IJACA INTERNATIONAL JOURNAL OF APPLIED AND CREATIVE ARTS

IJACA | Vol.8 | Issue 1 | June 2025 | Pages 91-109

APPLICATION OF INTERDISCIPLINARY TEACHING IN MUSEUM ART EDUCATION: CASE STUDY AND ENLIGHTENMENT

Li Yongyan

Faculty of Art, Sustainability and Creative Industry, Universiti Pendidikan Sultan Idris

Tajul Shuhaizam Bin Said

Faculty of Art, Sustainability and Creative Industry, Universiti Pendidikan Sultan Idris

Corresponding Author
464394578@qq.com

Abstract: Museum art education offers a dynamic platform for interdisciplinary learning. While many researchers have explored interdisciplinary approaches within traditional classrooms, few have examined how museums integrate multiple disciplines to enrich educational experiences. Some scholars have identified challenges in developing cohesive interdisciplinary models within non-traditional learning environments. Therefore, this study aims to develop a framework that combines constructivist theory, interdisciplinary teaching models, and case study methods to investigate effective interdisciplinary practices in museum art education.Using a case study approach, this paper highlights the integration of STEAM, project-based learning (PBL), and inquiry-based learning (IBL) within museum settings. Given the limited research on interdisciplinary teaching in museum art education, this paper focuses on two central questions: First, how does interdisciplinary teaching impact student engagement and comprehension in museum art education? Second, how does interdisciplinary teaching in museum education influence the development of students' creativity and critical thinking skills? This study employs qualitative thematic analysis to assess learning outcomes, specifically examining the effectiveness of interdisciplinary methods in enhancing student engagement and comprehension in museum contexts.

It also investigates whether interdisciplinary teaching significantly fosters creativity and critical thinking in students. These research objectives aim to uncover the potential applications and challenges of interdisciplinary teaching in museum education, ultimately providing practical insights for future educational models.

Keywords: Constructivism theory, creativity, museum art education, Inter-disciplinary teaching

1. INTRODUCTION

The rapid advancement of society and technology has brought significant shifts in educational models, underscoring the growing importance of interdisciplinary approaches. Traditionally seen as repositories of cultural and historical artifacts, museums are now recognized as dynamic educational spaces that foster innovative thinking and interdisciplinary learning. This paper explores the intersection of museum art education and interdisciplinary teaching methods, aligning closely with the International Conference on Application and Creative Arts (ICACA)'s theme of promoting creativity and applied arts through innovative educational practices. By examining the theoretical foundations, practical applications, and future implications of interdisciplinary approaches in museum art education, this study aims to highlight museums' pivotal role in advancing educational paradigms.

This paper argues that integrating various disciplines into museum education not only enriches the learning experience but also equips learners with the composite skills needed to navigate an increasingly complex world. Through qualitative research and case studies, it offers insights and practical recommendations for educators, policymakers, and museum professionals, contributing to ongoing discussions on educational innovation and interdisciplinary collaboration.

In the evolving field of education, interdisciplinary teaching has emerged as a powerful approach to foster deeper learning by integrating multiple domains of knowledge. Museums, as repositories of culture, art, and history, provide unique opportunities for interdisciplinary education by bridging gaps between academic disciplines through real-world context (Kaye, 2023). In museum art education, an interdisciplinary approach enables a more comprehensive understanding of art by connecting it with history, science, and social studies, thereby enriching the learning experience (Akmal, 2022).

The integration of interdisciplinary teaching methods within museum settings has proven effective in engaging students more deeply, encouraging critical thinking, creativity, and a broader perspective on art and culture (Sevilla et al., 2023). This approach is particularly relevant to 21st-century education, where complex, real-world problems require the ability to synthesize interdisciplinary knowledge (Bammer et al., 2020). By utilizing museums as interdisciplinary educational spaces, educators can provide students with a more immersive and meaningful learning experience.

Despite its recognized benefits, the application of interdisciplinary teaching in museum art education remains underexplored, particularly within non-Western

contexts. Shandong Museum, one of China's largest provincial museums, serves as a significant cultural and educational institution with an extensive collection of artifacts and artworks.

However, its traditional art education programs tend to focus narrowly on art techniques and historical context, often excluding connections to other domains of knowledge (Sobanova & Jiroutová, 2020).

Using Shandong Museum as a case study, this paper examines the application of interdisciplinary teaching methods in museum art education. The project integrates elements from art, history, science, and cultural studies, offering insights into the potential of interdisciplinary teaching to enrich museum-based learning.

Through an analysis of the outcomes from Shandong Museum's interdisciplinary teaching program, this study aims to provide practical recommendations for museum educators and art teachers on effectively implementing interdisciplinary approaches in their teaching. Additionally, it will discuss the broader implications of these findings for museum education and inspire similar educational innovations in other museums.

2. LITERATURE REVIEW

2.1 Constructivist Learning Theory

Piaget's theory of cognitive development emphasizes that learners accumulate knowledge through active engagement with their environment, making museums ideal spaces for experiential and interdisciplinary learning (Weber, 2022). Vygotsky's social constructivism highlights the importance of social interaction and collaboration (Mishra, 2023), which are critical in group-based interdisciplinary projects. Together, these theories underscore the value of active, experiential, and socially interactive learning environments within museums.

2.2 Interdisciplinary Teaching Models

Three prominent interdisciplinary teaching models are currently recognized. The STEAM approach (Science, Technology, Engineering, Arts, Mathematics) provides an ideal interdisciplinary framework (Al-Mutawah et al., 2022), incorporating scientific and technological principles through a creative arts education lens. Project-Based Learning (PBL) encourages students to explore real-world issues and challenges through collaborative, cross-disciplinary projects (Chang et al., 2022). Inquiry-Based Learning (IBL) prompts students to investigate questions and develop solutions based on interdisciplinary research, fostering critical thinking skills (Joseph et al., 2022).

Museums can serve as platforms for these types of projects, utilizing their artifacts and resources to address interdisciplinary questions.

2.3 The Application of Interdisciplinary Methods in Museum Education

Current research suggests that traditional museum teaching methods are relatively straightforward, typically limited to exhibitions and guided explanations, with insufficient student engagement and interaction (Othman et al., 2021). While various interdisciplinary models have been applied in education, museums provide an untapped resource for their fuller realization. Consequently, a growing number of educators and researchers are exploring the use of interdisciplinary teaching methods within museum education (Santaolalla et al., 2020), aiming to foster deeper understanding and interaction, enhancing both learner experience and educational outcomes.

Most existing studies focus on interdisciplinary teaching in science and natural history museums, while interdisciplinary research in art museums is relatively limited (Tenenbaum et al., 2020). This gap in the literature highlights the need to explore effective ways to implement interdisciplinary teaching in museums, as well as strategies for utilizing museum resources to stimulate students' creativity and critical thinking (Wilson et al., 2021).

2.4 Museums as Interdisciplinary Educational Environments

Museums provide a rich cultural and historical context, creating unique opportunities for interdisciplinary teaching. "Museum Learning Theory" suggests that the learning environment in museums is influenced by various factors, including social interaction, personal background, and the physical environment. Museums are not just repositories for artworks but are also centers for knowledge and cultural dissemination. Through exhibitions and interactive displays, museums can effectively support the implementation of interdisciplinary teaching (Gigerl et al., 2022). Interdisciplinary teaching models not only integrate knowledge from different fields but also inspire learners' creativity and critical thinking.

2.5 Case Studies and Practice

Existing studies have explored successful cases of interdisciplinary teaching in museum environments. For example, projects combining science and art have shown that students gain a deeper understanding of artworks and enhance their scientific literacy after participating in museum activities. This integration of art and science fosters deep learning within an interdisciplinary framework (Trott et al., 2020). Furthermore, studies demonstrate that Project-Based Learning and Inquiry-Based Learning can be effectively integrated into museum settings, significantly increasing student engagement and creativity (Domenici, 2022).

3. METHODOLOGY

3.1 Research Design

This study adopts a qualitative case study design to explore the application of interdisciplinary teaching in museum art education. The choice of a case study approach enables an in-depth examination of how interdisciplinary teaching can engage students in a museum setting (Gómez-Hurtado et al., 2020), aligning with the research goal of gaining practical insights to enhance museum-based art education. The qualitative approach, utilizing participatory observation and interviews, provides a detailed understanding of participants' experiences and perspectives, capturing the complexities of their interactions with interdisciplinary teaching methods.

This study is guided by constructivist theory, combining STEAM, PBL, and IBL models to leverage the museum environment, guiding students toward active exploration, autonomous learning, collaborative learning, and reflection to deepen understanding. Through this teaching approach, the aim is to increase student engagement and cultivate creativity and critical thinking skills.

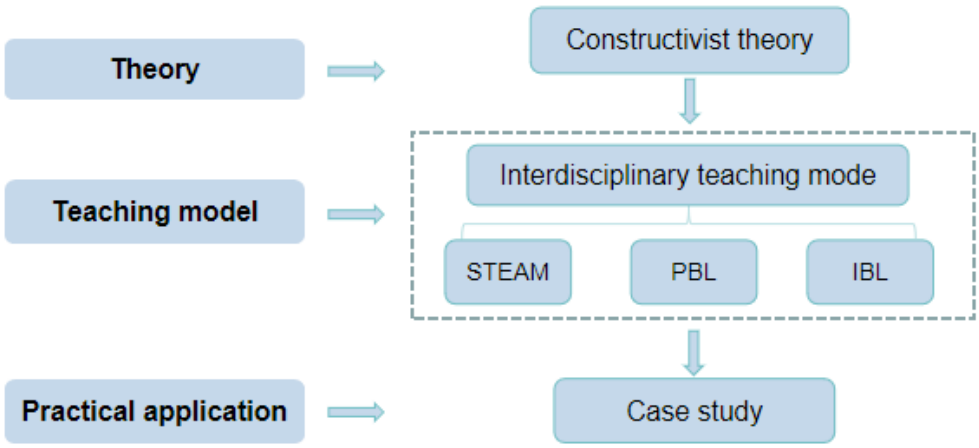

Figure 1. Research Design

3.2 Participants

The study involves 20 fourth and fifth-grade students aged 9 to 11 from the same primary school. Gender was unrestricted, and both male and female students were included. Participants were recruited through collaboration with a local school, with parental consent obtained after being informed of the research's objectives. These students were selected based on their consistent participation in museum art education activities, providing them with the ability to reflect on and discuss their

learning experiences. A sample size of 20 was chosen to ensure both a rich depth of participant experience and manageability for detailed observation and interviews.

3.3 Sampling Method

Purposeful sampling was employed to select students most likely to provide meaningful insights into the research topic. This method ensures that participants possess relevant art education experience and can actively engage in museum-based interdisciplinary activities. School administrators distributed research information to parents, detailing objectives and ethical considerations, with parental consent obtained. Out of 93 eligible students, 20 agreed to participate with their parents' consent. Although purposeful sampling ensures participants' rich background and experience, it may limit the generalizability of the findings.

3.4 Data Collection Methods

3.4.1 Observation

Observations took place during museum-based teaching, focusing on how students engaged with interdisciplinary teaching activities. The researcher observed student behaviors, including independent exploration, cooperative learning, creativity, reflective ability, and engagement with art and other subject content.

Table 1: Observation Table

Observation Dimension	Indicators	Rating (1-5)	Notes
Behavioral Performance	Demonstrates independent exploration of exhibits		Notes on independence shown in exploring exhibits
	Seeks additional information on own initiative		Instances of seeking extra details or insights autonomously
	Shows active interest in interdisciplinary activities		Level of enthusiasm in engaging with integrated subjects
Collaboration Level	Participates in group tasks willingly		Frequency of active participation in collaborative activities
	Encourages and respects contributions from peers		Examples of listening and acknowledging peers' input
	Shares insights or observations during group activities		Cases of sharing personal thoughts or insights within group
Engagement Level	Engages actively with both art and non-art content		Engagement with both artistic and scientific/historical content

Creativity	Shows sustained interest in the subject matter	Moments where sustained interest or focus is displayed
	Proposes innovative or alternative viewpoints	Instances of proposing novel perspectives or ideas
	Applies knowledge from other disciplines	Examples of interdisciplinary connections made by students
Reflective Thinking	Generates original questions or interpretations	Observations of unique questions or interpretations offered
	Evaluates own understanding of the exhibits	Instances of students assessing their understanding of topics
	Reflects on learning experience meaningfully	Examples of personal reflections on learning process
	Makes connections between exhibit content and broader concepts	Cases of connecting exhibit themes to larger concepts or ideas

3.4.2 Student Focus Groups

Focus groups were conducted with groups of 8 students after the teaching implementation, encouraging in-depth discussions about their learning experiences. This method helps capture group perspectives, fostering interaction among students and gathering rich data on their views of interdisciplinary teaching methods.

Interview questions focused on their museum learning experiences, exploring their engagement, comprehension depth, and perceptions of interdisciplinary content:

1. What did you learn from this museum activity? Which part impressed you the most?

2. Do you think combining art with other subjects (such as history, science) helped you understand the exhibits better? Can you give a specific example?

3. Did you find it easier to collaborate with others or work independently during these interdisciplinary activities? Why?

4. After participating in these interdisciplinary activities, did you become more interested in subjects like history or science? If so, which ones?

5. Did you face any difficulties during learning? How did you resolve them?

6. Do you feel these interdisciplinary activities inspired your creativity? Could you share a specific example?

These questions aim to gather students' impressions and understandings of interdisciplinary teaching, providing valuable data for further research.

3.4.3 Expert Interviews

Semi-structured interviews with education experts were conducted to evaluate and analyze the effectiveness of the interdisciplinary model on student engagement and creativity.

Key interview questions included:

1. Do you find my interdisciplinary course design reasonable? Are there areas for improvement in content structure or teaching flow?

2. Do you feel students gained a better understanding of the history, art, or science behind museum artifacts through this interdisciplinary approach? What areas could be strengthened?

3. What additional methods could be used to further stimulate student engagement?

4. How effective do you think the interdisciplinary course is in fostering student creativity? Do you have any specific suggestions to help students better express and develop their creative thinking?

5. Is the course effective in encouraging students' critical thinking? What improvements could help students analyze and understand artifacts more deeply?

6. What major challenges do you foresee in implementing this course? Any suggestions for overcoming them in future implementations?

7. What is your overall assessment of this interdisciplinary course? Does it have the potential for wider adoption in museums? If so, what areas should receive particular attention?

8. These questions aim to understand experts' feedback on course design, student reactions, and implementation outcomes, providing insights for future course refinement and promotion.

3.4.4 Additional Data Points

Photos from classroom and museum activities, along with student presentations, served as supplementary data points to illustrate students' learning process and creativity.

3.5 Procedure

Week 1: Students were introduced to the museum setting and the interdisciplinary art education program, participating in an interactive lecture that combined art with history and science to introduce interdisciplinary learning concepts.

Weeks 2-3: Weekly activities combining art and other disciplines took place. Prior to each museum visit, students conducted preliminary investigations and discussions on assigned topics. On the activity day, students were guided to interpret exhibits from multiple disciplinary perspectives, such as history, art, and science. The researcher observed and recorded student participation and themes of interaction, as well as their collaboration with peers. Interdisciplinary tasks included creating artworks that blended historical themes with scientific concepts, cultivating creativity and critical thinking.

Week 4: At the project's conclusion, the researcher conducted focus groups with students, emphasizing how interdisciplinary methods affected their learning experience and engagement with museum art exhibitions. Students reflected on their learning outcomes and how they connected various disciplines through the museum program. Meanwhile, education experts assessed the effectiveness of interdisciplinary methods in museum art education and provided suggestions.

3.6 Data Analysis

Qualitative data collected from interviews, observations, and focus groups were analyzed using thematic analysis. Initially, the researcher read all interview and observation notes to gain an initial understanding of the data. NVivo software was used to code data, identifying emerging themes based on patterns observed in the interviews and observations. Key themes were then organized into broader categories, with particular focus on how interdisciplinary teaching impacted student engagement, creativity, and critical thinking. Themes related to the research questions were reviewed and refined to ensure they accurately represented students' experiences with interdisciplinary methods.

3.7 Reliability

Triangulation was conducted by employing multiple data collection methods, including interviews, observations, and document analysis. This approach aids in verifying the results from various perspectives, enhancing internal consistency, and reducing the bias that may arise from a single data source.

During data collection, each interview and observation was meticulously documented, with both audio recordings and written notes retained for double verification. This practice ensures that data can be accurately reviewed and allows for similar studies to be conducted in the same context to validate the findings of this research.

3.8 Ethical Considerations

This study adheres to strict ethical guidelines to ensure the safety and privacy of all participants. Parental consent was obtained prior to the study, and students gave informed consent, fully understanding the research purpose and their role within it, agreeing to participate voluntarily.

To address confidentiality and anonymity, all student data were anonymized, with pseudonyms used in analysis and reporting. No identifiable personal information was shared, and all data were securely stored with access limited to the principal researcher.

By ensuring all questions were age-appropriate and phrased non-intrusively, any potential emotional discomfort during interviews was minimized. Additionally, students were informed of their right to withdraw from the study at any time without any consequences.

The study was reviewed and approved by the university's ethics review board, ensuring all procedures complied with ethical standards for research involving minors.

3.9 Limitations

The study's limitations include reliance on a relatively small, non-random sample, potentially limiting the generalizability of the findings. Additionally, the qualitative nature of the research means results are specific and may not easily transfer to other museums or different student groups. Lastly, the short project duration may not fully capture the long

4. DATA FINDINGS AND ANALYSIS

4.1 Data Analysis Method

Data collected through observations, focus group discussions, and semi-structured interviews were analyzed using thematic analysis, a widely recognized qualitative method suitable for identifying, analyzing, and interpreting patterns within data. This method was selected because it aligns with the study's goal of exploring students' interdisciplinary learning experiences in a museum environment, allowing in-depth insights into how this approach influences their engagement and learning. Thematic analysis follows guidelines by Braun and Clarke (2006), involving a systematic process of familiarizing with the data, coding, theme development, and theme refinement. This method is particularly effective in determining how interdisciplinary teaching strategies impact students' engagement and learning outcomes within the

museum setting. NVivo software was used to facilitate the coding process, enabling efficient management and organization of qualitative data, which enhances the reliability of the analysis.

4.2 Analysis Process

After concluding the focus group interviews with students, the discussions were manually transcribed by the researcher, coded using NVivo software, and categorized into broader themes based on similar or related codes. For example, codes related to students' interactions with museum artifacts and other subjects (such as history and science) were classified under the broader theme of “interdisciplinary learning,” ultimately resulting in six primary themes: interdisciplinary learning, collaborative learning, self-directed learning, creativity, critical thinking, and engagement.

4.3 Analysis Results

4.3.1 Observation Results

Observations were conducted during the museum art education activities incorporating interdisciplinary teaching. Based on records in the observation tables and video footage, an observation report was created. Students showed a high level of initiative in exploring exhibits independently, especially toward artifacts containing elements of history and science. Many students actively sought additional background information, indicating that interdisciplinary teaching encouraged self-directed inquiry.

Collaboration within groups was high, with students engaging in active communication and mutual encouragement during group tasks. Most students displayed a respectful attitude toward others' opinions, aiding in a better absorption of knowledge across disciplines. Particularly during discussions involving integrated knowledge (e.g., historical context or scientific principles), students shared and discussed more enthusiastically. Student engagement noticeably increased with the inclusion of interdisciplinary content, as they found it more appealing—especially when content was visually demonstrative (e.g., scientific examples). Students who consistently engaged deeply often developed a sustained interest in the interdisciplinary aspects of museum artifacts, indicating that this approach can enhance interest in both art and other subjects. Students exhibited creative behaviors during museum interactions, particularly when interpreting art uniquely or integrating knowledge from related disciplines. Some students demonstrated flexibility in

applying knowledge and presented novel insights, indicating a notable enhancement of creative thinking through interdisciplinary teaching.

Most students showed a degree of self-reflection after the activities, revisiting and reassessing the learning content in their self-evaluations. Reflective ability improved by the end of the activities, particularly in demonstrating how subject knowledge was applied to understanding exhibits and broader concepts. In conclusion, interdisciplinary teaching in the museum setting significantly enhanced students' engagement, creativity, and reflection. Improvements in behavior and collaboration also highlighted how such activities encourage active knowledge exploration and teamwork. This teaching approach provides students with a more comprehensive learning experience, helping them establish effective connections between art and other subjects.

4.3.2 Data Analysis from Student Focus Groups

After coding focus group data, a thematic analysis was conducted. Interdisciplinary teaching combining art with history and science enhanced students' holistic understanding and curiosity. Students found the interdisciplinary connections between art, history, and science stimulating; many reported that linking art projects to historical artifacts made both subjects more meaningful. For instance, students creating artwork based on ancient artifacts expressed a deeper understanding of the historical context.

Group collaboration facilitated mutual inspiration during discussions and explorations, proving particularly effective in grasping complex concepts. Collaboration boosted communication skills and team awareness, offering students diverse perspectives during the learning process. The museum provided a rich learning resource, allowing students to choose learning content based on their interests, thereby enhancing their sense of self-directed learning. Unlike in classrooms, students in the museum felt freer to explore. Some reported that the physical presence of historical artifacts and art pieces inspired them, making the learning process more immersive and engaging. However, observations also noted challenges, such as distractions due to the open space and difficulty maintaining focus during lengthy sessions.

Interdisciplinary activities sparked students' creativity, enabling them to express unique viewpoints. For example, students were inspired by the historical background of artifacts, attempting to understand knowledge from different perspectives, which promoted creative thinking.

Students exhibited strong critical thinking in interdisciplinary learning, especially in discussions about the cultural backgrounds of artifacts, learning to analyze and question information. Rather than accepting surface-level explanations, they formed personal viewpoints.

4.3.3 Data Analysis from Expert Interviews

Five themes emerged from coding the expert interview data: curriculum design rationality, student comprehension and engagement, fostering creativity and critical thinking, implementation challenges, and curriculum promotion potential. The analysis based on these themes is as follows: Experts widely acknowledged the interdisciplinary structure of the curriculum, agreeing that combining history, art, and science aids comprehensive student understanding. Some experts suggested further refining the teaching process, such as detailing the objectives for each phase so that students can grasp the learning focus at every stage. This indicates that while the curriculum design is generally well-received, there is room for process optimization.

The interdisciplinary curriculum significantly enhanced students' interest in and engagement with knowledge, with students achieving deeper artifact comprehension, especially when activities included interactive elements. Experts suggested incorporating more opportunities for discussion and expression, as this could both spark students' curiosity and deepen understanding. Thus, the interdisciplinary curriculum proves effective in boosting student engagement and can be further enhanced through increased interaction. Experts observed that students displayed strong creativity in interdisciplinary activities, particularly during artifact exploration. They suggested providing more opportunities for students to showcase their creativity, such as through discussions or creative work, to further enrich the learning experience. This theme analysis shows that the curriculum effectively fosters creativity, yet more practical activities could allow for a fuller expression of students' creative abilities.

Experts noted that interdisciplinary content helped develop students' critical thinking, though they suggested incorporating deeper guidance in the curriculum. For example, adding discussion sessions to encourage students to think more broadly about the historical and cultural backgrounds of artifacts would stimulate their analytical and questioning abilities. This theme indicates positive effects on critical thinking, but more structured guidance would aid deeper understanding. Experts pointed out challenges in teaching resources and time management, with some activities not fully developed due to time constraints. They suggested increasing curriculum flexibility and providing more applicable resources. Additionally, experts believed the curriculum has promotion potential but that issues like resource

allocation and curriculum adaptability need to be addressed for broader application. This theme analysis indicates that with sufficient resources, the curriculum has a greater potential for wider implementation.

4.3.4 Triangulation of Data Sources

Triangulating findings through literature, observations, focus groups, and interviews provided a multi-angled evidence chain, enhancing the reliability of conclusions on integrating interdisciplinary teaching within museum art education. This approach minimizes bias and ensures more generalizable results. Data showed consistency and variability in interdisciplinary teaching outcomes. Both student interviews and observation data indicated that interdisciplinary teaching significantly boosted students' interest and engagement in museum educational activities. Students reported high engagement with the interdisciplinary course content, and observations recorded students' active involvement. This outcome was supported by expert interviews, with experts agreeing that the interdisciplinary design effectively motivated students and increased their willingness to participate.

Student and expert interviews both highlighted the positive impact of interdisciplinary teaching on students' creativity and critical thinking. Students displayed flexible knowledge application and creativity, and critical thinking in discussions and answering questions, aligning with experts' observations and feedback. This triangulation strengthens the conclusion that interdisciplinary teaching promotes creativity and critical thinking.

Observation data documented active collaboration and interaction among students during group tasks, though some students reported a preference for individual work. This variability suggests that while interdisciplinary teaching generally supports collaborative learning, implementation should consider individual learning preferences. Experts noted the general applicability of interdisciplinary teaching, though they pointed out possible influences from students' diverse backgrounds. Student interviews and observation data mostly reflected the appeal and engagement of interdisciplinary content, without significantly showing the impact of background differences on learning outcomes. Thus, further research could examine background influences on interdisciplinary teaching to improve curriculum adaptability.

Triangulating student interviews, observation data, and expert interviews provides comprehensive evidence for the effectiveness of interdisciplinary teaching. The consistency across data sources demonstrates its effectiveness in improving student engagement, creativity, and critical thinking, while minor differences offer insights for

targeted curriculum enhancements. Integrating multiple data sources reinforces the study's reliability and persuasiveness, providing robust support for applying interdisciplinary teaching in museum education.

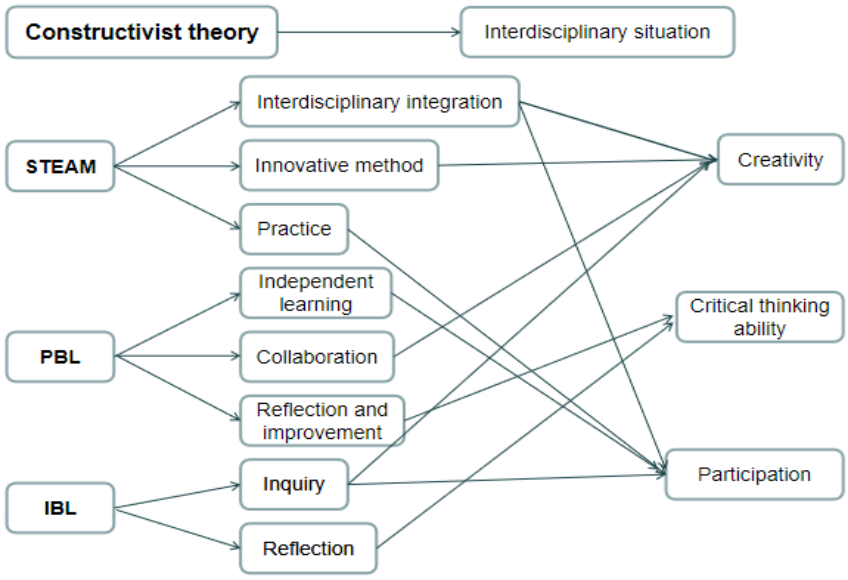

Figure 2. Interdisciplinary Teaching Framework

5. DISCUSSION

5.1 Summary of Findings

The main findings of this study indicate that interdisciplinary teaching significantly enhances student engagement and creativity in museum art education. By integrating art with other subjects like history and science, students not only gain a deeper understanding of the knowledge but also stimulate their creative thinking. These results align with our initial research questions, emphasizing the importance of interdisciplinary teaching in promoting students' comprehensive development.

5.2 Theoretical Significance of Findings

Our findings support the theoretical perspectives on the effectiveness of interdisciplinary teaching presented in existing literature (Santaolalla et al., 2020). By integrating multidisciplinary knowledge, students form a more holistic understanding. Additionally, the high levels of engagement and creativity observed in student activities further confirm the hypothesis that interdisciplinary teaching enhances learning outcomes. This result helps expand the current theories on museum education and interdisciplinary teaching, providing new theoretical insights.

5.3 Practical Significance of Findings

These findings hold significant practical value for museum educators, policymakers, and related professionals. By applying interdisciplinary teaching to museum art education, educators can design more engaging and interactive programs, helping students connect classroom knowledge to real-life applications. Promoting this teaching model can provide effective strategies for museums to attract a broader student audience while also fostering students' overall development. Policymakers should consider incorporating interdisciplinary teaching concepts into education policies to drive educational innovation and improve students' comprehensive competencies.

5.4 Limitations of the Study

Despite providing valuable insights, this study has certain limitations. First, the small sample size—limited to 20 students from one primary school—may affect the generalizability of the results. Second, as a qualitative study, the findings may be influenced by the subjective factors of the interviewees. Additionally, the study did not control all possible confounding variables, such as individual differences or background factors among students, which may impact the interpretation of the results to some extent.

5.5 Directions for Future Research

Based on the results of this study, future research could explore the application of interdisciplinary teaching on a larger scale to examine its impact on students from different backgrounds. Researchers could also consider adopting mixed-method studies, combining quantitative and qualitative data to obtain a more comprehensive understanding. Furthermore, future research could investigate how interdisciplinary teaching can be implemented in different types of museums (e.g., natural history museums, science museums) to assess its effectiveness and applicability. Finally, researchers should focus on how to integrate the results of this study into practical teaching practices to advance museum education.

6. CONCLUSION

The main findings of this study demonstrate that interdisciplinary teaching in museum art education effectively enhances student engagement and understanding, while also significantly impacting students' creativity and critical thinking. These results align closely with the research questions posed in this paper, further confirming the educational potential of interdisciplinary teaching. Students participating in museum programs gain a more comprehensive understanding of knowledge in history, art, and science.

At the same time, the interdisciplinary approach effectively stimulates their creativity and critical thinking. These findings not only validate the hypothesis in the research objectives but also provide practical evidence for museum educators, proving that interdisciplinary teaching positively impacts students' comprehensive development. This study calls for continued innovation and collaboration to promote the sustainable development of museum education and meet the evolving needs of society.

ACKNOWLEDGMENT

I extend my sincere gratitude to the International Conference on Applied and Creative Arts for providing this valuable opportunity, which has allowed me to engage in in-depth academic exchange and learning on this platform. This experience has not only broadened my academic horizons but also enriched me with invaluable knowledge and insights.

REFERENCES

Akmal, A. (2022). Integrative learning in history education: A systematic literature review. Dinamika Ilmu, 22(2), 375–392.

Al-Mutawah, M. A., Thomas, R., Preji, N., Alghazo, Y. M., & Mahmoud, E. Y. (2022). Theoretical and conceptual framework for a STEAM-based integrated curriculum. Journal of Positive School Psychology, 5045–5067.

Bammer, G., O'Rourke, M., O'Connell, D., Neuhauser, L., Midgley, G., Klein, J. T., Grigg, N. J., Gadlin, H., Elsum, I. R., & Bursztyn, M. (2020). Expertise in research integration and implementation for tackling complex problems: When is it needed, where can it be found, and how can it be strengthened? Palgrave Communications, 6(1), 1–16.

Chang, T.-S., Wang, H.-C., Haynes, A. M., Song, M.-M., Lai, S.-Y., & Hsieh, S.-H. (2022). Enhancing student creativity through an interdisciplinary, project-oriented problem-based learning undergraduate curriculum. Thinking Skills and Creativity, 46, 101173.

Domenici, V. (2022). STEAM project-based learning activities at the science museum as an effective training for future chemistry teachers. Education Sciences, 12(1), 30.

Gigerl, M., Sanahuja-Gavaldà, J. M., Petrinska-Labudovikj, R., Moron-Velasco, M., Rojas-Pernia, S., & Tragatschnig, U. (2022). Collaboration between schools and museums for inclusive cultural education: Findings from the INARTdis-project. Frontiers in Education, 7, 979260.

Gómez-Hurtado, I., Cuenca-López, J. M., & Borghi, B. (2020). Good educational practices for the development of inclusive heritage education at school through the museum: A multi-case study in Bologna. Sustainability, 12(20), 8736.

Joseph, V., Sheikh, I., & Rajani, S. (2022). Inquiry-based learning method of teaching in education: A literature review. Webology, 19(3).

Kaye, C. (2023). Global perspectives on art museums as third spaces for inquiry-based support in core curriculum. In Third-space exploration in education (pp. 195–220). IGI Global.

Mishra, N. R. (2023). Constructivist approach to learning: An analysis of pedagogical models of social constructivist learning theory. Journal of Research and Development, 6(1), 22–29.

Othman, M. K., Aman, S., Anuar, N. N., & Ahmad, I. (2021). Improving children's cultural heritage experience using game-based learning at a living museum. Journal on Computing and Cultural Heritage, 14(3), 1–24.

Santaolalla, E., Urosa, B., Martín, O., Verde, A., & Díaz, T. (2020). Interdisciplinarity in teacher education: Evaluation of the effectiveness of an educational innovation project. Sustainability, 12(17), 6748.

Sevilla, E., Jarrín, M. J., Barragán, K., Jáuregui, P., Hillen, C. S., Dupeyron, A., Barclay, J., Burneo, T. A., Cupuerán, M. I., & Zapata, C. (2023). Envisioning the future by learning from the past: Arts and humanities in interdisciplinary tools for promoting a culture of risk. International Journal of Disaster Risk Reduction, 92, 103712.

Sobanova, P., & Jiroutová, J. (2020). Connecting art education learning tasks with the artistic field: The factor of quality in art lessons. CEPS Journal, 10(4), 33–54.

Trott, C. D., Even, T. L., & Frame, S. M. (2020). Merging the arts and sciences for collaborative sustainability action: A methodological framework. Sustainability Science, 15(4), 1067–1085.

Weber, K. E. (2022). The role of museums in educational pedagogy and community engagement.

Wilson, H. E., Song, H., Johnson, J., Presley, L., & Olson, K. (2021). Effects of transdisciplinary STEAM lessons on student critical and creative thinking. The Journal of Educational Research, 114(5), 445–457.