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Integrating Meta-Art Principles into Online Foundational Design Education: A Qualitative Study with Non-Art Majors

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Abstract This study examines how meta-art principles can enhance online foundational design education for non-art majors. As digital transformation accelerated during the post-pandemic era, this study investigated whether project-based online learning could effectively deliver core design concepts to students without traditional art backgrounds. Grounded in meta-modernist philosophy and meta-art theory, this study applied these frameworks to educational service design. This study conducted a six-month online course with two non-art major participants, documenting their creative development, project outcomes, and interactions with the instructor via Zoom sessions and digital platforms. Our findings demonstrate that meaningful artistic growth and engagement can occur in remote learning environments, despite physical separation. The study reveals the pedagogical value of meta-art approaches in online design education and suggests broader applications for promoting reflective and creative learning experiences.

Keywords Online education, Meta art, Qualitative approach, Foundational design education

I. Introduction

Digital transformation accelerated dramatically during the COVID-19 pandemic, driving widespread adoption of remote communication across all sectors. Education and the arts, in particular, underwent rapid shifts toward digitally mediated, contactless delivery methods (Park and Pan, 2020). This transition poses unique challenges for foundational design education, which has traditionally relied on hands-on, face-to-face instruction and now requires innovative approaches to succeed in remote environments.

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The expansion of artistic practice and diversification of creative formats reflect broader historical changes in how we understand art itself. While traditional artistic production centered on finished works, contemporary practice increasingly positions artists as active agents of social communication. This evolution reframes art not merely as visual objects, but as non-verbal media through which creators express personal philosophy, cultural zeitgeist, and structural critique. These developments have fundamentally expanded our understanding of meta-art.

Earlier conceptions of meta-art focused narrowly on artworks themselves. Today's meta-art encompasses the entire creative process—planning, production, and realization—while emphasizing the creator's reflexivity and engagement with broader contexts. This conceptual expansion, coupled with advances in digital technology, has transformed every aspect of artistic creation, appreciation, and participation. Educational institutions are already experimenting with new formats including metaverse-based classes, virtual campuses, and online exhibitions, signaling an emerging paradigm for art education.

This study explored how meta-art principles can enhance online foundational design education from a technological innovation perspective. Through a qualitative case study with non-art-major participants, this study examined whether project-based online learning can effectively develop core design competencies. Our findings aim to provide insights into the pedagogical potential and scalability of meta-art as a framework for fostering reflective and creative learning in contemporary art education.

II. Theoretical Background and Literature Review

1. Definition of Meta Art

Artistic movements have consistently evolved alongside shifting intellectual paradigms. Modernism championed introspection and the search for universal truths, while postmodernism emphasized self-awareness and deconstructive critique. Metamodernism has emerged as a third aesthetic framework that moves beyond the ideological divide between these predecessors. By synthesizing opposing sensibilities—subjectivity with sensitivity, rationality with irony—metamodernism seeks artistic expression that balances idealism and pragmatism, acting as a mediating aesthetic theory.

The term "meta" has gained widespread recognition during the Fourth Industrial Revolution, particularly through the metaverse concept that symbolizes virtual-real world convergence. In artistic contexts, however, "meta"

encompasses broader meanings: self-referentiality, creator reflexivity, and philosophical introspection. Drawing from literary traditions like metafiction and cinematic approaches such as metacinema, meta-art positions the creative process itself and the artist's subjectivity as central to artistic inquiry.

While postmodernism embedded self-consciousness within artworks—often emphasizing fragmentation—meta-art redefines art's nature by centering the creator's internal reflection and audience interaction. This represents a fundamental shift from object-based to experience-centered aesthetics.

This aesthetic evolution parallels broader transformations driven by the Fourth Industrial Revolution, which has restructured social and economic systems by shifting economic activity from manufacturing toward services (Song, 2016). Technological advances including IoT and mobile platforms have increased service industry sophistication and enhanced consumer experience quality (Kim, 2017). Services are now understood as intangible values co-created and consumed through dynamic provider-user interactions (Hong & Chang, 2019).

Service design has emerged as a methodology for systematically planning and materializing these intangible service experiences. While definitions vary across academic and practical contexts, service design is broadly conceived as a creative, user-centered process that analyzes and orchestrates tangible and intangible elements, systems, and pathways to optimize experiences (Choi et al., 2016; Kim & Nam, 2015; Lee, 2016; Shin et al., 2021).

If meta-art redefines art's essence through self-reflective creation and aesthetic interaction, then service design operationalizes these meta-level principles into concrete experiential strategies within educational and social contexts. While metamodernist art aspires to integrate idealism with self-awareness, service design actualizes this philosophical vision through integrated design of technology, emotion, human experience, and systemic interaction.

Meta-art and service design thus function as complementary practices implementing "experience-centered creation"—a defining value of contemporary aesthetics grounded in shared metamodernist foundations.

2. Foundational Design Education

Understanding foundational design education requires examining its evolution within broader historical and industrial contexts. Since its ancient origins in Abydos, Egypt, education has continuously transformed alongside industrial revolutions. The First Industrial Revolution focused educational efforts on training skilled laborers for the mass production demands. The Second Industrial Revolution introduced academic specialization and institutionalized discipline-specific education to produce technical experts. The Third Industrial Revolution emphasized information processing capabilities in response to the

emerging knowledge economy. Today's Fourth Industrial Revolution has shifted education toward fostering creative and integrative talents equipped for digital transformation challenges (Yoo, 2020).

Educational paradigms have consequently evolved from unidirectional knowledge transmission toward approaches emphasizing multidisciplinary thinking, collaboration, and creative problem-solving (Lee, 2015). Design education has followed this trajectory, moving beyond conventional industry-centered instruction toward nonlinear, creativity-driven models grounded in digital technologies. While design knowledge was once restricted to elite circles, technological advances and learning democratization have broadened access to design education.

Within this evolving framework, foundational design education extends beyond preliminary skills training to become a vital process for developing students' aesthetic sensibilities, creative thinking, and design philosophy. It establishes the conceptual and expressive foundation for all design disciplines (Moon, 1999; Shin, 2003). According to Seoul Institute of the Arts' Basic Curriculum Subcommittee (2002), foundational design education aims to cultivate theoretical insight and perceptual acuity applicable across diverse design fields. It fosters both sensitive observation and unconventional expression, contributing not only to creative competence but also to integrative thinking and collaborative capacity (Hyun, 2007; Shin, 2003).

Despite its growing importance, foundational design education in Korea lacks a systematic, institutionalized structure. Instruction often depends heavily on individual instructors' subjective experience, making it difficult to adequately address Fourth Industrial Revolution demands (Park, 2011; Moon, 1999). In contrast, countries like the United States and the United Kingdom have implemented learner-centered curricula integrating creative thinking with technical skill development. Japan supports creativity-focused growth in foundational education through diversified entrance systems. Compared to these global models, Korea's education remains largely standardized around college entrance exams, highlighting urgent needs for curriculum reforms that emphasize creativity, diversity, and flexibility.

Foundational design education must therefore be restructured to align with emerging educational paradigms. It should serve as a cornerstone for cultivating emotionally intelligent and creatively competent individuals capable of meeting challenges in a rapidly evolving design landscape.

3. Convergence of Service Design and Education Services

Foundational design education has shifted from knowledge transmission models toward approaches emphasizing creative expression and emotional sensitivity. In today's educational landscape, foundational design education functions not as one-way instruction but as a complex educational service system involving multiple stakeholders—learners, instructors, parents, and government bodies. Unlike conventional services, educational services operate through co-creative structures where demand-driven design and stakeholder consensus-building are essential components (Hong et al., 2019).

Since different educational contexts—adult education, childhood education, and public education—involve varying participants and design objectives, tailored service design approaches are necessary for each. Educational services must balance the interplay between public and private education, prioritizing long-term human capital and social value formation over short-term outputs. Initiatives like Minerva Schools exemplify attempts to fundamentally restructure educational paradigms (Kim, 2018).

Foundational design education must similarly evolve beyond isolated sensory and creative exercises toward a holistic, service design-based educational framework that addresses learners' complete experiences. This perspective reframes education not as functional skill transmission but as a value co-creation process, positioning foundational design as a critical platform for cultivating emotionally and creatively competent individuals for the future.

4. Online Educational Service

Online education has steadily expanded alongside technological advancements, becoming increasingly relevant in recent years. Higher education institutions have embraced this digital shift by enabling degree completion through online platforms. Platforms such as K-MOOC and KOCW support structured online learning at the tertiary level. In contrast, widely accessible platforms like YouTube and Instagram serve as informal venues for sharing diverse educational content.

These developments mark a shift from traditional top-down instructional models to the broader adoption of online modalities in art education. Despite this growth, discussions on the effectiveness of online instruction remain limited in studio-based foundational design education, where hands-on practice is essential (Joo, 2017). Joo's study on online drawing instruction reported generally positive outcomes, aligning with Moore's (1989) online learning model, which highlights three essential interactions: learner-content, learner-instructor, and learner-learner. Jung (2002) further supports these findings by

analyzing successful international cyber education models, emphasizing that such interactions are crucial for effective online learning.

5. Research Contribution and Originality

This study distinguishes itself by extending meta-art concepts beyond conventional contemporary art discourse and into educational services — specifically, foundational design education—through empirical analysis. While meta-art has traditionally emphasized creators' self-reflective engagement with their artistic acts, this study applies the concept to education by positioning learners' creative processes and personal backgrounds as integral to artistic inquiry.

Online learning environments facilitate both asynchronous and synchronous interactions via tools such as KakaoTalk, Zoom, email, and Figma. These tools support the collection and analysis of student work that reflects biographical experience and personal philosophy. This approach enables personalized instruction in small classes and allows for group-level differentiation strategies in larger cohorts.

Since meta-art emphasizes connections between creators' experiences and artistic output, it offers a useful conceptual framework for linking learners' narratives to the contextual meaning of their creative products. Within this context, this study explores the applicability of meta-art's "creator-centered" typology to both online and offline foundational design education. It also proposes strategies for transforming student-created works into exhibition and educational content, highlighting the extensibility of the meta-art framework in education. By incorporating meta-art into educational service design, this study proposes an integrated art-education model that sets it apart from previous research.

III. Structure of Experiment

1. Overview

This study presents a qualitative empirical evaluation of online foundational design education. Online design instruction enables learners to produce creative outputs across the entire project cycle, from initial planning to final production. The study analyzes the types and characteristics of outputs generated during practical exercises and examines differences in documentation and final formats within online instructional settings.

An experimental framework was implemented involving non-art major students and instructors with advanced art backgrounds. The course was delivered via Zoom and structured around project-based learning (PBL). Instruction spanned six months, with classes held two to three times per week. Approximately ten creative outputs per student were used as primary evaluation materials throughout the study.

2. Empirical Evaluation of Student-Created Artworks

While prior studies have explored online learning environment development and educational service provision in design education, longitudinal studies with small participant groups and well-structured research designs like this one remain extremely rare. Empirical investigations focusing specifically on foundational design education—a core component of all design programs—are particularly scarce.

This study's distinctiveness lies in targeting non-art majors, including participants residing outside South Korea, for an online foundational design program. This approach aligns with current Korean educational trends seeking to broaden design instruction's scope and inclusivity. The participation of two non-majors in this experimental framework provides meaningful insights into online foundational art education's accessibility, scalability, and effectiveness.

Most significantly, by applying expanded meta-art concepts to online instruction, the study enabled systematic documentation of each participant's creative development throughout the course. This allows critical examination of meta-art's pedagogical utility and conceptual implications in educational settings, offering a novel contribution that bridges theoretical discourse in contemporary art with practical art education applications.

2.1 Purpose of Empirical Analysis

Online foundational design education is free from spatial and temporal constraints and is generally well-received by students who are accustomed to digital and remote communication platforms (Joo, 2017). In this study, the educational outcomes of online instruction were evaluated qualitatively by two independent evaluators with advanced degrees in art-related fields. Given that the participants were non-art majors, the following research objectives were established.

First, online foundational design education services can be implemented through synchronous platforms that facilitate real-time interaction, enabling a variety of instructional methods and promoting learner-centered creative engagement.

Second, such educational services aim to enhance the quality of student work across three core areas of foundational design—drawing, two-dimensional composition, and three-dimensional form, thereby fostering comprehensive visual and spatial literacy.

Third, the outputs produced through online instruction are assessed not merely as assignments, but as creative artifacts that reflect the learners' personal experiences and identities, thus holding artistic value when examined from a meta-art perspective.

2.2 Purpose of Empirical Study Structure

To assess online foundational design education effectiveness, this study introduces the experimental design summarized in Table 1. Participants consisted of two students who were non-majors in art or design. Given recent educational trends emphasizing diversification, interdisciplinary integration, and dismantling departmental boundaries, selecting non-majors reflects foundation educatio'ns evolving nature as it increasingly serves prospective majors and students from diverse academic backgrounds. Countries like the United States and the United Kingdom commonly structure pre-foundation or foundation courses for non-majors, and similar initiatives are gradually gaining traction in South Korea. This participant composition enhances the study's comparative significance relative to prior research centered on major students.

Learning outcomes were evaluated independently by two instructors, both holding master's degrees or higher in art-related fields. This dual-evaluator system minimized subjective bias and enhanced assessment objectivity and reliability. Educational delivery utilized the Zoom platform, which offers high accessibility and facilitates real-time interaction features, particularly well-suited for online design education.

The course followed a project-based learning (PBL) approach, encouraging active student participation and autonomous problem-solving. Instruction occurred over six months with sessions held two to three times weekly, each lasting approximately 3.5 hours. By course completion, each student had finished approximately 10 to 15 individual works. This experimental framework establishes a robust foundation for evaluating online foundational design education's qualitative outcomes.

Table 1. Overview of the Experiment

Item	Description
Student Characteristics	· Number of Students: 2 · Age Range: 20s to 30s · Background: Two non-art majors (non-specialist participants)
Instructor Characteristics	· Number of Instructors: 2 · Background: Instructors with a master's degree or higher in art-related fields
Course Characteristics	· Teaching Platform: Zoom (online-based instruction) · Instructional Methodology: Project-Based Learning (PBL) · Course Duration: 6 months (2–3 sessions per week, each lasting 3.5 hours) · Number of Artworks Produced: 10 to 15 pieces per student

2.3 Experiment Process

Table 2 summarizes the instructional structure of the online foundational design course conducted via Zoom. This study utilized the Zoom platform to ensure real-time interaction and immediate feedback during regularly scheduled classes. The instructional process consists of five key stages.

The first stage, "Setting," involves selecting a specific design category — drawing, two-dimensional composition, or three-dimensional form. The second stage, "Exploration," guides students to freely investigate and establish a creative topic within the chosen category. In the third stage, "Definition," students formulate logical rationales for their topics. If justification lacks clarity or persuasiveness, it can hinder the direction of the creative process. Rather than relying on arbitrary or unconscious choices, learners are encouraged to consider ethical, cognitive, and social dimensions when structuring their ideas. The fourth stage, "Ideation," involves brainstorming abstract ideas related to the topic, while the fifth stage, "Expression," focuses on visually materializing those ideas into concrete outcomes.

Throughout instruction, stages 1-3 feature active instructor-learner interaction, while stages 4-5 involve more directed instructor guidance based on themes identified in earlier stages. The effectiveness of online foundational design education largely depends on the creative and expressive processes occurring in these latter stages through real-time interaction, making them critical components for evaluating online art instruction's pedagogical impact.

Table 2. Overview of the Online Course Using Zoom

Item	Description
Contents	· The course was conducted primarily using Zoom, a platform that enables real-time instruction. · Classes began on scheduled days and times. · Project-based learning was implemented using the Zoom platform. · The course followed the process outlined in stages 2 to 5.
	1. Setting: Course Selection 2. Exploration: Topic Selection 3. Definition: Identifying the Rationale for the Chosen Topic 4. Development: Brainstorming (Generating Ideas) 5. Delivery: Refining and Articulating Ideas

IV. Result of Experiment

1. Method of Evaluation

In this experiment, this study examined the effectiveness of instructional methods utilizing digital media in online foundational design education by analyzing creative processes and output changes recorded over time. Final outputs produced at course completion were evaluated using assessment criteria adapted from United States Advanced Placement (AP) visual arts programs—specifically AP Drawing, AP 2D Design, and AP 3D Design. By referencing the AP framework, which is widely recognized in U.S. higher education as a pre-college program, the study aimed to enhance evaluation criteria reliability.

Each detailed evaluation category was structured as follows: For drawing, five elements—line, surface, space, light and shade, and composition—were selected. In two-dimensional design, the evaluation criteria included shape, color, layer, proportion, and balance, whereas in three-dimensional design, the criteria were shape, layer, proportion, balance, and rhythm.

1.1 Application of Digital Platforms and Programs

For successful online education implementation, effective instructor-student interaction is essential. Interactive platforms such as Zoom facilitate this interaction, with the screen-sharing function proving particularly valuable for enhancing instructional efficiency.

Figure 1 illustrates how the instructor shares a visual frame (left column) through Zoom, followed by corresponding student outputs (right column). Active utilization of digital technologies enabled real-time visual feedback, which contributed significantly to improved student work quality.

Segment of Instruction	Output
	
	

Figure 1. Direct Instruction by the Instructor

Figure 2 presents a more advanced instructional case using both Zoom and Photoshop. In Row A, the instructor provides explicit composition and layout guidance through Photoshop, and the student completes the task accordingly. Row B demonstrates a more abstract instructional approach where minimal visual cues were provided, encouraging learners creative interpretation. In Row C, shading techniques were taught via Photoshop, and students immediately applied these techniques in their work.

This teaching approach demonstrates that effective and creative visual arts education is possible even within remote environments. Digital tools not only support clear communication but also foster student creativity and expressive capacity.

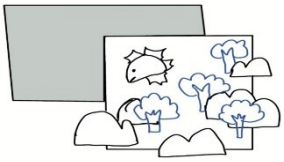
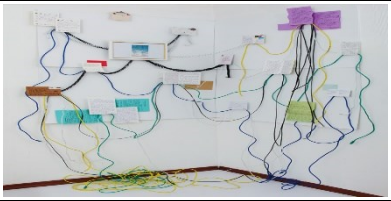
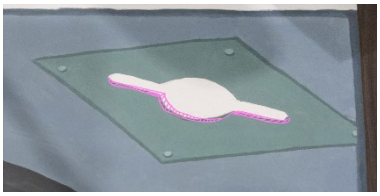
Item	Instruction Using Design Applications	Output
A		
B		
C		

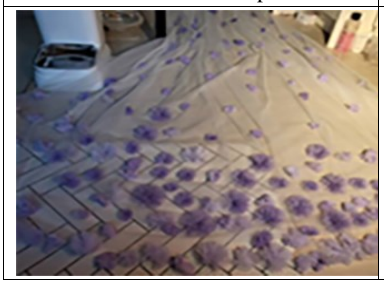
Figure 2. Instruction and Outcomes Utilizing Photoshop and Screen Sharing

1.2 Utilizing Digital Platform

Table 3 summarizes how online foundational design education continued outside fixed class hours through digital communication tools such as KakaoTalk. These examples illustrate online education's unique advantage: enabling continuous instructor-student interaction beyond scheduled session constraints.

Table 3 illustrates a student's artwork development through digital communication with the instructor. The conversation focused on concretizing an abstract theme and addressing the technical aspects involved in the process. Through this interaction, the student demonstrated improved understanding of compositional principles, reflected in the enhanced quality of the final output.

Table 3. Educational Interaction via Digital Communication Platforms

<table>
<tr><th>Item</th><th>Description of Feedback</th></tr>
<tr><td>Instruction and Outcomes</td><td>
Student A: “I added everything at the bottom, but the top felt empty, so I decorated that too. Does it look okay?”
Instructor: “The bottom has a nice weight and spread, but the transition upward feels a bit abrupt. The top looks balanced—try refining the middle for better harmony.”
<table>
<tr><th>Intermediate Output</th><th>Output</th></tr>
<tr><td>  </td><td>  </td></tr>
</table>
Instructor: “The showerhead doesn’t quite connect with your concept. Let’s skip coloring for now and don’t worry about the outer design.”
Student B: “Should I texture the inside? Can I use Styrofoam?”
Instructor: “No need to focus on the 3D texture. Concentrate more on the narrative.”
Student B: “How is the piece so far?”
Instructor: “It feels a bit staged and artificial. Try a more natural, intuitive approach. Also, consider adding more small pearl-like elements.”
Student B: “I see—I was too focused on the fur. I’ll revise it based on your feedback.”
<table>
<tr><th>Intermediate Output</th><th>Output</th></tr>
<tr><td>  </td><td>  </td></tr>
</table>
</td></tr>
</table>

Note: The feedback between the instructor and the student was conducted via a digital communication platform (Kakao Talk), and the original dialogues contained colloquial expressions. For the purpose of academic clarity and presentation, the researcher has rephrased the content in a more formal and refined language.

Beyond scheduled class sessions, ongoing communication through digital media platforms (messaging apps, email) enabled real-time feedback and iterative development. This process significantly contributed to students’ ability

to abstract and concretize foundational design ideas, as evidenced by notable progress across multiple works beyond the examples presented here.

Digital communication tools in the instructional process functioned as supportive mechanisms for the online learning environment, effectively expanding foundational design education beyond traditional spatial and physical constraints. By overcoming the inconveniences of synchronous phone calls and face-to-face interaction limitations, this digitally mediated approach demonstrates high utility as a supplementary tool that enhances educational efficacy in remote settings.

2. Summary of Online Foundational Design Course Outcomes

Based on comparisons of student performance before and after online course participation, evaluators reached the following conclusions. Before the course, students—being non-majors—demonstrated generally a low understanding of foundational design. However, after six months of online instruction, they achieved significant learning outcomes across foundational design's key elements. This suggests that online education can function effectively despite temporal and physical constraints and compensate for traditional offline instruction limitations.

As previous studies highlight (Dennen et al., 2007; Johnson et al., 2008), active interaction and individualized educational services contribute positively to enhanced learning outcomes and student achievement. In this study, providing interaction-based online foundational design education services utilizing digital media yielded meaningful results across three practical areas: drawing, two-dimensional design, and three-dimensional composition. Furthermore, various experience-based records were collected, including final student works, instructor-student conversation logs, demonstration videos, student sketches, course reflections, evaluation reports, and instructional modules. These materials serve not only to improve the quality of the educational process but also to enhance the potential for service design applications in future educational contexts.

V. Conclusion

1. Conclusion

This study applied an expanded meta-art concept to online foundational design education and explored its practical applicability and educational effectiveness through a long-term instructional experiment with non-art majors.

The six-month course utilized digital platforms including Zoom, KakaoTalk, and Photoshop, facilitating both synchronous and asynchronous instructor-student interaction. Structured around the double diamond process, the curriculum focused on three key areas: drawing, two-dimensional composition, and three-dimensional form. Learners demonstrated marked improvements in artistic thinking, expressive ability, and compositional skills, as evaluated qualitatively by expert instructors. Various outputs—including sketches, feedback conversations, reflections, and recorded teaching materials — functioned not only as educational artifacts but also as potential content resources. The study highlights how meta-art can enrich art education by embedding self-reflection and narrative context into creative practices, enabling a transformative shift from technical training toward reflective and socially situated learning.

2. Limitations and Future Directions

First, the small sample size limits the' generalizability of findings. Future studies should include broader, more diverse participant bases to validate and extend these results. Second, while art-educated evaluators conducted assessments using qualitative methods, the lack of standardized criteria raises reliability concerns. Future research should adopt mixed-method approaches incorporating quantitative data including interaction frequency, task completion rates, and feedback response times. Third, the instructional design and platforms used were optimized for one-on-one or small group settings. Further investigation is needed to identify scalable models suitable for larger online educational environments. Addressing these challenges is essential for positioning meta-art-based education as a standardized framework in digital art education's evolving landscape.

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