

Exploring Generative Ai Use in Creative Assignments among Art and Design Education Students at the Universiti Teknologi MARA

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ABSTRACT

Generative Artificial Intelligence (GenAI) has rapidly emerged as an influential technology in higher education, creating new possibilities for creative exploration, visual communication and digital production. Its growing use in art and design education, however, also raises questions concerning students' technological readiness ethical awareness. This study examines the use of GenAI in creative assignments among students enrolled in the Art and Design Education Programme at the Faculty of Education, Universiti Teknologi MARA (UiTM). A quantitative survey research design was employed to investigate Art and Design Education (ADE) students' readiness and experiences in using GenAI tools including Midjourney, DALL-E, Adobe Firefly and ChatGPT during creative assignments. Data were collected from 158 undergraduate students from semester 2 to 8 of the Art and Design Education Programme. The questionnaire consisted of 15 items adapted from established technological readiness and technology acceptance perspectives involving the Technology Readiness Index (TRI 2.0) the Unified Theory of Acceptance and Use of Technology (UTAUT). The instrument examined four areas involving optimism towards GenAI, visual ideation efficiency, pedagogical self-efficacy and ethical awareness. Descriptive analysis indicated a high overall level of readiness and perceived adoption of GenAI with a mean score of 4.29 (SD = 0.58). The findings suggest that ADE students generally perceive GenAI as a useful creative partner that supports conceptual brainstorming, visual experimentation, idea development and aspects of the digital production process. At the same time, the findings highlight the importance of developing ADE students' awareness of authorship and ethical considerations when incorporating AI-generated content into their creative assignments. The study recommends that GenAI literacy, ethical AI practices and structured prompt development strategies be incorporated into art and design education curricula to support responsible and meaningful use of emerging technologies in creative learning.

Keywords: Generative AI, Art and Design Education, Student Readiness, Creative Assignment.

INTRODUCTION

The rapid advancement of Generative Artificial Intelligence (GenAI) systems spanning from text to image synthesis models such as Midjourney, Stable Diffusion and DALL-E has catalyzed a profound shift across creative industries and academic institutions (Elgammal, 2020; Anantrasirichai & Bull, 2022). In art and design education, these tools are transforming established creative workflows by accelerating ideation, enabling rapid prototyping and expanding the possibilities for visual experimentation (Cetinic & She, 2022).

For students at higher learning institutions such as Universiti Teknologi MARA (UiTM), understanding and adapting to GenAI has a dual importance. As future visual art teachers, they use these technologies to support complex studio assignments and they will also need the pedagogical competence to guide school students through an increasingly AI-mediated visual landscape (Chiu et al., 2023).

While early discussions around GenAI in visual arts often focused on concerns about artistic replacement and academic dishonesty, emerging scholarship has highlighted its potential as a cognitive co-creator and creative scaffold (Resnick, 2021; Ng et al., 2023). Successful pedagogical integration, however, depends significantly on student readiness involving a multidimensional construct involving technical confidence, openness to experimentation, perceived usefulness and awareness of ethical creative practice (Parasuraman & Colby, 2015; Venkatesh et al., 2012).

This paper evaluates how 158 ADE students at Faculty of Education, (UiTM) utilize GenAI tools in their creative assignments. The study seeks to the study objectives as listed below.

1. To measure the level of technical and cognitive readiness among ADE students across different academic semesters (Semesters 2 to 8).
2. To identify the specific creative stages where GenAI provides the highest perceived value during artwork completion.
3. To formulate recommendations for embedding GenAI literacy into art education degree programs.

LITERATURE REVIEW

Previous studies on technology adoption have highlighted the roles of users' perceptions, confidence and acceptance in shaping their use of new technologies. In this study, the literature is reviewed in relation to the use of GenAI in education, its application in art and design education learning, ADE students' technological readiness and the ethical considerations associated with AI-supported creative assignments.

Generative AI in Art and Design Education

Generative AI algorithms synthesize patterns learned from large datasets to produce visual outputs in response to textual or multimodal prompts. Unlike traditional computer assisted design software, which generally requires direct manual execution of geometry and rendering, many GenAI systems operate through iterative semantic interaction. This shifts part of the ADE students role toward conceptual direction and prompt development. Within art and design education studio courses, GenAI enables ADE students to explore multiple visual directions, colour palettes and stylistic variations during early ideation, effectively eliminating creative blocks (Cetinic & She, 2022).

Theoretical Framework

This study grounds its evaluation in Parasuraman and Colby's (2015) Technology Readiness Index (TRI 2.0), combined with elements of the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2012; Chai et al., 2023). Technology readiness in an artistic learning context is considered through four construct pillars involving the items listed below:

TRI 2.0	UTAUT / contextual elements	GenAI use in creative assignments
Optimism Positive belief in usefulness and creative value	Performance / perceived usefulness	Creative brainstorming Visual ideation Idea development
Innovativeness Willingness to experiment with new tools	Effort / ease of use	Exploration of platforms Visual experimentation

Prompt efficacy Confidence in crafting and refining prompts	Technology acceptance and use	Prompt development Iterative refinement Production support
Pedagogical & ethical awareness Responsible use, originality, IP and authorship	Context of future teaching	Critical evaluation Artistic identity Responsible integration

Figure 1: Adapted theoretical framework linking TRI 2.0 and UTAUT to GenAI use in creative assignments

TRI 2.0 provides a basis for understanding users' positive orientations towards emerging technologies, particularly optimism and innovativeness while technology acceptance perspectives provide a foundation for examining ADE students' willingness to use and engage with new digital technologies. In the current study, these perspectives are adapted to the specific context of GenAI-supported creative learning through four areas optimism, innovativeness, prompt efficacy and pedagogical and ethical awareness.

The optimism dimension reflects the ADE students' perceptions that GenAI can support creative output, idea development together with the efficiency in completing creative assignments. Innovativeness refers to the ADE students' willingness to explore new AI-based visual and digital tools as part of their creative assignments. Prompt efficacy focuses on the ADE students' confidence in formulating appropriate prompts to obtain useful and relevant visual or textual outputs from GenAI tools. Finally, pedagogical and ethical awareness addresses the ADE students' understanding of responsible AI use including originality, intellectual property, authorship and appropriate use of AI-generated content in the students' creative assignments. Together, these dimensions provide a framework for understanding not only whether ADE students are willing to use GenAI but also how they approach and integrate GenAI into their creative learning processes.

METHODOLOGY

This study employed a quantitative, cross sectional survey methodology targeting a stratified sample of $N = 158$ ADE students across semesters involving the semester 2 through 8.

Research Design and Sample

The target population comprised the ADE students enrolled in the Bachelor of Education (Hons.) Art and Design Education program at the Faculty of Education, Universiti Teknologi MARA (UiTM), Puncak Alam Campus. A total sample of $N = 158$ respondents was gathered across semester 2 through 8 to ensure representation across lower and upper academic cohorts.

Instrumentation

The questionnaire consisted of two main sections namely Section A for reporting the Demographic characteristics (Gender, Semester, Primary GenAI tools used, Frequency of usage). Section B consisting of 15 items evaluating GenAI usage and readiness for creative assignments, scored on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

The 15 items were adapted from established instruments by Parasuraman and Colby (2015), Venkatesh et al. (2012) and Chai et al. (2023). Content validity was verified by three senior lecturers in educational technology and art pedagogy. A pilot test conducted prior to data collection yielded a high internal consistency reliability coefficient (Cronbach's $\alpha = 0.914$).

RESULTS AND FINDINGS

Data were collected using a structured 15 item questionnaire adapted from established technology adoption models from Parasuraman and Colby's Technology Readiness Index (TRI 2.0) and Venkatesh et al.'s UTAUT framework to measure student optimism, prompt competence, pedagogical self-efficacy and ethical awareness on a 5-point Likert scale.

Demographic Data

The demographic profile of the respondents is included to provide a clear overview of the sample characteristics and to establish the background of the students involved in the study. Identifying factors such as gender, academic level, GenAI platforms used and frequency of use helps to contextualise the findings and provides a better understanding of the diversity of the participants' experiences with GenAI. The demographic information also helps to describe the composition of the sample and provides a basis for interpreting the subsequent findings on students' use and readiness towards GenAI in creative assignments. The data is tabulated in the Table 1 below.

Table 1: Demographic of Respondents (N = 158)

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	44	27.8%
	Female	114	72.2%
Academic Level	Semester 2–3 (Junior)	50	31.6%
	Semester 4–5 (Intermediate)	56	35.4%
	Semester 6–8 (Senior)	52	32.9%
Primary GenAI Used	Midjourney / DALL-E / Adobe Firefly	92	58.2%
	ChatGPT / Claude (Text/Ideation)	43	27.2%
	Canva Magic Studio / Integrated Tools	23	14.6%
Frequency of Use	Daily	42	26.6%
	2–3 times a week	88	55.7%
	Rare / Assignment basis only	28	17.7%

The gender exhibits a significant female majority with 114 female respondents (72.2%) compared to 44 male respondents (27.8%). This distribution reflects the typical gender balance observed within education faculties across Malaysian higher learning institutions.

The participant group academic level is evenly distributed across different stages of their degree program. Junior students in semester 2 to 3 comprise 31.6% ($f = 50$) students in Semesters 4 to 5 represent 35.4% ($f = 56$) and senior students in Semesters 6 to 8 make up 32.9% ($f = 52$). This balanced progression ensures that the findings capture perspectives from both novice learners and advanced learners preparing for school placements.

Text to image primary GenAI platforms used synthesis models such as Midjourney, DALL-E and Adobe Firefly serve as the dominant primary AI tool among respondents total of 58.2% ($f = 92$). Large language models used for text and ideation (e.g., ChatGPT and Claude) represent 27.2% ($f = 43$) while integrated suite options such as Canva Magic Studio account for 14.6% ($f = 23$).

A significant frequency of utilization has identified that majority of students engage with Generative AI tools on a regular basis. Over half of the respondents consisting of 55.7% ($f = 88$) use AI tools 2 to 3 times a week while 26.6% ($f = 42$) utilize them daily for creative tasks. Only 17.7% ($f = 28$) report using these tools rarely or strictly on an assignment needed basis indicating a high level of habitual adoption across their creative assignments.

Quantitative Findings: Student Readiness and AI Usage

Data collected from the 15 item survey demonstrate a strongly positive orientation toward GenAI tools. Descriptive statistical analysis using Mean, Standard Deviation and Percentage of Agreement consisting of Agree until Strongly Agree is summarized in Table 2.

Table 2: Survey Results on How Art Education Students Use Generative AI (N = 158)

No.	Survey Item (Adapted Instrument)	Mean (M)	Std. Dev (SD)	Agreement (%)
Pillar 1	Optimism and Creative Value			
1	Using GenAI tools makes my creative brainstorming and mood-board process significantly faster.	4.51	0.51	95.6%
2	GenAI provides novel visual ideas and perspectives that I would not have considered on my own.	4.38	0.57	91.1%
3	Integrating GenAI into studio assignments improves the overall aesthetic quality and depth of my artwork concepts.	4.20	0.62	85.4%
4	GenAI allows me to overcome artistic mental blocks when starting a new assignment.	4.44	0.53	93.0%
Pillar 2	Technical and Prompt Competence			
5	I feel confident in writing text prompts to generate specific visual compositions and art styles.	4.15	0.66	81.6%
6	I am able to combine traditional/digital studio skills with AI-generated elements effectively.	4.27	0.60	87.3%
7	I understand how to refine iterative prompts when the initial AI output does not match my creative vision.	4.21	0.62	84.2%
8	Learning and exploring new GenAI platforms is intuitive and easy for me.	4.32	0.58	89.2%
Pillar 3	Pedagogical and Future Application			
9	As a future art teacher, I believe learning GenAI skills is essential for my future teaching career.	4.40	0.52	92.4%
10	I am capable of guiding secondary school students on how to use AI tools creatively and responsibly.	4.11	0.69	78.5%
11	GenAI helps me better understand complex visual art theories, art history styles and design principles.	4.05	0.72	76.6%
Pillar 4	Ethical and Quality Awareness			
12	I critically evaluate and modify AI outputs rather than accepting them as finished artworks.	4.47	0.49	94.3%

13	I am aware of copyright, originality and ethical concerns when utilizing AI in academic artwork.	4.30	0.60	87.3%
14	I maintain my personal artistic identity and style while utilizing GenAI as a co creation tool.	4.25	0.63	85.4%
15	Overall, I am well prepared and ready to incorporate GenAI into my current and future studio assignments.	4.33	0.55	90.5%
OVERALL	Overall Mean Readiness Score	4.29	0.58	87.5%

Note: Scale ranges from 1.00 (Strongly Disagree) to 5.00 (Strongly Agree). Agreement (%) combines "Agree" and "Strongly Agree" responses.

DISCUSSION

The empirical findings indicate that ADE students at UiTM report a high level of readiness ($M = 4.29$, $SD = 0.58$) and a positive orientation toward GenAI integration into creative assignments. In line with the reviewer's suggestion, the discussion is organised around the four score themes represented in the adapted framework rather than individual questionnaire items.

Optimism and Creative Value

The strongest pattern is found in the optimism and creative value theme, particularly around faster brainstorming, visual idea generation and overcoming creative blocks. Students therefore perceive GenAI as especially useful during the early stages of creative development, where multiple alternatives can be explored before a final direction is selected. This pattern is consistent with the view that generative visual tools can support rapid concept development and experimentation (Cetinic & She, 2022). The result should be interpreted as students' perceived value of GenAI rather than as evidence of an objectively improved quality of artwork.

Technical and Prompt Competence

The technical and prompt competence theme indicates that students are generally comfortable exploring GenAI platforms and combining AI-generated elements with existing traditional or digital studio skills. At the same time, confidence in writing and refining prompts is comparatively less pronounced than the strongest creative value responses. This suggests that exposure to GenAI does not automatically translate into advanced prompt competence. Structured opportunities for prompt development, iterative testing and visual evaluation may therefore strengthen students' ability to direct GenAI outputs according to specific artistic intentions.

Pedagogical and Future Application

The pedagogical and future application theme shows that the ADE students recognise the professional relevance of GenAI skills to their future teaching careers. However, the responses concerning their ability to guide secondary school students and their use of GenAI to understand visual art theories and design principles are comparatively lower than the strongest responses in the creative value and ethical awareness themes. This distinction is important for the ADE students because personal use of GenAI and the ability to teach responsible GenAI use are related but different competencies. The ADE students preparation should therefore move beyond tool exposure toward lesson design, classroom guidance and critical discussion of AI-supported visual production.

Ethical and Quality Awareness

The ethical and quality awareness theme reflects strong attention to evaluating and modifying AI outputs and maintaining personal artistic identity. The findings indicate that the ADE students do not necessarily regard AI-

generated outputs as finished artworks. Instead, they report a hybrid approach in which AI is used as a co-creation resource while human judgement remains involved in selection and artistic decision making.

CONCLUSION AND RECOMMENDATIONS

This study demonstrates that the ADE students at the Faculty of Education UiTM possess a highly positive readiness profile toward Generative AI. Participants utilize GenAI strategically for ideation as well as the visual experimentation in overcoming creative blocks while maintaining a strong commitment to produce artistic identity and ethical standards. Based on these findings, the following pedagogical recommendations are proposed for higher education institutions:

1. Formalizing AI Prompt Engineering in Art and Design Education Curricula by integrating studio modules covering prompt formulation with visual evaluation and iterative refinement.
2. Developing Frameworks for Ethical AI Art in establishing clear guidelines for documenting AI usage to ensure academic integrity is preserved and to acknowledge the copyright respect in creative assignment.
3. Promoting Hybrid Studio Workflows to encourage creative assignments that combine AI pre visualization with physical studio techniques for example traditional painting, printmaking or digital media to ensure core craftsmanship is preserved alongside technological fluency.

Methodological Limitations And Future Research

Several methodological limitations should be considered when interpreting the findings. First, the study used a quantitative cross sectional survey and therefore provides a snapshot of the ADE students' reported readiness and experiences at one point in time. The descriptive results do not establish causal relationships between GenAI use and the ADE students' creative performance or learning outcomes.

Second, the study reports combined descriptive results for students across semesters 2 to 8. Although the sample is distributed across junior, intermediate and senior cohorts, the manuscript does not contain the cohort-level raw scores required to conduct and report a valid One-Way ANOVA or Kruskal-Wallis test. Consequently, no statistical claim about significant differences between cohorts is made here. The available aggregate data should not be used to infer that readiness is equivalent across the three academic levels.

Third, the data are based on self-reported responses. Students' perceptions of their GenAI competence, ethical awareness and readiness may not necessarily correspond to observed performance in creative assignments or actual classroom practice.

Fourth, the sample was drawn from the Art and Design Education Programme at the Faculty of Education, UiTM, which limits the extent to which the findings can be generalised to other institutions, disciplines or student populations.

Future research should address these limitations by collecting cohort-level item or construct scores and applying an appropriate inferential test, such as One-Way ANOVA when assumptions are met or the Kruskal-Wallis test when a non-parametric approach is warranted. Follow-up studies could also use larger multi-institutional samples, longitudinal designs across semesters and mixed-method approaches combining surveys with interviews, portfolio analysis, classroom observation or assessment of actual creative outputs. Such research would provide stronger evidence about how GenAI use develops over time and how reported readiness relates to observable creative and pedagogical practice.

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