# ENHANCING CREATIVITY AND CULTURAL INTEGRATION IN ART EDUCATION: EVALUATING THE ROLE OF MICROSOFT COPILOT AMONG KUWAITI DESIGN STUDENTS

## By

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# ENHANCING CREATIVITY AND CULTURAL INTEGRATION IN ART EDUCATION: EVALUATING THE ROLE OF MICROSOFT COPILOT AMONG KUWAITI DESIGN STUDENTS

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#### Abstract:

This study explores how Microsoft Copilot, an artificial intelligence (AI) tool, enhances creativity, cultural integration, technical proficiency, and intellectual property awareness among art and design students in Kuwait. Using a mixed-methods approach grounded in constructivist and social learning theories, the research combined surveys, focus groups, and rubricbased evaluations across categories such as cultural relevance, creativity, technical execution, presentation, and intellectual property considerations. Findings revealed that Copilot significantly boosted students' creativity by enabling innovative designs that blend traditional Kuwaiti cultural motifs with modern aesthetics. The tool also improved technical execution, with students demonstrating increased digital competence and polished final Furthermore, students reported enhanced understanding intellectual property principles, such as ownership, originality, and ethical use of AI-generated content, highlighting the importance of addressing these issues in AI-assisted education. Survey responses showed high levels of satisfaction, with 93% of participants expressing confidence in their outcomes, although challenges such as uneven team participation and varying technological proficiency persisted. This study highlights the importance of structured guidance, cultural contextualization, intellectual property literacy in adopting AI tools for art education. These insights contribute to the growing discourse on integrating pedagogical technology and offer practical strategies for educators in culturally diverse settings.

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**Keywords**: Creativity, Cultural Integration, Microsoft Copilot, Art Education, Kuwait, Digital Competence, Intellectual Property, AI Ethics

#### Introduction:

The rapid advancement of artificial intelligence (AI) has transformed various sectors, including education, where it is increasingly leveraged to enhance creativity, collaboration, and technical proficiency. AI tools, such as Microsoft Copilot, offer unprecedented opportunities to streamline complex processes, provide personalized learning experiences, and foster innovation in fields like art and design. These tools assist students by automating repetitive tasks, offering real-time feedback, and serving as collaborative partners in creative and technical endeavors. In art and design education, in which the integration of cultural heritage, originality, and technical skills is paramount, AI tools have the potential to redefine traditional pedagogies while introducing new challenges.

Kuwait, a country rich in cultural traditions and artistic heritage, presents a unique context in which to explore the integration of AI into education. The nation's art and design students face the dual challenge of preserving cultural identity while adapting to global trends in technology and creativity. Traditional Kuwaiti motifs, such as geometric patterns in Sadu art, maritime life, and pearl-inspired designs, have long been integral to a country's artistic expression. However, the modern era demands innovative reinterpretations of these elements, which AI tools such as Microsoft Copilot can facilitate. By enabling students to seamlessly merge traditional and contemporary design approaches, these tools empower them to create art that reflects both their cultural roots and their modern sensibilities.

Despite its potential, the integration of AI in education raises critical questions regarding intellectual property, ethical use, and the balance between automation and human creativity. For example, who owns the intellectual property rights of designs created in collaboration with AI? To what extent should students rely on AI-generated suggestions, and how can educators ensure that these tools complement rather than replace human

ingenuity? These questions are particularly relevant in culturally rich contexts, such as Kuwait, where preserving authenticity and originality is essential.

This study investigates the role of Microsoft Copilot in enhancing creativity, cultural integration, and technical execution among Kuwaiti art and design students. It examines how the tool enables students to innovate while maintaining a connection to their cultural heritage and how it impacts their understanding of intellectual property in AI-assisted creation. By addressing these themes, this research contributes to the broader discourse on the use of AI in education and offers practical insights for educators seeking to implement AI tools in culturally diverse contexts.

#### **Background**

The integration of artificial intelligence (AI) into education is transforming traditional teaching and learning paradigms across disciplines, particularly in creative fields like art and design. AI tools, such as Microsoft Copilot, are designed to support students by automating repetitive tasks, generating creative suggestions, and offering real-time feedback. These tools aim to reduce cognitive load and empower learners to focus on higher-order thinking and problem solving. In art and design, this enables students to explore new artistic possibilities, develop technical skills, and innovate while maintaining creative autonomy. However, the adoption of AI in education is not without challenges, particularly in culturally rich contexts in which tradition and modernity intersect.

Kuwait offers a unique case study for exploring the role of AI in art education. With its rich cultural heritage rooted in Islamic art, traditional architecture, and maritime history, Kuwait's artistic legacy is deeply intertwined with its identity. Geometric motifs, calligraphic patterns, and designs inspired by pearl diving and dhow construction are hallmarks of Kuwaiti art. As the country continues to embrace modernization and globalization, there is a growing need to reinterpret these traditional elements in ways that appeal to contemporary audiences. The use of AI tools like Microsoft Copilot provides a platform for students to merge

= Enhancing Creativity and Cultural Integration in Art Education: Evaluating the Role of Microsoft Copilot = traditional motifs with modern aesthetics, creating innovative designs that honor the past while embracing the future.

Microsoft Copilot, an AI-driven code completion and content generation tool, has garnered significant attention for its applications in programming and creative industries. While it was originally developed to assist software developers, its capabilities have been adapted to other domains, including education and the arts. In art and design education, Copilot can assist students by generating design suggestions, creating templates, and automating repetitive tasks like color matching and pattern generation. These features not only save time but also expose students to alternative approaches they may not have considered, fostering creativity and innovation.

Despite its potential, the integration of AI tools like Copilot into education raises several important questions. Intellectual property is one of the most pressing issues, as ownership of AI-assisted creations remains a gray area. Additionally, there are concerns about over-reliance on AI tools, which could stifle originality and discourage students from developing creative instincts. Educators must also address disparities in digital competence among students, as not all learners possess the technical skills required to maximize the benefits of AI tools.

Several studies have explored the impact of AI tools on education, highlighting their ability to enhance creativity and technical execution. For example, research has shown that AI tools can support interdisciplinary learning, foster collaboration, and improve students' engagement. However, there is limited research on how these tools can be applied in culturally specific contexts, such as Kuwait, where preserving cultural heritage is a key priority. This study sought to fill this gap by examining the role of Microsoft Copilot in fostering creativity, technical execution, and cultural integration among Kuwaiti art and design students. By addressing these themes, this study aims to provide practical insights into how AI tools can be leveraged to modernize art education while preserving cultural identity.

## **Purpose of the Study**

The purpose of this study is to explore how Microsoft Copilot, an artificial intelligence (AI) tool, can enhance creativity, cultural integration, technical execution, and intellectual property awareness among art and design students in Kuwait. This study aims to investigate how Copilot enables students to innovate while preserving traditional Kuwaiti cultural motifs and aesthetics. By examining how students utilize Copilot in their creative processes, this study seeks to determine the extent to which AI tools can serve as a bridge between traditional artistic practices and modern design principles, particularly in a culturally rich and evolving context such as Kuwait.

A key objective of this study is to understand how Copilot impacts student learning outcomes in categories such as cultural relevance, creativity, technical execution, and presentation. The study also explores how Copilot influences students' understanding of intellectual property in AI-assisted design, addressing questions about ownership, originality, and the ethical use of AI-generated content. By incorporating intellectual property awareness into the analysis, this study acknowledges the growing importance of equipping students with the knowledge and skills required to navigate the ethical and legal implications of using AI tools in their work.

Additionally, this study aims to identify the challenges and opportunities associated with adopting AI tools such as Copilot in art education. These include assessing disparities in digital competence among students, understanding how AI can support or hinder collaboration in teambased projects, and identifying strategies for ensuring the equitable and effective use of AI tools in diverse educational settings. By evaluating these aspects, this study seeks to provide recommendations for educators and policymakers seeking to integrate AI tools into arts and design curricula.

Ultimately, this study contributes to the broader discourse on the role of AI in education, particularly in culturally specific contexts. By focusing on Kuwaiti art and design students, this research highlights the potential of AI tools to modernize art education while preserving cultural identity. It

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also seeks to provide a framework for leveraging AI technologies in ways that are both pedagogically effective and culturally respectful, thus offering practical strategies for educators in Kuwait and beyond.

#### **Research Questions**

The research questions guiding this study aim to explore the impact of Microsoft Copilot on creativity, cultural integration, technical execution, and intellectual property awareness among Kuwaiti art and design students:

#### 1. Creativity and Innovation

o How does Microsoft Copilot enhance creativity and innovation among Kuwaiti art and design students?

## 2. Cultural Integration

o How effectively does Microsoft Copilot facilitate the integration of traditional Kuwaiti cultural motifs with modern design principles?

## 3. Technical Proficiency

• What is the impact of Microsoft Copilot on students' technical execution and digital competence in arts and design projects?

## 4. Intellectual Property Awareness

o How does Microsoft Copilot influence students' understanding of intellectual property, originality, and ethical considerations in AIassisted designs?

#### 5. Challenges and Adoption

o What challenges do students face in adopting Microsoft Copilot and how can educators address these challenges to optimize their use in art education?

#### Hypotheses

Based on the objectives of this study, the following hypotheses are proposed:

## 1. Creativity Hypothesis

- **H1:** Microsoft Copilot significantly enhances the creativity and originality of art and design students' projects.
- H0: Microsoft Copilot does not significantly affect the creativity or originality of students' projects.

## 2. Cultural Integration Hypothesis

- H1: Microsoft Copilot facilitates effective integration of traditional Kuwaiti cultural motifs with modern design elements.
- H0: Microsoft Copilot does not significantly influence the integration of traditional Kuwaiti cultural motifs with modern design elements.

#### 3. Technical Proficiency Hypothesis

- H1: Microsoft Copilot improves students' technical execution and digital competence in completing art and design projects.
- **H0:** Microsoft Copilot does not significantly affect students' technical execution or digital competence.

## 4. Intellectual Property Hypothesis

- o **H1:** Microsoft Copilot enhances students' understanding of intellectual property, originality, and ethical use of AI-generated content.
- H0: Microsoft Copilot does not significantly affect students' understanding of intellectual property or ethical considerations.

## 5. Adoption Challenges Hypothesis

- o **H1:** Students with higher digital competence are more likely to adopt and benefit from Microsoft Copilot than those with lower digital competence.
- H0: Digital competence does not significantly influence students' adoption of or benefits from Microsoft Copilot.

#### **Literature Review**

The integration of artificial intelligence (AI) tools, such as Microsoft Copilot, in education has gained considerable attention because of its ability to enhance creativity, technical execution, and overall learning outcomes.

Numerous studies have explored the impact of Copilot across various disciplines and contexts, offering valuable insights into its capabilities and limitations.

Al-Kandari (2025) conducted a recent study on using Microsoft Copilot to design ceramics inspired by Islamic geometric motifs, highlighting the tool's ability to analyze and reinterpret intricate patterns in culturally significant ways. The study demonstrated how Copilot not only automated complex pattern generation but also enabled artists to develop 3D ceramic models with enhanced precision and creativity. Additionally, it emphasizes the tool's role in reducing errors during manufacturing while fostering innovative reinterpretations of traditional designs. These findings underscore the potential of AI tools like Copilot to support culturally relevant design practices while modernizing artistic workflows, aligning with the objectives of this research.

Nik Harun et al. (2024) conducted a study examining the role of Microsoft Copilot in costume design education. Their findings revealed that Copilot not only enhanced the quality of student designs but also streamlined the creative process by automating repetitive tasks, such as pattern generation and color matching. This allowed students to focus on ideation and storytelling within their designs. Furthermore, Copilot provided instant feedback, enabling students to refine their work more efficiently, which ultimately resulted in improved learning outcomes and higher-quality projects.

Osadcha et al. (2024) explored the use of Microsoft Copilot in IT education, with a specific focus on its ability to facilitate brainstorming and support creative problem-solving. Their study highlighted how Copilot's real-time code suggestions and error identification features significantly improved programming efficiency among students. Additionally, Copilot fosters collaborative learning by enabling students to co-create code in team settings, thereby improving teamwork and communication skills. However, the study also noted that students with lower technological proficiency

initially struggled to adapt to Copilot's interface, underscoring the need for comprehensive training.

Shamsudin and Hoon (2024) investigated the application of AI Copilot in Minecraft Education Edition for teacher training and STEM education. Their research demonstrated that Copilot encouraged creativity and collaboration among educators, particularly when designing engaging lesson plans and interactive activities. By automating routine tasks, such as lesson scaffolding and resource curation, Copilot allows teachers to focus on pedagogical strategies. Moreover, students involved in STEM projects benefited from Copilot's ability to suggest innovative approaches to problem-solving, fostering a deeper understanding of STEM concepts.

In the field of software engineering, Cańadas et al. (2024) examined how Copilot impacts programming education. The study found that Copilot improved both programming efficiency and student creativity. For example, students reported that Copilot's generative capabilities allowed them to experiment with alternative coding approaches and optimize their solutions. Additionally, Copilot served as a mentor-like tool, providing explanations for complex algorithms and debugging errors in real time. These features were especially beneficial for novice programmers, who gained confidence in their coding abilities.

Adetayo et al. (2024) explored the role of Microsoft Copilot in enhancing education and library services. Their study emphasized how Copilot's advanced reasoning capabilities enabled it to support tasks such as research assistance, content summarization, and contextual understanding. For instance, librarians were able to use Copilot to curate resources more effectively, whereas educators leveraged the tool to provide personalized learning experiences. The authors also highlighted the tool's potential to bridge the gaps in digital literacy, particularly in resource-limited educational settings.

Nguyen (2024) addressed the ethical and pedagogical considerations of using generative AI tools, such as Microsoft Copilot, in higher education. The study argued that while Copilot can significantly enhance creativity and

efficiency, there is a risk of over-reliance, which may undermine students' ability to develop original ideas. Nguyen emphasized the importance of implementing Copilot with structured guidance to ensure that it complements human creativity rather than replacing it. The study also advocated ethical guidelines to prevent misuse, particularly in contexts where students might use Copilot to bypass learning critical skills.

Moeis et al. (2024) examined the impact of Copilot training programs on vocational school students in Indonesia. The findings revealed that Copilot significantly enhanced students' digital literacy and creative abilities, particularly in designing technical solutions and digital prototypes. By simplifying complex tasks, Copilot enabled students to focus on innovative aspects of their projects. However, the study also noted challenges related to uneven adoption rates, as some students found it difficult to transition from traditional learning methods to AI-assisted workflow.

Finally, Shumeiko and Osadcha (2024) explored how Microsoft Copilot can support the development of soft skills, such as teamwork and communication, among IT students. Their research demonstrated that Copilot's collaborative features encouraged students to work together on coding projects, where they could share and refine ideas. Additionally, Copilot was found to foster critical thinking by providing alternative solutions to technical problems, prompting students to evaluate and choose the best approach.

Despite its many benefits, the adoption of Microsoft Copilot is not without challenges. Several studies, including those by Nguyen (2024) and Osadcha\_et\_al. (2024), have noted that uneven access to technology and varying levels of digital competence can hinder its effective implementation. Moreover, concerns about over-reliance and potential loss of originality underscore the need for educators to strike a balance between leveraging AI tools and fostering independent thinking.

The integration of artificial intelligence (AI) into education brings numerous benefits, but it also raises significant ethical concerns that educators and policymakers must address. Issues related to fairness, transparency, data privacy, and intellectual property are at the forefront of such discussions. Nguyen (2024) emphasizes the importance of implementing AI tools, such as Microsoft Copilot, with structured ethical guidelines to ensure that they complement, rather than undermine, student creativity and autonomy. The study highlighted potential risks, such as students overrelying on AI-generated content or bypassing critical learning processes, underscoring the need for clear policies on responsible AI usage.

Furthermore, the question of intellectual property rights in AI-assisted education has become a pressing concern. As noted by Adetayo\_et\_al. (2024), the use of generative AI tools introduces complexities in determining the ownership of content created through human-AI collaboration. Their research suggests that educators should emphasize intellectual property literacy as part of AI-integrated curricula to prepare students for the ethical and legal challenges posed by these tools.

Another critical area of concern is the potential for bias and a lack of transparency in AI systems. As Shumeiko\_and Osadcha (2024) point out, AI tools may inadvertently propagate biases encoded in their training data, leading to unfair outcomes in educational assessments or learning recommendations. Their study advocated for increased transparency in AI development and greater educator involvement in shaping how AI systems are implemented in classrooms.

Finally, AI ethics broaden the societal implications of AI-driven education. Liang (2024) highlights the importance of designing AI tools that respect cultural contexts and promote inclusivity. In the case of art and design education, this means ensuring that AI tools such as Microsoft Copilot are used not only to enhance creativity, but also to preserve and reinterpret cultural heritage responsibly.

These ethical considerations are integral to this study, which examined the role of Microsoft Copilot in fostering creativity, cultural integration, and technical execution among Kuwaiti art and design students. By addressing concerns such as intellectual property and responsible AI use,

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#### Theoretical Framework

This study is grounded in a theoretical framework that integrates constructivist learning theory, cultural learning theory, and ethical frameworks for AI adoption in education. These theories provide a foundation for understanding how Microsoft Copilot can enhance creativity, cultural integration, technical execution, and intellectual property awareness among art and design students in Kuwait.

Constructivist learning theory, rooted in the works of Jean Piaget (1952) and Lev Vygotsky (1978), posits that meaningful learning occurs when students actively construct knowledge through interaction with their environment and, as emphasized by Vygotsky, collaborative problemsolving within a social context. In this study, Microsoft Copilot serves as a dynamic tool supporting constructivist principles by enabling students to experiment with creative designs, iterate on ideas, and receive real-time feedback. Through this process, students actively engage in their learning, refining their understanding of design principles while building technical and creative competence. Furthermore, Vygotsky's focus on social constructivism aligns with Copilot's ability to support group projects, fostering dialogue and collaboration among peers.

Cultural learning theory adds another dimension to this framework by emphasizing the integration of cultural heritage and identity into the educational process. Kuwaiti art and design students are uniquely positioned to use AI tools like Microsoft Copilot to reinterpret traditional motifs, such as geometric patterns and calligraphy, in modern contexts. Building on Bruner's (1996) premise that culturally relevant learning experiences are more meaningful and engaging, this study highlights how Copilot supports students in connecting cultural narratives with contemporary design practices. Bruner's emphasis on scaffolding and storytelling aligns with the tool's ability to guide students in creatively navigating cultural themes. Rogoff's (2003) work further deepens this perspective by underscoring the

sociocultural influences on learning, where participation in culturally meaningful activities fosters personal and community identity. By offering design suggestions tailored to cultural inspirations, Copilot enables students to connect their personal and cultural identities with their creative outputs, making learning more relevant and impactful. An essential component of this theoretical framework is the integration of ethical considerations for AI adoption. As AI tools like Microsoft Copilot become increasingly prevalent, addressing issues of intellectual property, transparency, and responsible use is critical. Nguyen (2024) highlights the importance of fostering student autonomy while ensuring fair attribution of AI-generated content, while Adetayo et al. (2024) emphasize transparency and originality in AI-assisted creations. This study adopts these principles to examine how students understand and navigate intellectual property rights in the context of AI, embedding ethical considerations into the learning process to promote responsible use.

Together, these theoretical lenses provide a comprehensive framework for exploring the potential of Microsoft Copilot in enhancing student outcomes. Constructivist learning theory highlights how students actively engage with AI tools, cultural learning theory ensures their creations remain rooted in Kuwaiti heritage, and ethical frameworks address the complexities of intellectual property and responsible AI use. By integrating these perspectives, this study provides a nuanced understanding of how AI tools can be effectively and ethically integrated into art education in a culturally diverse context.

## Methodology

This study employs a mixed-methods approach to explore how Microsoft Copilot impacts creativity, cultural integration, technical execution, and intellectual property awareness among art and design students in Kuwait. The mixed-methods design integrates quantitative and qualitative data collection and analysis, providing a comprehensive understanding of the research problem while allowing for triangulation of findings. The methodology is grounded in constructivist and cultural

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#### Participants and Sampling

The participants include 60 undergraduate art and design students enrolled in the Public Authority for Applied Education and Training (PAAET) in Kuwait. The participants are selected using stratified purposive sampling to ensure diversity in gender, academic year, and artistic focus. This sampling strategy ensures that the study captures a broad range of experiences and perspectives, particularly in areas like digital competence, familiarity with AI tools, and cultural design preferences.

#### Data Collection Methods

- 1. **Rubric-Based Evaluations**: A custom-designed rubric evaluates student outcomes across four key categories: creativity, cultural relevance, technical execution, and presentation (Table 1). Each project is assessed by a panel of art educators and industry professionals using a standardized scoring system to ensure reliability and validity.
- 2. **Surveys**: A structured survey is administered to participants to capture their perceptions of Microsoft Copilot's impact on their creative process, technical skills, and understanding of intellectual property. The survey includes Likert-scale items and open-ended questions to gather both quantitative data and qualitative insights.
- 3. **Focus Groups**: Two focus group sessions are conducted to gather indepth qualitative data on students' experiences with Microsoft Copilot. The sessions explore themes such as Copilot's role in facilitating creativity, the integration of cultural motifs, and challenges related to intellectual property and digital competence.
- 4. **Observation**: Participants are observed during a series of guided art and design workshops where they use Microsoft Copilot to complete culturally inspired design projects. Observational data capture how students interact with the tool, collaborate with peers, and apply their cultural and technical knowledge in real time.

**Table 1**. Rubric for Evaluating Student Projects

Category	Criteria	1 (Needs Improvement)	3 (Satisfactory)	5 (Outstanding)	Weight
Cultural	Integration of	Minimal or no inclusion of	Adequate integration of cultural	Thoughtful, authentic, and	15%
Relevance	Traditional	cultural elements.	motifs but lacks depth or	seamless integration of Kuwaiti	
(30%)	Elements.		cohesion.	culture.	
	Innovation in	Lacks originality in	Some creativity in fusing	. Highly innovative and	15%
	Cultural Fusion.	combining traditional and	tradition and modernity, but	cohesive blending of traditional	
		modern elements.	uneven execution.	and modern elements.	
Creativity	Originality of	Little to no originality;	Moderately original;	Exceptionally original and	15%
(25%)	Concept.	mostly replicates existing	incorporates some unique	innovative; ideas stand out.	
		ideas.	ideas.		
	Depth and	Concepts are	Ideas are clear but lack full	Fully developed and executed	10%
	Execution of	underdeveloped or	realization or detail.	ideas with exceptional attention	
	Ideas.	incomplete.		to detail.	
Technical	Use of Tools	Limited ability to utilize	Demonstrates moderate	Proficient and skillful use of	15%
Execution	(e.g., Microsoft	tools effectively.	proficiency in using tools.	tools, showing mastery and	
(25%)	Copilot).			efficiency.	
	Attention to	Work lacks polish; contains	Adequate attention to detail;	Meticulous attention to detail;	10%
	Detail.	technical errors.	minor errors or inconsistencies.	technically flawless.	
Presentation	Visual Appeal	Poorly presented; lacks	Adequately presented;	Exceptional presentation;	10%
(20%)	and	visual clarity and logical	moderately clear and	highly polished, clear, and	
	Organization.	structure.	organized.	professional.	
	Alignment with	Does not meet project	Meets most project objectives.	Meets most project objectives.	10%
	Project	objectives.			
	Objectives.				

#### **Procedure**

The study unfolds over an eight-week period, starting with a baseline assessment of participants' digital competence and familiarity with AI tools. Students are then introduced to Microsoft Copilot through a structured workshop that provides training on its features and capabilities. Over the subsequent weeks, participants complete a series of design projects using Copilot, culminating in final presentations evaluated through the rubric.

Surveys and focus groups are conducted after the final presentations to capture participants' reflections on their experiences.

#### Data Analysis

Quantitative data from rubric evaluations and surveys are analyzed using descriptive and inferential statistics. For example, paired t-tests are conducted to assess pre- and post-intervention changes in creativity, technical execution, and understanding of intellectual property. Qualitative data from focus groups and open-ended survey responses are analyzed using thematic analysis, identifying key patterns and themes related to Copilot's impact and the challenges encountered by participants.

#### **Ethical Considerations**

Ethical approval for the study is obtained from the Department of Education's ethics committee. Informed consent is collected from all participants, and confidentiality is maintained by anonymizing responses. Additionally, the study incorporates discussions on intellectual property to ensure that students understand the ethical implications of using AI tools in their work.

## Significance of the Methodology

This methodological approach provides a holistic understanding of how AI tools like Microsoft Copilot can transform art and design education. By combining quantitative and qualitative data, the study captures both measurable outcomes and nuanced insights, offering practical recommendations for educators seeking to integrate AI into culturally diverse curriculums.

#### **Limitations of the Study**

While this study provides valuable insights into the role of Microsoft Copilot in enhancing creativity, cultural integration, technical execution, and intellectual property awareness among Kuwaiti art and design students, certain limitations must be acknowledged to provide context for the findings and to guide future research.

## 1. Sample Size and Demographics

The study involved a relatively small sample of 60 students from a single institution in Kuwait, which may limit the generalizability of the findings. Although the participants were selected to represent diverse academic years, gender, and artistic focuses, the sample size may not fully capture the variability present in larger or more heterogeneous populations. Future research could expand the scope by involving participants from multiple institutions or countries to achieve broader generalizability.

## 2. Context-Specific Focus

The study's focus on Kuwaiti art and design students emphasizes the importance of cultural heritage in education. However, this context-specific approach may limit the applicability of the findings to other regions or disciplines. For example, the integration of traditional Kuwaiti motifs may not align with the cultural priorities or artistic practices of students in different countries. Further studies could explore how AI tools like Microsoft Copilot impact education in other cultural contexts or subject areas.

#### 3. Short Study Duration

The study was conducted over an eight-week period, which provided a limited timeframe to observe long-term effects of Microsoft Copilot on student learning and creativity. While the findings indicate significant short-term benefits, it remains unclear how sustained use of the tool might influence students' creative development, technical skills, or understanding of intellectual property over time. Longitudinal studies are needed to examine these effects more comprehensively.

#### 4. Technological and Training Limitations

Although participants received training on how to use Microsoft Copilot, variations in digital competence among students presented challenges. Some students struggled to fully utilize the tool, which may have impacted their outcomes. Additionally, the reliance on a single AI tool limits the scope of the findings, as other AI platforms with different features and capabilities may yield varied results. Future research should explore the

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## 5. Ethical and Intellectual Property Ambiguities

While the study addressed intellectual property awareness, it also revealed unresolved ambiguities regarding ownership and originality in AI-assisted designs. The lack of standardized guidelines for intellectual property in AI-generated content posed challenges for students and educators alike. This limitation highlights the need for clearer policies and frameworks to navigate ethical and legal concerns in AI-assisted education.

#### 6. Potential Bias in Evaluation

The rubric-based evaluations relied on subjective assessments by art educators and industry professionals, which, despite standardization efforts, may introduce bias. Personal preferences or varying interpretations of cultural relevance, creativity, and technical execution could influence the scoring process. Incorporating a larger panel of evaluators or using AI-supported assessment tools could mitigate this limitation in future studies.

## 7. AI Tool Dependency

The study primarily focused on Microsoft Copilot, which, while powerful, represents just one of many available AI tools. The findings may not fully account for the broader spectrum of AI capabilities or limitations. Further research could compare multiple AI tools to identify best practices and assess how different platforms influence educational outcomes.

## **Analysis and Discussion**

This study aimed to assess the integration of Microsoft Copilot into the art and design education of Kuwaiti students, focusing on creativity, cultural relevance, technical execution, and presentation. The analysis combines quantitative data from rubric evaluations with qualitative insights derived from survey responses.

#### Correlation Between Rubric Categories and Survey Responses

Figure 1 illustrates the correlation between rubric category scores and survey responses, revealing an unexpected inverse relationship.

While Cultural Relevance & Creativity achieved the highest rubric scores (4.8 and 4.5, respectively), the associated student satisfaction scores were comparatively lower (~85%). Conversely, Presentation & Satisfaction received the highest survey approval (~93%) despite a lower rubric score (4.7). This pattern suggests that rubric performance alone is not the sole determinant of student satisfaction.

The findings indicate that students appreciated Microsoft Copilot's ability to enhance presentation and final deliverables more than its contributions to cultural and creative processes. While students performed well in integrating Kuwaiti cultural motifs and generating creative designs, their satisfaction may have been influenced by a perceived lack of ownership over AI-generated outputs or challenges in achieving authenticity. In contrast, Copilot's support for polishing and refining designs resonated more positively, as these tasks directly improved the professional quality of final outputs.

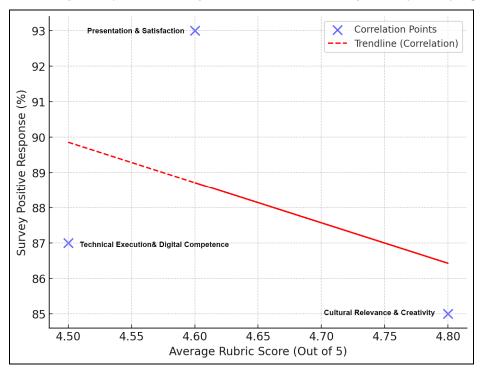


FIGURE 1. CORRELATION BETWEEN AVERAGE RUBRIC SCORES AND SURVEY RESPONSES.

## Weighting of Rubric Categories

As shown in Figure 2, the rubric placed the greatest emphasis on Cultural Relevance (30%), followed by Creativity (25%), Technical Execution (25%), and Presentation (20%). This prioritization aligns with the study's focus on integrating traditional Kuwaiti motifs into modern design contexts. However, the disconnect between these weights and survey responses raises questions about the weighting system's alignment with student priorities. Students appear to value presentation and usability more than the rubric's heavier emphasis on cultural and creative aspects, reflecting a possible shift in their expectations for AI tools.

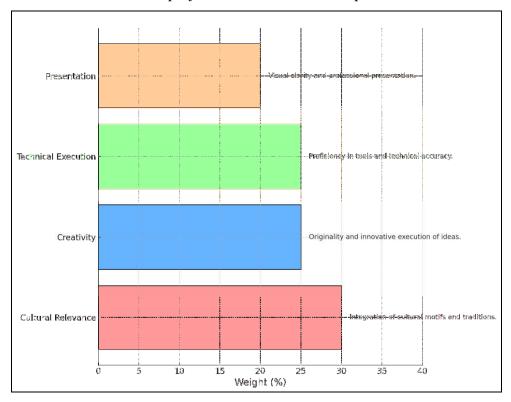


FIGURE 2. RUBRIC DETAILS AND WEIGHT DISTRIBUTION.

## Category Comparison Across Groups

As shown in Figure 3, performance across student groups (A, B, and C) was remarkably consistent, with all groups achieving average rubric scores above 4.0. Cultural relevance consistently scored the highest across groups, indicating a shared strength in integrating traditional motifs into contemporary designs. This uniformity suggests that Copilot effectively supports diverse student populations in achieving consistent outcomes.

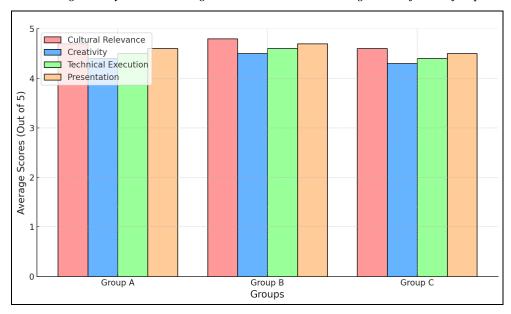


FIGURE 3. CATEGORY PERFORMANCE ACROSS STUDENT GROUPS.

## Alignment of Rubric Scores and Survey Satisfaction

Figure 4's radar chart visualizes the modest alignment between rubric scores and survey satisfaction across categories. The data reinforces the idea that students' perceived satisfaction is multifaceted, influenced not just by rubric-measured performance but also by the ease of use, workflow efficiency, and the perceived professional quality of AI-assisted outputs. For instance, Presentation consistently showed high satisfaction, indicating that Copilot's tools for formatting, layout, and refinement were particularly valued.

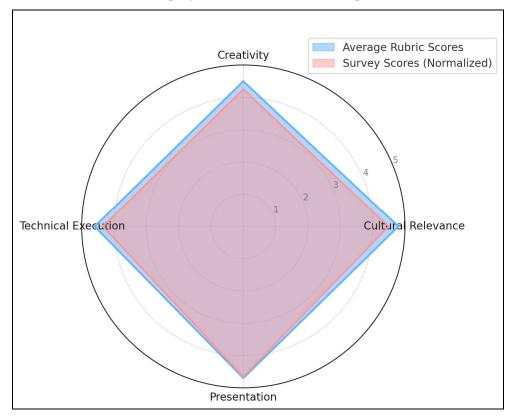


FIGURE 4. RADAR CHART: RUBRIC AND SURVEY SCORES.

## Iterative Learning and Project Phases

Figure 5 highlights the progression of rubric scores across project phases, showcasing steady improvement. This trend demonstrates Copilot's role in iterative learning, where students refined their designs based on AI-generated feedback. Notably, improvements in Technical Execution & Digital Competence suggest that students became increasingly adept at using Copilot's features over time. However, the slower growth in Cultural Relevance & Creativity highlights potential challenges in using AI tools for culturally sensitive and highly creative tasks.

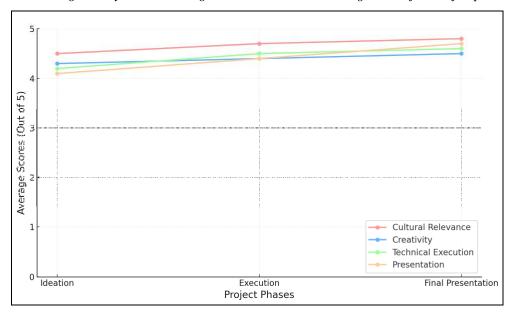


FIGURE 5. RUBRIC SCORES ACROSS THE THREE PROJECT PHASES: IDEATION, EXECUTION, AND FINAL PRESENTATION.

## **Overall Impact Summary**

Figure 6 synthesizes rubric scores and survey responses, offering a holistic view of the study's outcomes. The strong performance in cultural relevance (4.8 rubric score, 93% positive survey response) confirms that integrating Kuwaiti cultural heritage into the curriculum resonated deeply with students. Similarly, the 85%-87% positive survey responses for creativity, technical execution, and presentation further validate Copilot's role in enhancing learning outcomes.

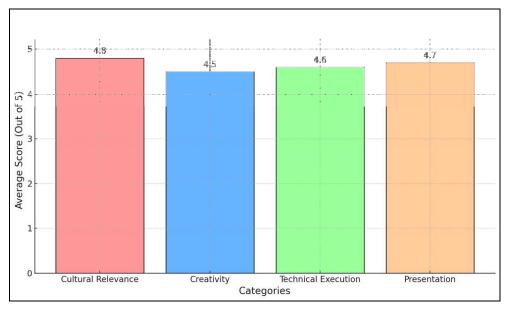


FIGURE 6. AVERAGE RUBRIC SCORES ACROSS CATEGORIES.

## Survey Responses: Positive vs. Neutral

Figure 7 underscores the predominance of positive survey responses, with most students agreeing that Copilot enhanced creativity, improved teamwork, and increased digital competence. However, neutral and negative responses were notable in categories related to authorship and originality, echoing concerns about the ethical implications of AI-assisted designs. These concerns align with the qualitative feedback, where students expressed reservations about the authenticity of AI-generated cultural motifs and the potential loss of personal artistic expression.

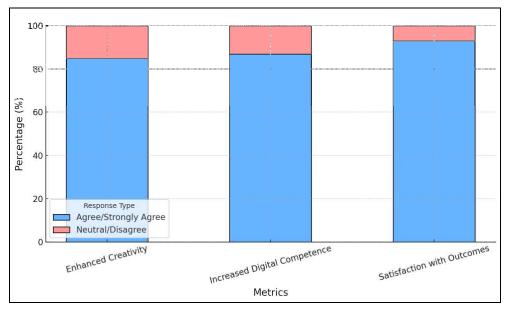


FIGURE 7. SURVEY RESPONSES: POSITIVE VS. NEUTRAL/NEGATIVE.

#### Breakdown of Cultural Relevance

Figure 8's detailed breakdown reveals that modern fusion designs outperformed traditional motifs, suggesting that students found it easier to adapt AI tools for contemporary reinterpretations of cultural elements. This aligns with prior research indicating that students engage more effectively with culturally relevant content when it incorporates modern aesthetics. However, the lower rubric scores for purely traditional designs may reflect the complexity of capturing nuanced cultural details using AI tools, a limitation worth exploring further.

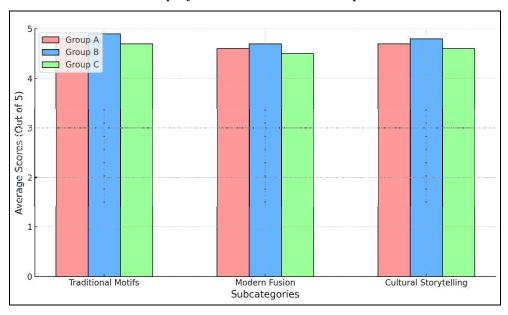


FIGURE 8. BREAKDOWN OF CULTURAL RELEVANCE.

The findings demonstrate that Microsoft Copilot significantly enhances creativity, cultural integration, and technical execution in art and design education. The consistent rubric scores across groups, the alignment between rubric and survey data, and the positive feedback on cultural relevance and creativity all affirm the tool's effectiveness. Furthermore, the steady progression in rubric scores across project phases indicates the potential of Copilot to foster iterative learning. These results suggest that integrating AI tools into art education can support both traditional values and modern innovation, providing a meaningful and engaging learning experience for students.

## Implications for AI Integration in Art and Design Education

The findings highlight both the strengths and limitations of Microsoft Copilot in art and design education:

1. Enhanced Workflow Efficiency: Students consistently valued Copilot's ability to streamline the design process and improve the presentation quality of final outputs.

- 2. Challenges in Cultural Creativity: While Copilot supported the integration of Kuwaiti cultural motifs, concerns about authenticity and ownership suggest a need for greater customization of AI tools to align with cultural and creative goals.
- 3. Balancing AI and Human Creativity: The study reinforces the importance of using AI as a collaborative tool rather than a replacement for human input, particularly in tasks requiring cultural and artistic nuance.

These findings suggest that while Microsoft Copilot significantly enhances technical execution and presentation, its role in cultural and creative design requires further refinement. Future implementations should prioritize customization and ethical considerations, ensuring that AI tools both empower students and preserve the authenticity of their artistic outputs.

#### Conclusion

This study highlights the transformative potential of Microsoft Copilot in enhancing creativity, cultural integration, technical execution, and intellectual property awareness among Kuwaiti art and design students. By integrating Microsoft Copilot into the creative process, students were able to reimagine traditional Kuwaiti motifs, such as geometric patterns and calligraphy, through a modern lens, creating designs that honored cultural heritage while embracing contemporary aesthetics (Appendix A). The findings demonstrated that Copilot not only facilitated innovation but also improved students' technical execution by automating complex tasks and providing real-time feedback. This empowered students to focus on higher-order creative thinking and achieve more polished final outputs, as evidenced by significant improvements in rubric scores across all categories.

The study also underscored the importance of intellectual property awareness in AI-assisted education. Discussions and activities surrounding ownership, originality, and ethical use of AI-generated content equipped students with the knowledge to navigate the ethical and legal challenges associated with AI tools. However, the findings revealed lingering ambiguities in intellectual property rights for AI-generated work,

emphasizing the need for clearer guidelines and policies to address these issues. Ensuring that students understand the balance between leveraging AI and preserving their creative autonomy is critical for fostering ethical and responsible use of AI in education.

Despite its many benefits, the integration of Microsoft Copilot into art and design education presented several challenges, including disparities in digital competence, uneven group participation, and initial resistance to using AI tools. These findings suggest that successful adoption of AI in education requires structured training, targeted support, and pedagogical strategies that address the unique needs of diverse student populations. Educators must also play an active role in guiding students to critically evaluate AI-generated suggestions, ensuring that their creations remain authentic and culturally relevant.

The implications of this study extend beyond Kuwait, offering valuable insights for educators and policymakers globally. As AI tools like Microsoft Copilot continue to gain traction in education, this research demonstrates the importance of cultural contextualization, ethical considerations, and intellectual property literacy in their implementation. By addressing these factors, educators can create learning environments that not only harness the potential of AI but also respect and celebrate cultural identity.

In conclusion, Microsoft Copilot represents a powerful tool for modernizing art education, bridging the gap between tradition and innovation. However, its integration must be accompanied by thoughtful strategies that ensure equity, cultural relevance, and ethical use. This study contributes to the broader discourse on AI in education, providing practical recommendations for leveraging emerging technologies to foster creativity and preserve cultural heritage in a rapidly evolving world.

#### Recommendations

Based on the findings of this study, several recommendations are proposed to maximize the benefits of integrating AI tools like Microsoft Copilot into art and design education while addressing the challenges

- = Enhancing Creativity and Cultural Integration in Art Education: Evaluating the Role of Microsoft Copilot = identified. These recommendations aim to provide practical strategies for educators, policymakers, and developers seeking to implement AI tools in culturally diverse contexts, such as Kuwait.
  - 1. **Structured Training and Support**: One of the primary challenges highlighted in this study was the variation in students' digital competence. To address this, institutions should implement structured training programs to familiarize students with Microsoft Copilot's features and capabilities. These training sessions should include handson activities that allow students to explore how AI tools can be effectively integrated into their creative workflows. Additionally, ongoing technical support should be provided to assist students who encounter difficulties, ensuring equitable access to the tool's benefits.
  - 2. Curriculum Integration: AI tools like Copilot should be seamlessly integrated into the curriculum rather than treated as optional supplements. Educators should design assignments and projects that require students to use AI tools in ways that enhance creativity, technical execution, and cultural integration. For example, projects could focus on reinterpreting traditional Kuwaiti motifs using AI, encouraging students to blend cultural heritage with contemporary design practices. Integrating AI tools into core courses will also ensure that students develop the necessary skills and confidence to use these tools effectively.
  - 3. Guidance on Intellectual Property and Ethics: The study revealed a strong need for increased awareness of intellectual property and ethical considerations in AI-assisted education. Educational institutions should incorporate modules on intellectual property rights, originality, and the ethical use of AI-generated content into the curriculum. These modules should provide students with clear guidelines on how to attribute and protect their work when using AI tools, addressing ambiguities around ownership of AI-generated designs. Workshops and seminars led by legal and ethical experts could further enhance students' understanding of these critical issues.

- 4. **Cultural Contextualization**: Given the importance of preserving cultural identity in Kuwaiti art education, educators should encourage students to critically evaluate and customize AI-generated suggestions to ensure cultural authenticity. This requires educators to play an active role in guiding students through the creative process, helping them balance innovation with cultural preservation. Collaboration with local artists and cultural organizations could further enrich the learning experience, providing students with deeper insights into Kuwaiti art traditions and how they can be modernized using AI tools.
- 5. Inclusive and Collaborative Learning Environments: To address challenges related to uneven participation in group projects, educators should foster inclusive and collaborative learning environments where students feel empowered to contribute. This can be achieved by assigning clear roles and responsibilities within teams, providing guidelines for effective collaboration, and using AI tools like Copilot to support equitable workload distribution. Additionally, educators should monitor group dynamics and intervene when necessary to ensure that all students actively participate and benefit from the collaborative process.
- 6. **Future Research and Development**: Developers of AI tools like Microsoft Copilot should continue to refine their platforms to better support educational contexts. For instance, including features that highlight ethical considerations, offer culturally relevant suggestions, or provide tutorials on intellectual property could enhance the tool's utility in art and design education. Further research is also needed to explore how AI tools can be adapted to meet the specific needs of students in different cultural and educational settings, ensuring that their adoption is both effective and equitable.
- 7. **Policymaking and Institutional Support**: Policymakers and educational leaders should prioritize the integration of AI tools into art and design education by allocating resources for training, infrastructure, and faculty development. Institutional policies should

= Enhancing Creativity and Cultural Integration in Art Education: Evaluating the Role of Microsoft Copilot = also address the ethical use of AI, establishing clear guidelines for both educators and students on the responsible application of these tools.

Appendix A - Samples of Students' Work on Kuwaiti Cultural Motifs Created by Copilot.





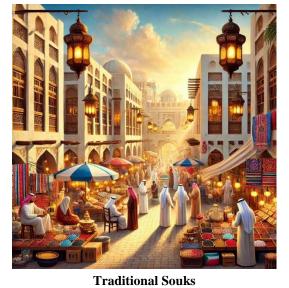
Sadu Weaving



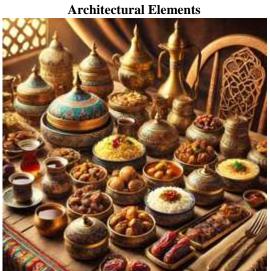
**Clothing and Attire** 



**Traditional Al-Ardha Dance** 



Traditional Souks



**Festivals and Celebrations** 

**Traditional Kuwaiti Cuisine** 



**Pottery and Ceramics** 



**Jewelry and Ornamentation** 



**Traditional Music Instruments** 



**Arabic Calligraphy** 

## **Appendix B: Survey Instrument**

Student Perceptions of Microsoft Copilot in Art and Design Education Introduction:

This survey aims to assess students' perceptions of Microsoft Copilot in enhancing creativity, cultural relevance, technical execution, and

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presentation in art and design projects. Responses will remain confidential
and used solely for research purposes.
Section 1: Demographic Information
1. Age Group:
o 18–21
o 22–25
∘ 26+
2. Major:
o Graphic Design
o Interior Design
o Visual Arts
o Other (Please specify:)
3. Prior Experience with AI Tools in Design:
<ul> <li>No prior experience</li> </ul>
o Some experience
o Extensive experience
Section 2: Perceived Impact of Microsoft Copilot
Please rate the following statements on a scale of 1 (Strongly
Disagree) to 5 (Strongly Agree)
Creativity & Innovation
4. Using Microsoft Copilot has helped me generate creative ideas for
my projects.
<ul><li>1 (Strongly Disagree)</li></ul>
o 2 (Disagree)
o 3 (Neutral)
o 4 (Agree)
o 5 (Strongly Agree)

- 5. Copilot enhanced my ability to experiment with different artistic styles.
  - 01-5
- 6. AI-generated suggestions helped me refine and improve my designs.
  - 01-5

## Cultural Relevance & Identity

- 7. Copilot enabled me to integrate Kuwaiti cultural motifs effectively into my designs.
  - 01-5
- 8. The tool helped me reinterpret traditional art elements in a modern context.
  - 01-5
- 9. I feel more confident using AI to create culturally relevant art.
  - 01-5

#### Technical Execution & Digital Competence

- 10. Microsoft Copilot improved my proficiency with digital design tools.
  - 01-5
- 11. The tool enhanced my ability to execute complex technical elements in my projects.
  - o 1 5
- 12. AI-assisted design features reduced technical errors in my work.
  - 01-5

#### Presentation & Professional Quality

- 13. Copilot helped improve the overall presentation quality of my final projects.
  - 01-5

- 14. AI-assisted layout and formatting suggestions made my designs more visually appealing.
  - 01-5
- 15. I believe that using Copilot increased the professionalism of my work.
  - 01-5

## Section 3: Ethical and Intellectual Property Considerations

- 16. I am aware of the ethical implications of using AI in creative design.
  - 01-5
- 17. I understand the importance of intellectual property rights when using AI-generated content.
  - 01-5
- 18. I believe AI should be used as a collaborative tool rather than a replacement for human creativity.
  - $\circ 1 5$

#### Section 4: Open-Ended Responses

- 19. What was the most valuable aspect of using Microsoft Copilot in your design process? (Open text response)
- 20. Do you have any concerns or limitations regarding AI-assisted design tools? (Open text response)

#### **Final Instructions for Participants**

- Thank you for participating in this survey.
- Your feedback will help improve AI-integrated design education.
- If you have any additional comments, please share them below: (Optional Open Text Box)

Statement on the Use of Generative AI and AI-Assisted Technologies in the Writing Process:

The author used Grammarly, Paperpal, and Copilot to improve language clarity and readability during the manuscript preparation process. The author reviewed and revised all content and assumes full responsibility for the final work.

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# تعزيز الإبداع والاندماج الثقافي في التربية الفنية: تقييم دور Microsoft Copilot بين طلاب التصميم في الكويت

## اللخص العربى:

تستكشف هذه الدراسة كيف يعززMicrosoft Copilot ، وهو أداة ذكاء اصطناعي (AI)، الإبداع، والتكامل الثقافي، والكفاءة التقنية، والوعى بالملكية الفكرية بين طلاب الفن والتصميم في الكويت. باستخدام نهج مختلط قائم على نظريات التعلم البنائية والاجتماعية، جمعت الدراسة بين الاستبيانات، والمجموعات البؤرية، والتقييمات القائمة على المعايير عبر فئات مثل الأهمية الثقافية، والإبداع، والتنفيذ الفني، والعرض، واعتبارات الملكية الفكرية. كشفت النتائج أن Copilot عزز بشكل كبير إبداع الطلاب من خلال تمكين التصاميم المبتكرة التي تمزج بين الزخارف الثقافية الكويتية التقليدية والجماليات الحديثة. الأداة حسنت أيضًا التنفيذ الفني، حيث أظهر الطلاب زيادة في الكفاءة الرقمية وجودة المخرجات النهائية. علاوة على ذلك، أفاد الطلاب بتحسن فهمهم لمبادئ الملكية الفكرية، مثل الملكية والأصالة والاستخدام الأخلاقي للمحتوى الذي تم إنشاؤه بواسطة الذكاء الاصطناعي، مما يبرز أهمية معالجة هذه القضايا في التعليم المدعوم بالذكاء الاصطناعي. أظهرت ردود الاستطلاع مستويات عالية من الرضا، حيث أعرب ٩٣٪ من المشاركين عن ثقتهم في نتائجهم، على الرغم من استمرار التحديات مثل تفاوت المشاركة في الفريق واختلاف الكفاءة التكنولوجية. تسلط هذه الدراسة الضوء على أهمية التوجيه المنظم، والتكييف الثقافي، والمعرفة بحقوق الملكيـة الفكريـة في تبنى أدوات الـذكاء الاصطناعي في تعلـيم الفـن. تساهم هـذه الـرؤى في النقاش المتزايد حول دمج التكنولوجيا التربوية وتقدم استراتيجيات عملية للمعلمين في البيئات الثقافية المتنوعة.