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Artificial Intelligence in Microteaching Lesson Study: Enhancing Pre-Service Teachers' Confidence and Instructional Quality

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Research Article

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Abstract

Background/purpose. The marginalization of art education globally has prompted concerns about the instructional competence of art teachers. This study probed the potential of microteaching lesson study as a remedy, with a novel integration of generative artificial intelligence.

Materials/methods. This was a pre-test/post-test controlled study with quantitative data collected from two groups of pre-service visual art teachers. They partook in collaborative lesson planning: one aided by generative chatbots and the other not, both followed by microteaching activities. A comparison group adhered to a standard university curriculum.

Results. Both treatment conditions, with or without conversational agent usage, significantly improved overall lesson plan quality, particularly in terms of facilitating art-related discourse. Furthermore, both experimental groups outperformed untreated subjects in overall teaching competence. Specifically, the chatbot-supported condition scored significantly higher in the instruction domain at the post-test. However, post-intervention teaching self-efficacy scores indicated a uniform decline compared to pre-existing levels, without significant intergroup variance.

Conclusion. This study provides empirical support for microteaching lesson study as a potent tool to enhance specific teaching skills within visual art education, irrespective of artificial intelligence integration. Furthermore, the findings of this investigation underscore the need for continued research into the effective deployment of technology, such as generative conversational agents, in teacher training programs.

1. Introduction

The arts, particularly visual arts education, reportedly face a precarious position within the global educational landscape (Angel-Alvarado et al., 2024; Estrada et al., 2023; Lilliedahl, 2023). Frequently marginalized and perceived as subjective and impractical, visual arts are often relegated to the periphery of core knowledge (Goodwin & Vincent, 2024; Green, 2021). This devaluation stems from the prevailing neoliberal paradigm in education, characterized by an emphasis on efficiency, standardization, and market-driven values (Ahrenby, 2025). Within this framework, knowledge and skills that are immediately marketable and quantifiably productive are prioritized, often at the expense of disciplines perceived as subjective or indirectly applicable to economic productivity, such as the visual arts. As a result, visual art educators, including pre-service teachers (PSTs), often experience professional isolation, hindering their learning, growth, and confidence. This challenge is compounded by the evolving demands of teacher education, which necessitates a broader spectrum of experiential learning opportunities to cultivate robust teaching competencies (Lee & Kim, 2024).

Addressing this gap requires innovative pedagogical approaches, and microteaching lesson studies (MLSs) have emerged as promising candidates. Fusing elements of microteaching and lesson study, MLSs engage student-teachers in a collaborative process of planning, teaching, observing, analyzing, and revising short lessons in a simplified yet authentic setting with their peers. This iterative cycle, often enriched by feedback from experienced educators, provides PSTs with invaluable opportunities to bridge the chasm between theoretical knowledge and practical application and promote collaboration and revision (Vígh, 2024).

While empirical evidence supports the efficacy of MLS in science disciplines (Bwalya et al., 2024; Kartal & Çınar, 2024; Kurt & Çakıroğlu, 2023), its application and impact within visual arts education remain largely unexplored. This is particularly concerning given the recognized importance of lesson planning as a core component of effective teaching. Research indicates a strong correlation between meticulous lesson planning and positive student outcomes, including achievement gains and perceived instructional quality (Großmann & Krüger, 2023). Despite this, empirical investigations into the nuances of lesson planning as a situation-specific skill for pre-service teachers, especially in the arts, are scant.

2. Literature Review

From a theoretical standpoint, MLS activities hold significant promise for burgeoning educators. With its emphasis on active learning through experience, reflection, and collaboration, the constructivist theory provides a strong rationale for MLS. By engaging in iterative cycles of planning, teaching, and receiving feedback within a safe and controlled environment, PSTs can refine their pedagogical skills before entering real-world classrooms (Luo & Li, 2024; Suleimenova et al., 2024). Furthermore, collaborative learning theory posits that collaborative environments, such as those fostered by MLS, cultivate professional behaviors, including resilience, in complex situations (An et al., 2024; Song & Elftman, 2024; Suyato et al., 2024). These simulated experiences provide crucial space for ongoing educators to work on interpersonal interactions in a scaled down version of an actual classroom (O'Flaherty et al., 2024).

Beyond pedagogical development, MLS can nurture pre-service teachers' sense of self-efficacy in teaching – the belief in their own capacity to effectively accomplish teaching tasks and achieve desired learning outcomes (Choong et al., 2024). By confronting and overcoming teaching challenges within the supportive framework of MLS, and through the integration of constructive feedback, student-teachers gain valuable insights into their strengths and weaknesses, allowing them to refine their practices and bolster their confidence iteratively (Zheng et al., 2024). To date, there are only a few studies on the professional development of visual art educators, but they involve a restricted pool of in-service teachers, and the interventions revolve mainly around partnerships with artists and

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museums (Morrissey & Kenny, 2023; Taylor, 2023). The potential of microteaching and lesson planning interventions as part of visual art PST training remains a lacuna in the literature. This highlights a critical need for quantitative investigations that delve specifically into the implementation and impact of MLS on teachers-in-training (particularly those specializing in visual arts) within simulated teaching environments.

Adding another layer of complexity and opportunity to this landscape is the recent burst of generative artificial intelligence (GenAI), specifically generative chatbots, i.e., applications simulating customized conversations with human users. Chatbots such as ChatGPT send ripples across various academic disciplines and industries, challenging traditional notions of learning, teaching, and professionalization within higher education (Nartey, 2024; Nguyen et al., 2025; Wang et al., 2024). These novel AI tools are expected to provide valuable support for educational practitioners in areas such as personalized course content creation, pedagogical refinement, and real-time performance feedback (Chiu et al., 2024; Padovano & Cardamone, 2024). Yet aside from the rather numerous survey-derived and theoretical papers on the topic of GenAI in student-teacher training, only a couple of empirical studies among science and language PSTs are available (Lee & Zhai, 2024; Moorhouse et al., 2024).

Based on the above, it is safe to state that there is a paucity of research considering the influence of GenAI on the efficacy of potential educator training. This necessitates empirical research efforts to deepen our understanding of how instrumental MLS is, both as a standalone approach and when interwoven with GenAI technology, within the specific context of visual art teacher education. This study aims to address this need by evaluating the impact of MLS, with and without GenAI support, on visual art PSTs' lesson planning quality, teaching competence, and teaching self-efficacy.

3. Research Questions

Based on the identified gap in the literature, this study seeks to answer the following research questions:

RQ1. To what extent does MLS, with and without GenAI support, improve visual art PSTs' lesson planning quality?

RQ2. Does MLS, with and without GenAI support, enhance visual art PSTs' teaching competence?

RQ3. What is the impact of MLS, with and without GenAI support, on visual art PSTs' teaching self-efficacy?

The integration of GenAI technology in the MLS process adds a unique dimension to this investigation, allowing us to examine the potential benefits and limitations of this innovative approach. By examining the effectiveness of MLS, with and without GenAI support, this study contributes to our understanding of how to best support the development of pre-service visual art teachers and enhance their instructional quality. This pedagogical intervention provides a unique opportunity to put to the test some assumptions and potential benefits of collaborative learning practices and next-generation technology-saturated education.

4. Materials and Methods

This was a randomized controlled trial (RCT) involving an MLS-informed intervention. The study's use of random assignment makes it a true experiment with a pre-test/post-test control group design, allowing for stronger causal inferences about the impact of MLS and AI-MLS on prospective teachers.

4.1. Sample and Data Collection

This was a microteaching lesson study intervention with a randomized selection of research groups. The subjects of this investigation were 37 third-year pre-service teachers (29 females and six

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males, aged between 20 and 31 years) majoring in secondary visual arts at a public urban university in [blinded for review]. Students enrolled in the course were randomly selected to participate in the study. All potential participants were required to provide informed consent in accordance with the Declaration of Helsinki. They were assured that their data would be kept anonymous and that they could withdraw from the study at any time without penalty.

Upon consent collection, 41 PSTs were randomly allocated to three groups, namely MLS (n = 14), AI-MLS (n = 14), and CON (n = 13). Then pre-test evaluation was conducted over two weeks. It comprised rating teaching skills through a topic-specific lesson plan composed individually in the presence of the assessors and a microteaching assessment task, where each participant presented their 10-minute teaching segment. Faculty members were artificial learners in the microteaching task, so that a participant could be free to go after completing their microteaching. Each lesson plan and microteaching session were independently evaluated against a corresponding predetermined checklist by two research assistants. Additionally, the student-teachers filled out a brief paper-pencil questionnaire appraising their teaching self-efficacy and basic demographics (age and gender). The procedures were replicated in a few days upon the intervention conclusion. Since students were to be examined twice, an identifying code was employed to maintain anonymity while enabling the matching of data over time.

4.2. Intervention

For the MLS and AI-MLS, once a week, the participants were randomly assigned to the micro-groups of two who had to collaboratively design a mini-lesson of approximately ten minutes on their chosen visual art topic and teach it in the university lecture theater to the rest of the group, who role-played as secondary students. Once the mini-lesson was delivered, the micro-group disclosed the background of their lesson plan and their intentions. One of the researchers, supervising instructors, and audience participants provided supportive and constructive feedback on the quality of teaching and planning, indicating positive elements and areas for opportunities for further development. In MLS, student-teachers crafted lesson plans without resorting to AI tools, which was ensured by research assistants through submitting the lesson plans to the undetectable.ai platform detecting AI-generated text. Conversely, PSTs in AI-MLS were requested to employ GenAI bots like ChatGPT when designing their lesson plans. In CON, students received a standard curriculum that included no microteaching activities. The intervention spanned over eight weeks within the spring semester of the 2023/2024 academic year. One participant in MLS and two in AI-MLS decided to discontinue during the intervention, so a total of 37 student-teachers were included in the final analysis (MLS, n = 13; AI-MLS, n = 13; CON, n = 11). When the number of participants in a group was odd, one participant performed lesson planning and microteaching alone.

4.3. Instruments

4.3.1. Lesson Plan Quality

When designing the lesson plan, PSTs were instructed to take into account the ten-minute time constraint and the consequent focus on visual observation, analysis, and verbal explanation rather than hands-on activities. The lesson plan quality coding scheme was adopted from Backfisch et al. (2020), translated to Russian, and adjusted to the context of visual art teaching in secondary settings (Appendix I). The scheme relied on three subcategories, each rated on a scale from zero (subcategory absent) to three points (subcategory fully present). A higher score indicated higher quality. Two raters independently coded the plans at both time points, and the scores they assigned were averaged to yield individual results.

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4.3.2. Teaching Self-efficacy Scale

PSTs' beliefs about self-efficacy in teaching were gauged using three items from the questionnaire by Chan et al. (2023). The items began with "In my future classes, I will be able to" and continued as follows: (1) "apply various teaching techniques effectively," (2) "use various examples to explain what students find difficult to understand," and (3) "ask various questions that can improve student learning" (Chan et al., 2023). A Likert scale with five levels was employed to assess the statements, where a score of 1 represented strong disagreement and a score of 5 reflected strong agreement. A higher score denoted greater perceived self-efficacy in teaching.

4.3.3. Teaching Quality

The delivered mini-lessons were video recorded and later rated by two raters based on the Assessing Quality Teaching Rubrics (AQTR; Chen et al., 2011) form translated to Russian. Originally, the AQTR encompassed 17 items within the four essential dimensions. The rubric was revised to include only criteria relevant to the specific context of visual art microteaching. The resulting instrument (Appendix II) comprises three dimensions encompassing a total of five teaching components, each receiving one to three scores, with higher scores implying higher teaching levels. Scores on A and B were averaged to obtain results for the Task Design and Instructions constructs. The scoring procedures were similar to those for the lesson plan task, with a kappa of .92 at pre-test and .80 at post-test.

For the lesson plan-related coding rubric, there was substantial inter-rater agreement (kappa coefficient of .78 at pre-test and .89 at post-test). The reliability (Cronbach's alpha coefficient) of the teaching self-efficacy instrument was .72 at pre-test and .77 at post-test.

4.4. Statistics

Apart from descriptive statistics, post-intervention group comparisons were conducted using separate analyses of covariance (ANCOVAs) for each dependent variable whilst controlling for pre-test performance. ANCOVA was selected because it allows better precision of the analysis and reduces potential biases arising from pre-existing group differences. The Shapiro–Wilk and Levene tests confirmed the normality and homogeneity of the collected data, respectively. The dependent variables were post-experimental scores on separate components of lesson planning and microteaching tasks, their average values, and self-reported teaching self-efficacy. The participant's group was a fixed factor. Baseline scores were input as a covariate variable. When ANCOVA was significant in terms of group effects, post hoc comparisons were performed using the Tukey correction. Differences were deemed significant at $p < .05$.

5. Results

Table 1 summarizes descriptive and inferential statistics on the collected data. In lesson planning, the ANCOVA showed that, when adjusted for the pre-test, there was no significant group effect on post-evaluation scores in the subcategory 'Stimulation of critical reflection regarding everyday art' ($F(2, 33) = 2.084$, $p = .140$, $\omega 2 = .051$) and 'Encouragement of conceptual connections' ($F(2, 33) = 1.707$, $p = .197$, $\omega 2 = .027$), except for the effect on the 'Facilitation of art-related discourse', which was borderline significant, with a small-to-medium effect size ($F(2, 33) = 3.301$, $p = .049$, $\omega 2 = .093$), and the post hoc analysis revealed that the mean score in this subcategory was significantly greater in MLS than in CON ($p = .047$). Concerning the average scores across the three subcategories, the univariate ANCOVA revealed that grouping had a significant effect on the overall lesson plan quality at the post-test, with a large effect size ($F(2, 33) = 8.610$, $p < .001$, $\omega 2 = .206$), and pre-existing scores significantly influenced this effect ($F(1, 33) = 22.605$, $p < .001$, $\omega 2 = .293$). Tukey's test detected that the untreated counterparts had significantly lower scores for mean lesson planning performance as opposed to both MLS (.002) and AI-MLS (.005).

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Table 1. Participants' lesson planning quality, teaching competence, and self-efficacy (n = 37). The data are presented as mean (standard deviation)

Variable	CON (n=13)		MLS (n=13)		AI-MLS (n=11)		ANCOVA			
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Group		Baseline scores	
Lesson planning							F	p	F	p
Stimulation of critical reflection regarding everyday art	1.62 (.51)	1.69 (.63)	1.77 (.44)	2.08 (.49)	1.73 (.47)	2.18 (.60)	2.08	.140	4.60	.039
Encouragement of conceptual connections	1.39 (.51)	1.31 (.48)	1.31 (.48)	1.62 (.65)	1.36 (.51)	1.55 (.69)	1.71	.197	15.59	<.001
Facilitation of art-related discourse	1.46 (.52)	1.54 (.52)	1.54 (.52)	2.08 (.64)	1.46 (.52)	1.91 (.54)	3.30	.049	9.09	.005
Overall	1.49 (.29)	1.51 (.29)	1.54 (.32)	1.92 (.31)	1.52 (.35)	1.88 (.40)	8.61	<.001	22.61	<.001
Teaching quality										
Task design	1.54 (.52)	1.65 (.52)	1.50 (.50)	1.85 (.52)	1.50 (.45)	1.91 (.49)	1.83	.177	26.42	<.001
Instructions	1.58 (.40)	1.62 (.36)	1.50 (.35)	1.96 (.59)	1.59 (.44)	2.09 (.44)	4.56	.018	11.82	.002
Responses	1.39 (.51)	1.39 (.51)	1.39 (.51)	1.62 (.65)	1.46 (.52)	1.64 (.50)	.98	.386	18.26	<.001
Overall	1.50 (.36)	1.55 (.30)	1.46 (.25)	1.81 (.29)	1.52 (.26)	1.88 (.35)	6.85	.003	26.50	<.001
Teaching self-efficacy	3.39 (.68)	3.21 (.74)	3.51 (.68)	3.36 (.75)	3.30 (.84)	3.24 (.87)	.09	.917	1.22	.277

Regarding teaching competence, it is clear from Table 1 that scores on the Task Design dimension increased over the intervention period, but there were no significant differences in the post-test means among the groups after accounting for the covariate ($F(2, 33) = 1.825$, $p = .177$, $\omega 2 = .026$). Conversely, a significant between-group difference was revealed in the Instructions domain at the post-test ($F(2, 33) = 4.558$, $p = .018$, $\omega 2 = .130$), with pre-assessment level significantly predicting this effect ($F(1, 33) = 11.816$, $p = .002$, $\omega 2 = .197$). The post-hoc comparisons found that AI-MLS participants' scores were significantly higher in comparison to CON ($p = .026$). Although MLS also outperformed the control group, the difference was statistically indiscernible ($p = .055$). As for the Responses aspect of teaching competence, the treatment was ineffective across all three research conditions ($F(2, 33) = .980$, $p = .386$, $\omega 2 = 0$). The overall teaching competence variable was significantly affected, as evidenced by the significant difference in terms of the group factor, with a large effect size ($F(2, 33) = 6.852$, $p = .003$, $\omega 2 = .158$). Pre-experimental teaching competence scores significantly impacted this effect ($F(1, 33) = 26.496$, $p <001$, $\omega 2 = .344$). The Tukey post-hoc found that, relative to the busy-as-usual participants, there were significantly higher scores in both MLS (.012) and AI-MLS (.007).

Finally, post-test self-reported teaching self-efficacy was reduced in all conditions compared to baseline. However, the ANCOVA showed no significant difference among the groups ($F(2, 33) = .087$, $p = .917$, $\omega 2 = 0$).

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6. Discussion

The objective of this randomized control group study was to explore the effects of lesson planning alongside collaborative microteaching with and without AI assistance on the quality of lesson planning, teaching competence, and teaching confidence of visual art PSTs. The outcomes of this investigation illuminate the potential of MLS as a pedagogical approach within PST education, particularly in the context of visual arts. While not all outcome measures revealed statistically significant differences, the overall pattern of results suggests a positive influence of both conventional MLS and AI-supported MLS interventions, with marked improvements in overall lesson plan quality and teaching competence when compared to a control group receiving standard instruction. This suggests that the active, collaborative learning experience provided by the microteaching activities, irrespective of whether AI was utilized, may have catalyzed PSTs' preparedness for the complexities inherent in classroom teaching. Interestingly, the findings also reveal a nuanced impact, with specific benefits depending on the integration of AI and specific teaching areas. For instance, while the two treated groups exhibited comparable advancements in stimulating critical reflection and fostering conceptual connections, only the AI-assisted students experienced significant improvements in the instructional facet of teaching competence. This likely implies that AI can be particularly beneficial for novice teachers in crafting concise and engaging instructional strategies, thereby bumping up the clarity and effectiveness of lesson delivery. This finding is in line with the already research-validated advantage of generative artificial intelligence in its capacity to render detailed feedback, including suggestions for refinement; however, thus far, the positive effects of this feature of conversational agents have been documented primarily for users qua learners rather than for educators (Boubker, 2024; Chiu, 2024; Wu & Yu, 2024; Zheng et al., 2025). However, the lack of significant differences in other teaching competence dimensions suggests that the role of AI might be limited to specific aspects of teaching, and further research is needed to explore its full potential in art education. Lastly, in the present study, the teaching self-efficacy did not improve post-intervention in any condition, indicating a complex interplay between teaching practice and self-confidence.

Several mechanisms may underpin these findings. Collaborative lesson planning and the iterative process of designing and delivering mini-lessons, receiving feedback, and reflecting may have created a supportive and constructive learning environment, accelerating skill gain and the exchange of instructional strategies. The act of teaching in a simulated classroom environment, even for a short duration, likely provided valuable practical experience and immediate feedback, allowing PSTs to learn from each other, identify areas for improvement, and refine their teaching approaches. The additional resources of AI tools potentially provide diverse ideas, resources, and content, thereby enriching lesson plans and instructional methods. This access to extensive information and alternative perspectives could empower student-teachers to craft clearer, more engaging, and well-structured instructions. Furthermore, generative instruments could free up participants' cognitive resources to focus on pedagogical considerations and fine-tune their instructional layout. Despite skill enhancement, the lack of improvement in teaching self-efficacy might be attributed to the Dunning–Kruger effect. That is, as PSTs gain more knowledge and experience, they may become more aware of the complexities of teaching, leading to a more realistic self-assessment of their abilities and higher expectations of teaching competencies. This emphasizes the worth of continuous professional development and support beyond initial teacher training programs to ensure sustained growth in these areas.

6.1. Recommendations

Based on the findings of this study, some recommendations can be made for practitioners. First, educators and curriculum designers should consider incorporating regular microteaching sessions

into teacher education curricula, focusing on the cyclical process of collaborative planning, teaching, observation, and feedback. This iterative routine could provide student-teachers with essential opportunities for practice and adjustment. Second, training instructors on the effective use of AI platforms in lesson planning and instructional design could further hone teaching competence among PSTs, particularly in terms of instructional clarity. However, it is crucial to provide adequate training on using these tools effectively and to ensure that they are used to complement, not replace, traditional teaching methods.

6.2. Limitations and Future Research

Despite its strengths, this study is subject to several limitations. The relatively small sample size limits the statistical power and generalizability of the findings. Additionally, the study focused on a specific subject area (visual arts), and the results may not be applicable to other disciplines. The study's focus on a single institution and specific cultural context hampers its ability to fully represent the diversity of PSTs. The duration of the intervention (eight weeks) was relatively short, and a longer-term study might reveal different patterns of change.

Potential directions for future research include replicating this study with larger, more diverse samples across different settings and educational levels to elevate external validity and yield a more comprehensive understanding of its effectiveness. Future studies might investigate the long-term effects of MLS and AI-informed MLS on student-teacher development, including tracking participants into their early career years. Investigating how these methods adapt over time and their effects on actual student learning outcomes in schools would provide deeper insights. Moreover, exploring the optimal balance between AI assistance and independent planning would also be fruitful for future research. In particular, future research could explore the long-term implications of AI support on teachers' autonomy in lesson planning and ongoing self-efficacy, including potential dependence on or independence from chatbot assistance over extended periods. Understanding these prolonged effects could significantly inform best practices and policies in teacher education related to generative technology integration.

6.3. Implications

This study makes several valuable contributions to teacher education and educational research. First, it provides empirical evidence supporting the efficacy of MLS in bolstering potential art teachers' pedagogical skills, aligning with prior research advocating for practice-based teacher education (Firetto et al., 2024; Luke et al., 2024; Meneses et al., 2023; Peters-Burton et al., 2024). Second, this study contributes to the burgeoning field of AI in education by empirically testing the effects of AI-powered microteaching activities on teaching outcomes. This is the first study to shed light on the possible strengths and specific areas of impact when generative agents are embedded within MLS, particularly within the field of visual arts, paving the way for innovative approaches to pedagogical training. Third, the study offers valuable revelations for teacher educators seeking to incorporate active learning strategies and technology into their curriculum to better prepare future art teachers.

7. Conclusion

Throughout the intervention period, both experimental groups – those utilizing a chatbot and those who did not – exhibited significant enhancements in overall lesson plan quality, especially in promoting art-related discussions. Additionally, both experimental groups surpassed the control group in terms of teaching competence. Notably, the group harnessing the chatbot achieved significantly greater scores in the instruction category post-intervention. Conversely, the teaching self-efficacy level declined uniformly post-test relative to baseline, although there was no significant intergroup difference. To summarize, the results of this study lend some support to the merit of MLS,

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both in its regular configuration and when augmented with AI, in equipping upcoming visual art teachers with essential instructional planning and delivery skills. As education continues to evolve in the digital age, further exploration of these methodologies may lead to more effective and innovative teacher training practices. Notably, this work is practical as a first-cut evaluation of how generative AI implementation affects those who are supposed to teach visual arts soon. While both experimental approaches demonstrated significant advantages over conventional instruction, AI-driven MLS proved particularly beneficial in boosting the clarity and effectiveness of instructional delivery. By leveraging the strengths of both human and artificial intelligence, teacher education programs could better prepare PSTs for the challenges of the 21st-century classroom, ultimately enriching the educational landscape.

Declarations

Author Contributions. All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest. The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Appendix I. Coding Scheme for the Lesson Plan Quality Task

Subcategory	Description	Prototypical example of high quality
Stimulation of critical reflection regarding everyday art	Teacher prompts students to analyze and evaluate art in everyday objects	Teacher delivers a brief presentation on the design of a classroom chair, encouraging students to consider how functional design meets aesthetic appeal
Encouragement of conceptual connections	Students are guided to discover connections between different art concepts	Teacher presents images of folk-art chairs made from branches or recycled hockey sticks, prompting students to explore the relationship between function, design, and artistic expression
Facilitation of art-related discourse	Teacher guides students in discussing complex art-related topics	Teacher initiates and moderates a class discussion on the distinctions and overlaps between art and decor

Appendix II. Coding Scheme for the Microteaching Lesson Delivery

Task Design

A. Developmentally Appropriate and Challenging Tasks

3. Learning tasks are developmentally appropriate and challenging for students' skill levels.
2. Learning tasks are somewhat developmentally appropriate and challenging for students' skill levels.
1. Learning tasks are not developmentally appropriate or challenging for students' skill levels.

B. Maximally Engaging Tasks

3. The learning tasks provide students with active and maximum participation.
2. Some of the learning tasks provide students with active and maximum participation.
1. None of the learning tasks provide students with active and maximum participation.

Instructions

A. Clarity of Task Presentation

3. The teacher presents the tasks in a clear, concise, and accurate manner.
2. To some degree, the teacher presents the learning tasks in a clear, concise, and accurate manner.
1. The teacher presents the learning tasks in an unclear, wordy, and/or inaccurate manner.

B. Learning Cues

3. The teacher effectively presents the learning cues in a simple, accurate, and relevant manner throughout the teaching segment.
2. To some degree, the teacher presents the learning cues in a simple, accurate, and relevant manner throughout some of the teaching segment.
1. The teacher presents the learning cues in a complicated, inaccurate, and irrelevant manner throughout the teaching segment.

Responses

A. Positive/General Feedback

3. The teacher provides students with sufficient specific performance feedback based on students' responses throughout the teaching segment.
2. The teacher provides students with insufficient specific performance feedback based on students' responses throughout the teaching segment.
1. The teacher does not provide students with specific performance feedback based on students' responses throughout the teaching segment.

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