the Meaning-Making Processes form one coherent Framework for Pedagogy in Design Education. The current qualitative research and pedagogical studies are designed to help strengthen the understanding of learning as an integrated process involving Affective Experience, Reflective Practice and Interpretive Reason, thus creating meaningful Design Learning Outcomes.

Therefore, this study aims to explore how an integrated human-centered pedagogical framework shapes students' learning experiences in design education. Specifically, this research investigates how affective engagement, reflective interpretation, and meaning-making interact during project-based learning activities and influence students' understanding of visual communication practice. By examining students' reflective accounts and design process documentation, this study seeks to provide empirical insights into how human-centered learning environments support holistic competency development in design education.

LITERATURE REVIEW

Contemporary design education is experiencing a pedagogical shift from primarily focusing on technical skill development toward approaches that highlight interpretation, reflection, and meaning-making in learning. Recent academic literature on design education emphasizes a move away from technical skill-based learning toward more targeted pedagogies that prioritize students' learning experiences and how they create meaning through those experiences. (Selvalakshmi et al., 2021; Sandri et al., 2021; Ruge et al., 2020). Studies have shown that the best way for students to learn how to design effectively is through active engagement in exploring and solving design problems using collaborative inquiry and experiential approaches, rather than through the passive absorption of instructional materials (i.e., technical skills) (Stoten, 2020; Selvalakshmi et al., 2021; Sandri et al., 2021; Ruge et al., 2020). This shift repositions design education as a process of interpretation and meaning-making, where students critically engage with complex design problems rather than focusing solely on technical execution.

Experiential learning and project-based learning are both prevalent within design education because these models allow learners to simultaneously connect theory to practice, develop higher-order cognitive skills, and prepare for their future professional careers. Moreover, research on post-secondary education has demonstrated that experiential learning supports motivation, collaboration, and problem-solving skills by

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providing students with authentic learning experiences situated within their own contexts (Kokotsaki et al., 2016; Almulla, 2020; Rohm et al., 2021). However, research on experiential learning models has suggested that experiential learning models do not guarantee meaningful learning outcomes unless learning conditions are deliberately designed to include reflective and interpretive processes (aki, et al., 2016; Almulla, 2020; Rohm et al., 2021). Therefore, without the inclusion of well-defined opportunities for students to reflect on and interpret their learning experiences, there is a likelihood that student learning will be largely based on end products rather than on meaning derived from their learning experiences (Pan et al., 2019; Belwal et al., 2020; Zairul, 2020; Saghafi, 2020).

The increasing use of human-centered design in design education has led researchers to examine how embedding human-centered principles into students' learning activities promotes greater engagement with the social context of designing, ethical considerations of designing, and the needs of stakeholders in the design process, which contributes positively to both student learning experiences and design outcomes (McLaughlin et al., 2019; Garcia-López, et al., 2020; Higgins et al., 2024). The literature reflects a cautionary note about educational institutions that utilize human-centered design since they often use a procedural approach with an emphasis on the stages of the process and deliverables as opposed to students' internal interpretation of the human-centered process, emotional engagement, and reflective sense-making of their learning experience (Karakaya, 2020; Qian, 2023.) Emphasis will, therefore, need to be placed on developing an understanding of how students experience and interpret human-centered learning beyond merely the methodology of execution.

Meaning-making is an essential part of educating students about visual communication design. Students learn how to take abstract concepts, stories, and contextual meanings and convert them into visible images. The study of visual literacy and semiotics shows that meaning is created by people interacting with multimodal elements such as images, words, layout, and structure in a given cultural and social setting (Serafini, 2017; Mnguni, 2019; Cardoso et al., 2022). The process of interpretive learning helps students articulate their design rationale (reasons for creating a design), assess the symbolic value of the design (what it symbolizes), and comprehend how visual decisions create different messages apart from aesthetics (Dziwa, 2018; Navarro et al., 2023). These studies support the notion that education in design is an ongoing interpretative negotiation of an individual's previous knowledge, experience, and localized information.

The affective dimensions of learning are central to how a student engages in the task of learning. Educational psychology research has demonstrated that emotions are an important part of how a learner perceives and regulates their efforts, as well as how they sustain motivation throughout their learning endeavors (Dewaele et al., 2019; Froiland et al., 2016; Muis et al., 2015). In higher education, the affective aspect of engagement has been shown to mediate the relationship between the learning environment and learning outcomes, specifically in instances of experiential and project-based learning, where uncertainty, feedback, and iterative development are present (Perander et al., 2020; Wang et al., 2024; Mais-Thompson et al., 2024). Therefore, it can be concluded that emotional

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experiences are not peripheral but play an important role in how students engage with their learning tasks and create meaning from these experiences.

Reflective practice is an important means by which a learner's experience and emotions can become reflective practice. Recent research has found that through reflection, learners can explore assumptions, manage their emotions, and begin to understand their personal educational experiences in terms of the relationship between these experiences and the creation of new knowledge (Rosen et al., 2024; Hussein, 2018; Jonck et al., 2018). Reflection is increasingly regarded as a knowledge-development process, not merely a way of reviewing learning experiences after they have taken place (Karaca et al., 2016; Kostianen et al., 2018). In design education, structured reflection, such as writing or guided reflection, helps connect the learner's emotional engagement with the interpretation of knowledge and design decision-making (Asadpour, 2021; Bubnys, 2019).

In summary, the literature points to experiential learning, humanitarian pedagogy, emotional engagement, reflective practice, and meaning-making as critical components of current design education research. However, these components are often studied separately rather than as interrelated components of an integrated educational system. The limited amount of research on emotional engagement, reflective knowledge, and the development of knowledge as a result of these components may indicate that future research needs to focus on how they are connected and thus emphasize the importance of understanding emotional engagement, reflective knowledge, and meaning-making.

RESEARCH METHOD

Background of Research

This study was conducted in an undergraduate visual communication design course that adopted a human-centered approach through project-based learning activities. Students were tasked with developing a brand identity for either a real or simulated client, requiring them to investigate user perspectives, contextual conditions, and communication objectives throughout the design process. The project emphasized experiential engagement, encouraging students to interact directly with design challenges, reflect on their decision-making processes, and document their learning experiences through reflective writing.

During the course, students progressed through several stages of the design process, including problem exploration, concept development, visual experimentation, and iterative refinement. Alongside their design work, students documented reflections describing how they interpreted the design problem, how their ideas evolved, and how their feedback influenced their decisions. These reflective accounts, together with the documentation of the design process, served as primary data sources for examining how students experienced the human-centered learning framework implemented in the course.

The researcher in this study served as the course instructor and learning facilitator while also observing and analyzing students' learning experiences within the course environment. To uphold ethical standards, students were informed about the purpose of the study, and their participation was voluntary. All reflective writing and design documentation used as data were anonymized to protect students' identities. Participation in the study did not affect students' academic grades, and all data were used solely for research purposes.

Research Design

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Using a qualitative research methodology, this study focused on how students learn when taught within an integrated human-centered pedagogical framework for design education. A qualitative approach was used to enable an in-depth representation of the nature of affective engagement, reflective interpretation, and meaning-making that occurred throughout the students' learning, due to the multifaceted and context-specific quality of these processes related to the students' involvement in the various learning activities. Qualitative research methodologies are particularly effective for investigating how students construct knowledge and meaning, express their perceptions, and understand their experiences in the context of their learning and education, particularly where learning is viewed as an interpretive and situated process, rather than solely about achieving outcomes (Hussein, 2018; Bubnys, 2019; Navarro et al., 2023). This aligns with the purpose of this study - to investigate the nature of learning as it is shaped by experience, reflective interpretation, and contextual interpretation.

Participants and Research Context

Students enrolled in the Commercial and Service Design course of the Visual Communication Design program at Universitas Ciputra (Surabaya, Indonesia) comprised the sample. The course focuses on applying visual communication principles in both commercial and service-oriented situations. The course is offered as part of the second year of study (4th semester) and was specifically chosen for examination because of the purpose of providing learners with experience and opportunities to learn about visual communication through a human-centered approach to pedagogy. Sixty students participated as subjects of this research because each student was an active participant in designing (as well as implementing) the instructional units developed and delivered in accordance with the integrated Human-Centered Pedagogy framework that is the focus of this study. The rationale for using this form of deliberate subject selection is well established within qualitative research using education as the research domain, since the intent is to investigate the learning experiences of a population of learners who share a significant amount of common experience with the educational experience under investigation (Bubnys, 2019; Navarro et al., 2023).

Learning Design and Implementation

Integrating an experiential learning approach to the design of project-based learning activities through a human-centered collaborative framework highlights the importance of ensuring that students engage in all aspects of the project with a focus on human-centered values. Learning Goals were established for each project task to be completed by the students using four (4) examples of Human-centered Design Principles: experiential engagement (engaging in relevant practical experience); contextual inquiry (understanding the user context of where they will use the solution); reflective interpretation (making one's own meaning of and predictions about what has occurred during experiential engagement); and meaning making (using information collected to make decisions). The students participated in a series of project-based tasks that required them to investigate real-world contexts, identify users' needs, and create visual communication solutions based on human-centered design principles. Students engaged in learning activities that included brief design analysis, group discussions, creating new designs through an iterative process, and receiving feedback during these events. These activities also allow students to be emotionally engaged, develop interpretive reasoning,

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and intentionally make decisions while creating their designs (Almulla, 2020; Rohm et al., 2021).

Reflective practice was integrated into the overall design of the Learning Activities to support students when articulating their emotional responses, experiences, and rationale for the design solutions. Instead of being treated as the last step of the Learning Activities as is commonly done, reflection was integrated throughout the Learning Activities so that students were able to build connections between their experiential engagement and their conceptual understanding (Mann et al., 2007). Integrating reflection into learning creates the potential to enhance learners' ability to make deeper meaning out of experiential engagement and develop their capacity to progressively develop their critical thinking and emotional self-regulation during complex learning tasks (Hussein, 2018; Karaca et al., 2016; Kostainen, et al., 2018).

Data Collection

The data collection used qualitative techniques that emphasized the students' experience and reflective accounts of their learning experience. Data sources for this research consisted of students reflective writing along with their documentation of the design process that occurred during their learning activities. Through the analysis of the students' reflections, data related to the students' affective engagement, their interpretations, and how they were dependent on the process of making meaning came from analyzing reflective writing. While the design documentation illustrated how a given concept was developed and the decision-making that took place throughout the design process, both reflective writing and design documentation were used together to support capturing the students' experiences and articulating their learning versus only inferring learning from the design outcomes (Asadpour, 2021; Bubnys, 2019).

Data Analysis

The collected data were analyzed using an interpretive qualitative approach through thematic analysis to identify recurring patterns within students' learning experiences. This method is appropriate for exploring how learners interpret and construct meaning through educational activities and reflective experiences (Hussein 2018; Bubnys 2019; Navarro et al. 2023).

The analysis was conducted in several stages. First, the researchers conducted repeated readings of students' reflective writing and design documentation to develop familiarity with the data. Second, an initial open coding was conducted to identify meaningful segments related to emotional engagement, reflective reasoning, and contextual interpretation that emerged during the design process. Third, the identified codes were grouped into broader thematic categories representing key learning dimensions, including affective engagement, reflective interpretation, and meaning-making.

Through this iterative coding and categorization process, patterns across multiple student reflections were systematically compared to identify consistent experiences in the learning environment. The themes were generated inductively and remained closely connected to the students' own expressions and perspectives. This interpretive approach enabled a systematic examination of experiential learning data while preserving the contextual richness of participants' reflections and meaning-making processes during project-based design activities.

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Trustworthiness and Ethical Considerations

To establish the study's credibility, the authors used consistency and transparency in coding and developing themes as part of the analysis to demonstrate that the findings were based on the participants' experiences as expressed through their own words, rather than as presumed by the researcher. Analytic rigor was maintained by substantiating findings based on the data and demonstrating patterns across many student reflections. Ethical considerations were addressed by providing participants with information related to the study's purpose and ensuring that their involvement did not affect their academic performance. Each student was assigned a unique identifier that protected the confidentiality of individual participants while maintaining an acceptable level of ethical conduct in educational research.

RESULTS

The qualitative analysis of students' reflective writing and design documentation revealed recurring patterns in how students experienced the human-centered design project. Three key dimensions emerged from the data: affective engagement, reflective interpretation, and meaning-making within the design process. Rather than appearing as isolated experiences, these dimensions interacted throughout the learning process and shaped how students approached design challenges, interpreted user contexts, and developed their understanding of visual communication practices.

Affective Engagement in the Design Process

Students frequently described their emotional responses when engaging with real-world design challenges and when attempting to understand the needs of actual users. Feelings such as curiosity, uncertainty, empathy, and personal interest are commonly expressed during the early stages of design exploration.

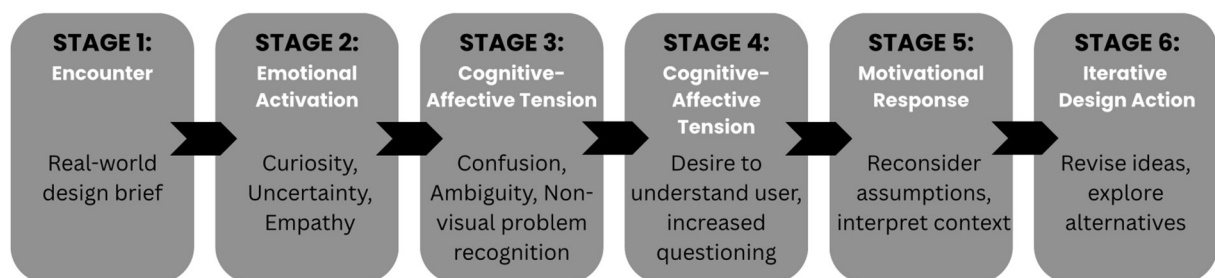


Figure 1. Process of Affective Engagement in Human-Centered Design Learning

Figure 1. illustrates how affective engagement emerges from students' encounters with complex real-world design problems. Emotional responses, such as curiosity, uncertainty, and empathy, generate cognitive tension, which activates reflective inquiry and motivates iterative engagement in the design process. Rather than acting as barriers, these emotional responses function as drivers that sustain student involvement and deepen their exploration of design challenges.

Many reflections indicate that emotional responses are closely linked to the moments when students encounter unfamiliar perspectives or attempt to translate user needs into visual solutions. One student described this experience as follows: "At the beginning, I was

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confused because the client's problem was not purely visual. I had to understand their story and business context first before thinking about the logo."

Such experiences illustrate how emotional engagement emerges when students confront the complexity of real design situations. Rather than acting as obstacles, these emotional reactions appeared to motivate students to explore the design problem more deeply and remain involved in the iterative design process.

Several reflections also showed that feelings of uncertainty often accompany important learning moments. As another student noted: *"I realized that being unsure was actually part of the process. It pushed me to ask more questions and rethink my design direction."*

These findings indicate that affective engagement functioned as a motivational driver that sustained students' commitment to the project and encouraged deeper exploration of the design challenge.

Reflective Interpretation of Design Decisions

Reflective interpretation has emerged as another central dimension of students' learning experiences. Through reflective documentation, the students described how they reconsidered their initial assumptions, evaluated their design decisions, and incorporated feedback into their evolving understanding of the design problem.

Students frequently explained their reasoning behind their visual choices and how their ideas changed during the iterative design process. For example, one student reflected: *"At first I focused on making the logo visually attractive. After discussing it with the client, I realized the design needed to represent their brand story, not just look good."*

These reflections suggest that students were not merely documenting the design process but actively interpreting their experiences. Reflection enables them to connect feedback, contextual information, and design experimentation into a coherent learning process.

Students also began to recognize the dynamic nature of design thinking. As one reflection stated: *"The design process felt like a continuous cycle. Every feedback session made me reconsider my previous decisions."*

This indicates that students gradually understood the design process as iterative and interpretive rather than as a linear sequence of tasks.

Meaning-Making Through Visual Communication

Another important finding concerns students' growing ability to construct meaning through visual communication. As the project progressed, many reflections revealed a shift in perspective from focusing primarily on aesthetic qualities to understanding design as a communicative practice.

Students increasingly recognized that visual elements such as typography, color, layout, and imagery function as tools for conveying messages, values, and identity. One student explained: *"Before this project, I mostly thought about design in terms of style. Now I think about what the design is trying to say."* Similarly, another student reflected, *"Choosing the color palette was not just about aesthetics. It needed to represent the personality of the brand and how the audience would perceive it."*

These statements indicate that students began to interpret visual elements as communicative components that shaped audience perception. Through the design project, they developed a deeper understanding of visual communication as a meaning-oriented practice that responds to contextual and user-centered considerations.

Integrated Learning Experience

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Taken together, these findings suggest that students experienced the human-centered design project as a holistic learning process that integrated emotional engagement, reflective reasoning, and contextual interpretation. Emotional responses encouraged deeper involvement in the design task, reflective practices helped students interpret their experiences, and meaning-making enabled them to connect visual decisions with communicative intentions.

Through this interaction of affective engagement, reflection, and meaning construction, students gradually developed a more comprehensive understanding of design as a purposeful and context-sensitive practice.

DISCUSSION

This study provides insight into student experiences when engaged in learning that uses an integrated human-centered pedagogical framework. Specifically, this research provides insights into how the three components of affective engagement come together through a reflective process to create meaning and develop an understanding of a given situation. Therefore, this study supports other recent research conducted on design education and indicates that when students learn within a design context, they not only learn technical skills but also develop interpretive and emotional elements contributing to their understanding and internalization of learning (Sandri et al., 2021; Ruge et al., 2020). As such, this study also reinforces that design learning occurs in a situated, experiential manner wherein the meanings produced during the learning process derive from engagement with context, users, and reflective inquiry.

Students' affective experiences were very important when reporting about their experiences while learning in a human-centered pedagogical framework, which supports previous research that has documented how emotions are a significant factor in higher education engagement and motivation (Dewaele et al., 2019; Froiland et al., 2016). The emotional responses students reported when engaged in this study include curiosity, uncertainty, and empathy, and provide corroboration with research findings from experiential and project-based learning studies indicating that students remain engaged and involved in complex learning experiences when they engage in tasks that include an emotional component (Perander et al., 2020; Mais-Thompson et al., 2024). In the context of design education, these affective responses appear to function as entry points for deeper reflection and interpretation rather than as distractions from learning.

Students reflected on their affective experiences from the design process, concluding that reflective interpretation helped students to mediate their ability to create meaning through interpretive reasoning and the ability to articulate their rationale for creating design projects. This supports the conclusion found in similar literature that reflects the importance of reflection within these contexts to create understanding or transform learning through reflection as an epistemic process (Hussein, 2018; Karaca et al., 2016; Kostianen et al., 2018). Rather than functioning as a post-activity exercise, reflection was a continuous mechanism of connection between students, creating emotional engagement with interpretive understanding.

In addition, the findings suggest that students' ability to interpret context and communicate the intent of their visual decisions is essential to their ability to experience and interpret communication design as part of their learning process of making meaning from visual communication. As evidenced by students' growing understanding of how visual elements convey messages and values, similar research on visual literacy and

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semiotic interpretation shows that design is a process of creating meaning, and that there is an underlying and ongoing contextualized relationship among elements of a design and its creation process (Serafini, 2017; Mnguni, 2019; Cardoso et al., 2022). Moving away from an initial focus on design aesthetics toward a focus on communicating through design and understanding the context of design supports arguments that pedagogical approaches focused on the interpretation and construction of meaning in design education will improve student outcomes (Dziwa, 2018; Rod et al., 2021).

The findings indicate that affective engagement, reflection, and meaning-making are also seen as interconnected components of the learning process and not as distinct types of experiences for participants within this study. Emotional responses led to reflective interpretations, which in turn led to more meaningful interpretations and more conscious design choices. This interaction reflects the recent literature on educational research that demonstrates how affective engagement influences how an individual interprets an experience and sets learning intentions for the completion of that experience (Wang et al., 2024; Mais-Thompson et al., 2024 ; Woldt et al., 2021 ; Cando et al., 2025). The findings of this research support the conclusion that the processes of developing affective, reflective, and experiential components are interconnected and create learning outcomes for students in design education.

The human-centered approach to learning design appears to have encouraged students' engagement with the human user perspective and contextual narrative while developing their design solutions. In agreement with previous research, the integration of human-centered learning principles in the learning process promoted development of empathy, gain of contextual understanding, and reflective analysis of design decisions (McLaughlin et al., 2019; Garcia-López et al., 2020; Higgins et al., 2024). However, this study adds to the existing research on this topic by demonstrating how students internalized and interpreted their experiences using human-centered learning, rather than simply focusing on the procedural use of human-centered principles or the design outcomes produced by their use.

The results of the study showed that students were able to enhance their capacity for meaningful extraction of information from affective immersion, based on the theory of reflective practice and experiential and human-centered contexts. This confirms the theory of embedding reflective practice into learning activities, rather than being an additional element (Asadpour, 2021; Bubnys, 2019); students were able to establish reflection as a component of the learning process. As a result, students were able to articulate their learning goals, connect their experiences to conceptual understanding, and identify their developing design-thinking ability. This progression suggests that human-centered pedagogical approaches may serve as a practical pathway for supporting self-directed and context-sensitive learning in design education

Rather than functioning as isolated experiences, affective engagement, reflective interpretation, and meaning-making operate as interconnected dimensions shaping how students interpret design problems and construct learning outcomes within a human-centered learning environment. Evidence from students' reflective writings showed that emotional responses such as curiosity, uncertainty, and empathy often emerged when students attempted to understand user perspectives and contextual narratives in the design brief. These emotions frequently prompt deeper reflection, encouraging students to reconsider assumptions, explore alternative visual solutions, and articulate the reasoning behind their design decisions.

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Students' reflections also indicated a shift in perspective from focusing primarily on visual aesthetics to understanding visual communication as a contextual and meaning-oriented practice. Through reflective interpretation, students began to recognize how visual elements, such as color, typography, and imagery, functioned as communicative tools that convey values, messages, and user-oriented intentions. This suggests that meaning-making emerges through the interaction between emotional engagement and reflective reasoning during the design process.

Future research could examine how affective engagement, reflection, and meaning-making develop across contexts and over time using longitudinal and mixed-method approaches. Studies might explore different reflective practices—written, visual, or dialogic—and compare design disciplines, studio formats, or institutional settings to determine how these factors influence student engagement and learning. These efforts are key for evolving design education toward process-oriented, experiential models that value students' interpretive and meaning-making skills alongside outcomes.

Together, these findings indicate that design learning extends beyond technical skill development toward the cultivation of interpretive awareness and contextual reasoning. Human-centered pedagogical approaches, therefore, have the potential to support more personalized and self-directed learning, where students actively interpret experiences, reflect on design decisions, and connect visual outcomes with user needs and communicative intent. For design education, this highlights the value of integrating reflective practice and context-based design challenges within studio learning. Future research may further examine how similar frameworks operate across different design disciplines and learning environments to better understand how experiential and human-centered approaches support deeper design learning.

CONCLUSION

Fundamental Finding

This study explored how an integrated human-centered learning framework shapes students' learning experiences in design education. The findings suggest that affective engagement, reflective interpretation, and meaning-making operate as interconnected dimensions within the design-learning process. Emotional responses, such as curiosity, uncertainty, and empathy, frequently emerged when students engaged with contextual design challenges and attempted to understand user perspectives. These emotional experiences encouraged students to question assumptions, evaluate their design decisions, and gradually develop a deeper understanding of visual communication as a contextual and communicative practice.

Rather than functioning independently, these elements appeared simultaneously across the learning experience and influenced how students approached design problems and developed their reasoning. Through reflective interpretation, students gradually shifted from focusing primarily on visual aesthetics to understanding visual communication as a contextual and communicative practice that conveys meaning, values, and user-oriented intentions. This shift indicates that design learning involves not only the development of technical skills but also the cultivation of interpretive and reflective thinking.

Implication

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These findings highlight the importance of creating learning environments that support emotionally engaging and reflective design experiences. When students encounter authentic design contexts and are encouraged to reflect on their experiences, they become more capable of articulating the rationale behind their design decisions and understanding the communicative implications of visual elements.

Integrating reflection within human-centered and experiential learning activities allows students to interpret design challenges more critically and connect visual outcomes with contextual narratives and user needs. For design educators, this suggests that affective engagement, reflective practice, and meaning-making should be considered integral components of design pedagogy. By incorporating reflective documentation and context-based design tasks into the learning process, educators can support deeper levels of student engagement and encourage the development of context-sensitive and user-oriented design thinking.

Limitation

Several limitations of this study should be acknowledged when interpreting its findings. First, the research was conducted within a single-course context involving undergraduate students in a Visual Communication Design program. Consequently, the findings reflect the learning experiences of a specific group of students within a particular educational setting, and may not fully represent learning processes in other disciplines, institutions, or instructional contexts.

Second, the study relied primarily on students' reflective writing and design process documentation as the main data sources. Although reflective narratives provide valuable insights into students' interpretations of their learning experiences, they also represent subjective accounts that may vary depending on individual levels of reflection, self-awareness, and communication abilities. Consequently, the data captured students' perceived learning processes rather than directly measuring learning outcomes or performance.

Finally, this study focuses on understanding the interaction between affective engagement, reflection, and meaning-making within a specific project-based design activity. Other factors that may influence design learning, such as prior design experience, instructor feedback styles, or collaborative dynamics, were not examined in depth. Future studies incorporating multiple data sources, such as interviews, observational data, or comparative course contexts, may provide a more comprehensive understanding of how integrated human-centered learning frameworks influence design education.

Future Research

Future research could explore how the interaction between affective engagement, reflection, and meaning-making operates across different design disciplines, educational levels, and learning environments. Comparative studies involving multiple institutions or interdisciplinary design programs could provide broader insights into how human-centered learning approaches influence design education. In addition, further studies should investigate how reflective practices and experiential design activities contribute to the development of self-directed and context-sensitive learning behaviors among design students. Such research would help expand the understanding of how integrated

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learning experiences can support holistic and meaningful learning processes within design education.