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# From Intimidation to Innovation: Cross-Continental Multiple Case Studies on How to Harness AI to Elevate Engagement, Comprehension, and Retention

**Sue Haywood [1], Loredana Padurean [2], Renée Ralph [3] and Jutta Tobias Mortlock [4,*]**

[1] Smith School of Business, Queen's University, Kingston, ON K7L 3N6, Canada; sue.haywood@queensu.ca
[2] D'Amore-McKim School of Business, Northeastern University, Boston, MA 02115, USA; l.padurean@northeastern.edu
[3] School of Management and Marketing, Faculty of Business and Law, Curtin University, Bentley, WA 6102, Australia; renee.ralph@curtin.edu.au
[4] School of Health and Medical Sciences, City St George's, University of London, London EC1V 0HB, UK
* Correspondence: jutta.tobias-mortlock@citystgeorges.ac.uk

**Abstract**

As generative AI tools become increasingly embedded in education, their role in supporting student learning remains both promising and contested. These cross-continental multiple case studies explore how integrating AI into classroom-based creative projects can move students from intimidation to meaningful engagement, comprehension, and retention of course content. Drawing on data from four international university classrooms—in the USA, UK, Canada, and Australia—this mixed-methods study examines students' experiences as they collaboratively created comic books using generative AI. Each instructor embedded the assignment within their own pedagogical context, enabling cross-institutional comparison of AI's educational potential. Findings highlight a shared trajectory: students initially approached AI with uncertainty or overconfidence, but developed nuanced understandings of its capabilities through experimentation, reflection, and collaboration. The process of creating narrative-driven visual outputs required students to synthesize theoretical material, communicate effectively in teams, and creatively solve problems—fostering both cognitive and interpersonal learning. Students reported deeper comprehension of academic content and greater confidence using AI tools critically and ethically. This study concludes that when framed as a collaborative partner rather than a replacement for human thinking, AI can support deeper learning experiences. It also suggests that creative, team-based projects can demystify AI and build essential future-facing skills.

**Keywords:** artificial intelligence (AI); generative artificial intelligence (GenAI); ChatGPT; engagement; comprehension; retention; graphic stories; future-facing skills



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## 1. Introduction

The COVID-19 pandemic has impacted the learning habits of students (Clarke et al., 2024). The long-term effects of the shift to virtual learning for students of all ages remain to be seen, but the authors note a decrease in attention and engagement. The pandemic has negatively impacted teaching and learning activities (Munna et al., 2024). This has resulted in Pham and Chau (2024) calling for an urgent need to further understand the relationship between students' motivated behavior and their engagement. It has been suggested that novel approaches to pedagogy and adapting instructional design and activities to suit the needs of students can positively impact learning and engagement (Xiong et al., 2025).

The rapid advancement of Artificial Intelligence (AI) has introduced transformative potential to higher education (Gligorea et al., 2023; Allam et al., 2025). From adaptive learning systems to AI-powered assessment tools, educational institutions worldwide are experimenting with AI to enhance teaching, learning, and student engagement (Tariq, 2025). However, despite these innovations, the use of AI remains intimidating for many educators and students, especially when applied to creative, open-ended projects (Benke & Szőke, 2024). Concerns about ethical implications, intellectual ownership, and the fear of AI replacing human creativity contribute to this unease.

There is an important and urgent debate among education scholars regarding the future of AI in education. Some argue that AI can enhance student learning and skills development, while others believe it may hinder the development of critical thinking skills due to over-reliance on AI-generated knowledge (Grassini, 2023; Zhai et al., 2024; Melisa et al., 2025). A recent systematic review of adaptive learning using AI in education found that AI could help increase student engagement, retention, and academic performance (Gligorea et al., 2023; Al-Smadi et al., 2024). However, limited research currently exists on best practices for integrating AI into curricula (Farrelly & Baker, 2023; Grassini, 2023; Cordero et al., 2025). While some studies suggest that AI can enhance critical thinking, others argue it reduces deep learning skills. Scholars are calling for more empirical studies to resolve this debate (van den Berg & du Plessis, 2023; Lo & Hew, 2023).

This study responds to this call for more research by contributing a multiple-case study from four higher education institutions across three continents, investigating best practices in integrating AI—specifically generative AI (GenAI), AI that generates images, text, and video—into teaching and learning contexts. The paper examines the use of GenAI in these four case study contexts to support students' creation of discipline-specific comic books, which demonstrate the learning of key management science constructs using a participatory design (PD) approach. The study contributes to theory by linking generative AI to student engagement and retention through participatory design group projects that transform management concepts into AI-illustrated graphic stories. It also contributes to practice by demonstrating how AI can be transformed from a source of intimidation into a tool for innovation and creativity.

### *1.1. Scientific Background*

Since the release of generative AI chatbots like ChatGPT for public use around 2022, research on AI in education has increased exponentially. Overall, student uptake of GenAI is high (Honig et al., 2025) and studies demonstrate that most students, by the end of 2024, were at least at the initial engagement level and with a growing awareness of GenAI's limitations and ethical issues (Tsao & Nogues, 2024; Wood & Moss, 2024).

Much scientific research focuses on Intelligent Tutoring Systems (ITS), including their effectiveness, platform usability, and the quality of the content generated (VanLehn, 2011; Mousavinasab et al., 2018; Mukherjee et al., 2025) or student preferences for technologies based on demographics and/or learning experiences. A central component of ITS is GenAI-enhanced feedback on assessments (Chan et al., 2024; Huesca et al., 2025). Gamification is another core topic in the AI scholarly debate and is being used to deal with low self-efficacy and increase participation rates, hypothesizing that gamification may enhance student engagement with course material (Da Yang & Chin Wei, 2021).

To date, however, empirical studies investigating engagement with and retention of GenAI-enabled learning are scarce. An exception is a recent survey of undergraduate and postgraduate students in China, which found that AI-enhanced Social-Emotional-Learning improves engagement by providing personalized support tailored to students' emotional and academic needs (Zong & Yang, 2025). Another is a recent study on student engagement in a co-curricular creative writing using GenAI to help with creative content

at two Hong Kong universities, demonstrating that GenAI may promote student improvisation and spontaneity, yet emphasizing the need for human participation in the use of GenAI in the classroom (Tsao & Nogues, 2024).

In addition, a small number of studies have explored the extent to which GenAI may support student retention. For instance, in an assessment of GenAI adaptive feedback, 340 students receiving AI-driven adaptive feedback demonstrated a 28% improvement in conceptual mastery as well as a 35% increase in student engagement with a 22% reduction in cognitive overload compared to a control group of students who received traditional instructor-led feedback methods (Naseer & Khawaja, 2025). In another study of chemistry students using GenAI, scholars found that its use can improve technical writing (Yuriev et al., 2025). However, when researchers compared the academic performance between student learning groups using a generative AI-powered textbook and others who utilized printed materials, no statistically significant differences between the two groups could be detected (Chun et al., 2025).

Studies frequently show students with stronger capabilities tend to extract higher-quality information from AI sources, which in turn fosters their satisfaction with GenAI tools and the intention to continue using these tools (Jia et al., 2025; Essien et al., 2024; O'Dea et al., 2024; Oc et al., 2024). The use of GenAI appears to vary between disciplines, with applied fields showing higher GenAI knowledge and utilization intentions (Qu et al., 2024). There seems to be a broad scholarly consensus over the pedagogical benefits of generative artificial intelligence in higher education (see Pavlik, 2025, for a recent review). However, more empirical research is needed to understand how GenAI may be most effectively integrated with established educational theories to enhance education in diverse classrooms, in particular in business schools (Anderson et al., 2025).

One specific use of GenAI for learning is particularly relevant to the present study: GenAI-enabled image creation to support learning. There is some evidence that early childhood learning in mathematics can be enhanced through stories accompanied by GenAI-enabled images (Li et al., 2025), but empirical research on the utility of integrating image creation using AI tools with university students is to date inconclusive. While a qualitative study of the experiences of undergraduate nursing students using AI image generation as a strategy to decrease anxiety, increase preparatory knowledge, and enhance emotional connection with the patient's story following an acute care simulation showed positive pedagogical outcomes (Reed & Dodson, 2024), a quantitative study of undergraduate interior design students assessing the correlation between learning styles and perceived ease of use, perceived usefulness, or actual use of AI tools revealed no strong correlations (Chandrasekera et al., 2024).

In a more recent study with medical students, researchers employed various GenAI tools to enhance the teaching of clinical pharmacology through cinematic clinical narratives (CCNs), for example using ChatGPT for developing the storyline, Leonardo.ai and Stable Diffusion for generating images, Eleven Labs for creating audio narrations, and Suno for composing a theme song (Worthley et al., 2025). The authors compared an experimental group of medical students who were engaged in AI-enabled CCN creation with a control group who received traditional text-based clinical cases and reported that the experimental group scored an average of 8% higher on exam questions related to the material covered by the AI-enabled learning compared to students in the control group. Qualitative feedback collected in a related study indicated increased student engagement, yet the study's author stressed the need for more research to assess long-term retention of knowledge and the applicability of learned material in clinical settings (Bland, 2025).

This study responds to the call for more research on GenAI-enabled classroom learning, specifically investigating the following two-fold research questions:

(a) How can students become confident and effective in using AI in the classroom?
(b) What improvements would make AI tools more effective for academic learning?

### 1.2. The Genesis of This Study

In the 2023/24 academic year, Professor Loredana Padurean launched a pioneering trial of a generative AI-integrated assignment in the senior-level capstone course INTB 4504 Integrated Studies in Corporate Innovation at Northeastern University. The initial pilot ran in Fall 2023 with a small, highly engaged cohort of 14 students, tasked with collaboratively creating comic books that visually translated core innovation frameworks using generative AI tools. This cohort, largely unfamiliar with generative AI before the course, provided a rich opportunity to observe the perceptions, challenges, and breakthroughs of an "AI-naïve" learner group. Students completed a baseline survey capturing their attitudes toward AI prior to the project, revealing both curiosity and apprehension.

Due to the overwhelmingly positive response and the originality of the student outputs, the assignment was expanded in Spring 2024 to a larger class of 38 students. This scale-up not only confirmed the success of the original trial but also provided a broader dataset to examine AI's impact on student engagement, creativity, and learning. Across both cohorts, students engaged deeply with the tools, demonstrated growing confidence in AI literacy, and produced creative, high-impact comic books that served as both learning artifacts and evidence of pedagogical innovation.

In 2024, Padurean delivered the keynote at the Academy of Management's Teaching and Learning Conference in Chicago titled "AI in Education: From Intimidation to Innovation," where she met the co-authors of this study from Australia, Canada, and the UK. Their shared curiosity and pedagogical vision laid the groundwork for this international, cross-institutional study exploring how generative AI can enhance creativity, critical thinking, and collaboration in higher education. The core idea behind this research is to guide students in engaging with AI-based approaches to enhance their understanding, comprehension, and retention. To achieve this, we undertook the task of assigning the creation of comic books to visually depict theory through storytelling in classrooms across four continents, with the aim of supporting and validating the development of an approach that others can replicate.

## 2. Materials and Methods

The study explored how generative AI can be integrated into teaching to enhance attention, comprehension, and retention. The initiative centers around the co-creation of a comic book as an unconventional, collaborative graphic text developed with students using tools like ChatGPT-4.0, DALL·E 2, Adobe Firefly Image Model 3, and Canva VS1.

Students were instructed to work in small groups to produce a graphic story or comic that illustrated a key concept in their specific management science classroom. The storytelling format invited students to engage deeply with the concept they had chosen for their graphic story, translating theory into vivid, emotionally resonant visual narratives.

In this study, a qualitative multi-case study design (Yin, 2018) was used to examine the use of generative AI across these four case study contexts in supporting students to create discipline-specific comic books that demonstrate the learning of key management science constructs using a participatory design (PD) approach. Each case study focused on a different learning context: innovation and entrepreneurship in the United States, management skills in Canada, organizational psychology in the United Kingdom, and Human Resources in Australia. In each classroom, the case study examined how students experienced working with AI in an educational setting whilst co-creating specific learning outcomes focused on their respective learning contexts. Data were collected using a mixed-methods approach from four different student groups, exploring perceptions of AI engagement with and retention of academic concepts before and after participating in an AI-enabled graphic story student project.

Thematic analysis (Braun & Clarke, 2006) was used to identify patterns across the data. A cross-case synthesis approach (Yin, 2018) was applied to compare findings across the four national and disciplinary contexts. Codes were developed based on the sentiments and events referenced by students in their feedback. The qualitative data from each university setting was collected and shared with the other researchers. Thematic coding and findings were reviewed collectively to align understanding.

To evaluate changes in student perceptions of AI over the semester, quantitative surveys were conducted. In three of the four case studies, this consisted of two rounds of data collection, one at the beginning and the other at the end of the semester (at Northeastern University in the U.S.A., the first setting in which this teaching innovation was explored, this had not been feasible). All students in each class were invited to complete the surveys. Participation was optional, and in the courses where a grade was impacted by the comic book assignment, participation was not requested until after the grades had been published. Students who consented to participate were then given access to the survey. Ethics review board approval was given by the universities where this was a requirement. The surveys were administered online, and responses were kept anonymous.

Using a Likert scale format, inviting students to respond on scales from 1 (completely disagree) to 5, 7, or 10 (completely agree), students were asked to rate statements about the use of generative AI. Additionally, there were three open-text questions: what do you find most beneficial about using AI tools for learning, what do you find least beneficial about using AI tools for learning, and what improvements would you suggest to make AI tools more effective for academic learning? The text responses are included in the qualitative results section. Overall, the data indicate a positive shift in student attitudes toward AI, with increased motivation, perceived academic benefit, and reduced intimidation. These findings support the project's broader aim of transforming AI from a source of uncertainty into a catalyst for educational innovation and deeper engagement.

### *2.1. Settings and Procedure*

In each setting, the instructor introduced the comic book project and offered overviews of generative AI tools (e.g., ChatGPT, Canva) as part of the project. Instructors also offered guidance on their ethical and effective use. Students were encouraged to "play with" using AI to create graphic stories for a comic book by drawing on the concepts and theories they had learned in class. Students were guided on how to use GenAI and provided with a step-by-step guide on developing a comic, which stressed the need to focus on the story and the information they wanted to communicate before generating images. Dedicated class time was used to provide real-time feedback to students. The creative process was highly iterative and student-driven. Brainstorming sessions, open discussions, and group critiques were central to the classroom dynamic. Students were encouraged to share their strategies and discoveries across teams, fostering a collaborative learning ecosystem. Structured milestones were provided to guide progress, but these were adapted responsively based on class dynamics and student feedback.

Each instructor adopted an adaptive teaching style, frequently redesigning support materials and timelines week by week to meet students where they were. This project demanded more active instructional engagement than traditional assignments, but also yielded significantly higher student investment and learning depth. Students were encouraged to reflect critically on their own use of AI and on the ethical and creative dimensions of their peers' work. The project also challenged our author team to rethink our roles as teachers, as we needed to adapt week by week. The intensity of the instructional support required was significant, but it was matched by exceptional student engagement.

The final products were assessed based on how effectively the comic books depicted the theories intended, as well as the effectiveness of the storytelling. This encouraged students to focus on what was being communicated to readers as well as how it was being created. Additional criteria included narrative clarity, originality, teamwork, effective integration of AI tools, and educational value. Students were also expected to demonstrate a balanced use of visual and textual elements. The grading process included peer review presentations prior to final submission, as well as both peer and self-assessment components.

At three out of the four case settings in this study, the assignments were formative and did not impact the students' final grades. However, at Queen's University in Canada, the assignments were viewed as a capstone project, and the grading was based on their thematic content and included a peer feedback component where students also assessed the work of other groups as to whether the intended course learnings were communicated. Overviews of each course involved in the study and focus areas are given below.

#### 2.1.1. Northeastern University, U.S.A.

INNO 4504 Integrated Studies in Corporate Innovation is a capstone course offered at the D'Amore-McKim School of Business at Northeastern University in Boston, USA. Designed for senior undergraduate students in their final semester, the course integrates key innovation frameworks, including Lean Startup, Disruptive Innovation, Blue Ocean Strategy, and Nail it, Scale it, Sail it, with an emphasis on real-world application and creative experimentation. Through experiential learning, case studies, and technology-enhanced assignments, students explore how innovation evolves across the life cycle of organizations. The course is highly participatory and encourages collaboration, critical thinking, and self-reflection, with a strong focus on bridging academic theory and practical insight.

Figure 1 below shows an excerpt from one of the student-generated graphic stories of key innovation concepts and frameworks taught in this class, comparing the start-up world to life in the jungle.


**Figure 1.** Sample truncated graphic story of innovation produced by a student group at Northeastern University.

2.1.2. Queen's University, Canada

COMM357 Interpersonal Skills for Managers is a course offered at the Smith School of Business at Queen's University, Kingston, Canada. This course content focused on the practical application of organizational behavior and human resource management knowledge to the effective and productive management of people and relationships at work and was highly experiential. Students developed interpersonal skills crucial to any manager's role, including self-awareness, stress and time management, creativity and problem-solving, and conflict management. The course caters to students in the Bachelor of Commerce program and is open to those in the 3rd or 4th year of their Engineering and Arts and Sciences degree, and counts as credit towards the Certificate in Social Impact.

Figure 2 is an image briefly summarizing the graphic publication of one student group's story of developing management skills. It depicts the story of Juliette, a young professional struggling to manage her team. Thankfully, while sitting on a park bench, she meets a squirrel coach who knows exactly what she needs to do to motivate and support her team to perform.


**Figure 2.** Truncated graphic story of management skills produced by a student group at Queen's University.

2.1.3. City St George's, University of London, United Kingdom

PSM529 Mindful Leadership Development is a mandatory module in the MSc in Organisational Psychology (OP) at City St George's, University of London, England. This master's program aims to develop OP scientist-practitioners. In the module, students learn how to develop organizational leadership by drawing on insights from mindfulness science. It forms part of the MSc's mission of enabling its students to become proficient

in translating scientific knowledge in OP into organizational practice, with the ultimate goal of cultivating wellbeing and sustained performance in workplaces. In 2024, a core formative assignment in this module was to have student groups select one from a series of key leadership theories and create and present at the end of the term a graphic story of how to develop this type of leadership, using ChatGPT to generate the story's graphic images. Students chose from different types of leadership theories, e.g., humble leadership, shared leadership, crisis leadership, and so on. They were given tutorials on how to create story lines and were invited to share draft versions of their story of leadership development throughout the term, and the second author offered a special guest webinar to all students in class, sharing experiences of their previous AI enabled comic book student projects and answering the students' questions in real time.

Figure 3 shows several images of a student group's story of leadership development. It depicts a fictitious "Crisis Carol"; a story about Carol, the CEO of Fantastic Fireplaces Limited, whose company is on the brink of going into crisis, when she is visited by the Ghost of Organisational Psychology, helping her grow her crisis leadership 'muscle'.


**Figure 3.** Partial sample graphic story of leadership development produced by a student group at City St George's, University of London.

### 2.1.4. Curtin University, Australia

MGMT5001 Human Resource Development (HRD) is a comprehensive compulsory master's unit within the master's program at the Graduate Business School, School of Management and Marketing, Curtin University, Perth, Western Australia, Australia. Over a period of 13 weeks, a weekly 3-hour seminar was conducted with the aim of developing students' knowledge, skills, management, and implementation of learning, training, and development in organizations. The unit integrates key knowledge and skills with other Human Resource (HR) functions and business imperatives within the HR cycle. HRD aims to lead to enhanced employee satisfaction and improved strategic organizational efficiency. The learning methodology in this unit was Experiential Learning, as an effective way to apply the students' understanding of HRD knowledge and skills to real-world situations. Experiential learning is a student-centered methodology that engages students in developing critical thinking through undertaking an authentic and meaningful project. In the spring term of 2025, the student cohort of 28 in this unit was given the group project of creating a graphic image narrative of one of several topics: leadership, trust, aging, mindfulness, and reflection, all utilizing generative AI.

Figure 4 below shows the student-generated fictitious story of Karma, a young female warrior, who, with the help of the spiritual and mythical White Fox, realizes that leadership is not only about combative wins but also about reflection, listening, and mindfulness.

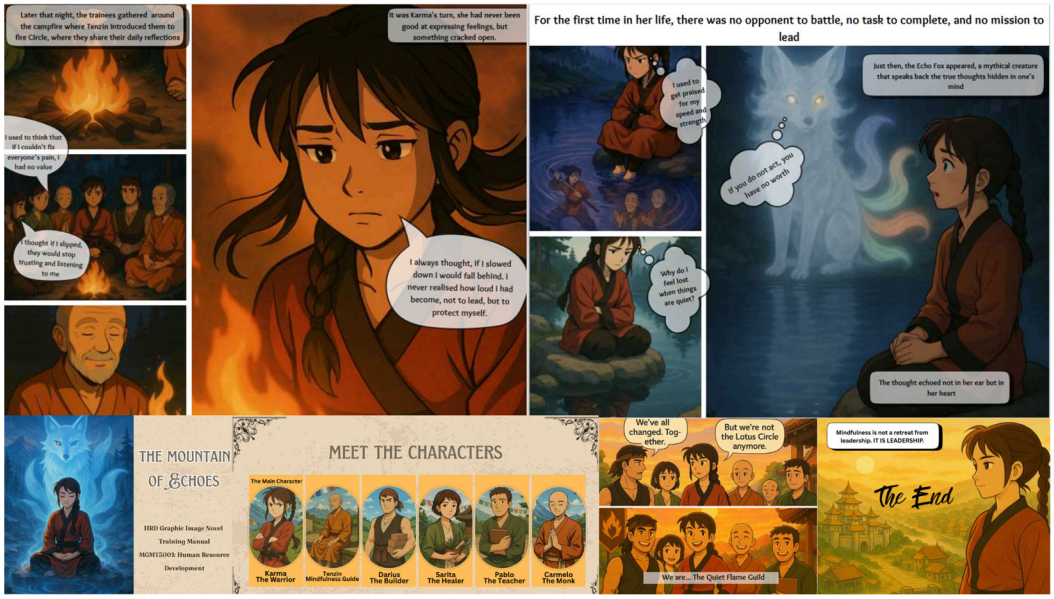


**Figure 4.** Partial sample graphic story of leadership and mindfulness produced by a student group at Curtin University.

## 3. Results

### *3.1. Quantitative Results by University*

#### 3.1.1. Northeastern University Quantitative Results

The integration of generative AI into experiential learning, particularly through the comic book project, had a consistently positive impact on engagement, comprehension, and retention across both cohorts.

In Spring 2024, students appeared to hold moderate levels of familiarity and motivation, but their perceptions of AI's value in learning seemed to show dramatic improvements post-project. Notably, intimidation seemed to drop while retention and critical thinking scores appeared to rise significantly, indicating that structured, creative AI use can transform fear into fluency.

In Fall 2024, a more detailed pre-project assessment confirmed students' initial unfamiliarity with AI, with only modest understanding of its societal implications and notable feelings of intimidation (not reported here). However, their retention scores post-project were substantially higher than their general academic learning norms (7.8 vs. 5.8), validating that the comic book approach helped students internalize complex innovation frameworks far more effectively than traditional formats.

Students were asked to indicate their response to the survey statements about the use of generative AI on a scale of 1 (lowest) to 10 (highest). Table 1 below shows the survey data.

Before taking part in the comic book project, ethical concerns were mid-range (4.7/10), and perceived complexity was relatively low (3.7/10), hinting that students were unsure but not overwhelmed. Students rated the comic book project's ability to help them retain theoretical frameworks at 7.8/10, showing strong pedagogical impact. As mentioned above, general academic retention was rated at 5.8/10, while attention levels during the course within this project were higher, at 7.8/10, suggesting that the AI-based creative format significantly improved engagement and memory.

**Table 1.** American student perceptions of generative AI and the comic book project (Fall 2024, n = 29).

| Survey Item | Mean |
|---|---|
| How familiar you are with generative Artificial Intelligence | 5.4 |
| How well you understood the potential impacts of generative AI on society | 4.7 |
| How familiar were you with generative AI technology | 4.5 |
| How intimidated or uncomfortable were you using generative AI | 4.1 |
| How concerned were you about the ethical implications of using generative AI | 4.7 |
| How complex did you expect the process of using generative AI to be | 3.7 |
| Creating a comic book helped me retain the theoretical framework taught in this course | 7.8 |
| Was critical thinking a skill developed during this project | 7.8 |
| Should AI courses be integral to Northeastern's core curriculum | 7.6 |
| The comic book project was a valuable part of my learning experience in this course | 7.7 |
| Assess the complexity of this project, compared to a traditional class project | 7.4 |
| Creating a comic book enhanced my attention during the course | 7.8 |
| How much academic learning do you think you retain normally | 5.8 |

Across both terms, students reported feeling more connected to the material, with many identifying the project as a breakthrough in their understanding of both course content and the potential of AI. Despite some ethical concerns and initial technical hesitation, the project demonstrated that AI—when used in a participatory, reflective, and collaborative setting—can be a powerful tool for learning transformation.

This evidence strongly supports a scalable model of AI-integrated pedagogy, where small trials can be expanded to broader implementations without sacrificing depth, creativity, or student ownership.

#### 3.1.2. Queen's University Quantitative Results

The initial survey in February 2025 included 25 students, while the follow-up survey in April 2025 had a lower response rate (N = 6) due to the survey being optional and conducted after grades were posted, as well as the course being a 4th-year course and students graduating after completing it. Despite the smaller sample in the follow-up survey, the comparative results offer valuable insight into how students' comfort, engagement, and perceptions of AI evolved through their participation in the comic book project.

Students were asked to rate each of the survey statements about the use of generative AI using a scale of 1 (completely disagree) to 7 (completely agree); responses are shown in Table 2.

Students reported stable or increasing levels of comfort and motivation in using AI for learning over time. Comfort with AI use remained steady (6.4 to 6.5 out of 7), while motivation to use AI showed a moderate increase (6.44 to 6.83). Notably, students' belief that AI could support their critical thinking improved significantly, rising from a mean of 4.6 at the start of the term to 6.33 at the end. This suggests that through active engagement with AI in the creative process, students began to see AI as a tool not only for efficiency but also for cognitive development.

Perceptions of AI as intimidating decreased (from 3.16/7 to 2.5/7), indicating a shift in emotional response from apprehension to increased confidence. Students also continued to find AI capabilities impressive (6.72 to 6.5), reflecting sustained interest and engagement. Importantly, students increasingly perceived AI as enhancing both their academic engagement and retention. Agreement with the statement that AI helps them engage with academic learning rose substantially (5.96 to 6.83). Students' perception of how much academic content they retained during the project was also higher (5.0/7) compared to

their general retention in other contexts (4.33/7), and the majority felt that AI increased their connection with the material (6.17/7), rather than diminishing it (2.33/7).

**Table 2.** Canadian student perceptions of generative AI and the comic book project (Winter 2025, start of term n = 25, end of term n = 6).

| Survey Item | Start of Term | End of Term |
|---|---|---|
| I am comfortable using AI for learning. | 6.4 | 6.5 |
| I'm motivated to use AI for learning. | 6.44 | 6.83 |
| I feel AI can enhance my learning. | 3.16 | 6.33 |
| AI can support my critical thinking skills. | 4.6 | 6.33 |
| I find it impressive how much AI can do for me. | 6.72 | 6.5 |
| I find AI intimidating. | 3.16 | 2.5 |
| I believe AI helps me engage with academic learning. | 5.96 | 6.83 |
| I believe AI helps me retain academic learning. | 5.16 | 6.17 |
| How much academic learning do you think you retain normally? | 4.33 | 4.4 |
| How much academic learning do you think you retained in this project? | 0 | 5 |
| Do you feel using AI increased your connection with the material covered in this project? | 0 | 6.17 |
| Do you feel using AI decreased your connection with the material covered in this project? | 0 | 2.33 |

#### 3.1.3. City St George's, University of London Quantitative Results

A total of 40 students at the London university participated in the Mindful Leadership Development module and were given the group task of generating a graphic story of leadership development with the help of generative AI. The majority of students (n = 26) completed a survey of their perceptions of AI before the completion of the group task (in October 2024) and after (in December 2024). Students were asked to rate each of the survey statements about the use of generative AI using a scale of 1 (completely disagree) to 7 (completely agree); the last statement was rated on a scale of 1 (extremely unfamiliar) to 10 (extremely familiar). Table 3 shows the survey results.

Between October and December 2024, students showed a notable increase in comfort, motivation, and perceived effectiveness of using AI for learning. Comfort with AI rose from a mean of 4.62 to 5.27 out of 7, and motivation increased slightly from 4.85 to 5.04. While belief in AI's ability to enhance learning remained high and relatively stable (5.31 to 5.23), students reported slightly improved perceptions of AI's support for critical thinking (4.23 to 4.42) and engagement with academic content (from 4.27/7 to 4.62/7). Intimidation of AI slightly decreased (4.27 to 4.15). Students also reported high levels of academic retention and connection with the material when using AI during the project, with scores of 5.96/7 and 5.50/7 respectively, compared to a baseline retention rating of 5.35/7. Overall, the data suggests a positive shift in attitudes and perceived learning outcomes related to AI use over the course of the project.

In addition, this survey added a question on the ethical use of AI. Students indicated their understanding of ethical AI use significantly improved from 4.31 to 5.00 out of 7.

Most striking was students' increase in familiarity with generative AI among participants at the end of the term (from 5.08 to 7.19) on a sliding scale of 1 to 10, with the top score indicating extreme familiarity. This indicates a substantial positive shift, in line with our expectations.

**Table 3.** British student perceptions of generative AI and the graphic story project (Fall 2024, n = 26).

| Survey Item | Start of Term | End of Term |
|---|---|---|
| I am comfortable using AI for learning. | 4.62 | 5.27 |
| I'm motivated to use AI for learning. | 4.85 | 5.04 |
| I feel AI can enhance my learning. | 5.31 | 5.23 |
| AI can support my critical thinking skills. | 4.23 | 4.42 |
| I find it impressive how much AI can do for me. | 5.35 | 5.69 |
| I find AI intimidating. | 4.27 | 4.15 |
| I believe AI helps me engage with academic learning. | 4.27 | 4.62 |
| I believe AI helps me retain academic learning. | 3.5 | 3.62 |
| How much academic learning do you think you retain normally? | 0 | 5.35 |
| How much academic learning do you think you retained in this project? | 0 | 5.96 |
| Do you feel using AI increased your connection with the material covered in this project? | 0 | 5.50 |
| I know exactly how to use AI ethically in an academic learning environment (scale from 1 = extremely unfamiliar to 10 = extremely familiar) | 5.08 | 7.19 |

#### 3.1.4. Curtin University, Australia Quantitative Results

At the point of inviting students to complete the generative AI survey at the start of term in February 2025, 22 out of the 28 individuals in the student cohort completed the survey, while participation in the follow-up survey in May 2025 was lower (n = 14). This was due to competing stressors and assessment deadlines. Nonetheless, comparing students' survey responses before and after taking part in the graphic image group assignment indicates that student engagement, retention, and in particular, employability perceptions had increased substantially.

Students were invited to rate each of the generative AI survey statements using a scale of 1 (completely disagree) to 5 (completely agree); responses are shown in Table 4.

**Table 4.** Australian student perceptions of generative AI and the graphic image group project (Spring 2025, start of term n = 22, end of term n = 14).

| Survey Item | Start of Term | End of Term |
|---|---|---|
| I am comfortable using AI for learning. | 2.86 | 3.28 |
| How confident do you feel about using Generative AI tools effectively in your studies? | 2.59 | 3.36 |
| How concerned are you about the ethical implications of using Generative AI in education? | 3.01 | 3.21 |
| I believe AI helps me engage with academic learning. | n/a | 4.45 |
| How much academic learning do you think you retained in this project? | n/a | 4.5 |
| Did the graphic image novel team assessment deepen your learning? | n/a | 4.50 |
| Did you feel satisfied and accomplished after completing the team assignment using AI? | n/a | 4.45 |
| Do you see AI as an employability skill and by being AI literate provides you the competitive advantage in the workplace? | n/a | 4.0 |

Students reported stable or increasing levels of comfort and confidence in using AI for learning over time. Comfort with AI use rose substantially (2.86 to 3.28 on a 5-point scale), while confidence in using AI also appeared to increase considerably (2.59 to 3.36 out of 5). In relation to the ethical implications of Generative AI in education, students' perceived concern rose from 3.01 to 3.21, indicating increased awareness of ethical usage concerns.

Notably, students indicated after the group project that AI helped them engage with academic learning (4.45/5). Their perception of how much academic content they retained

during the project was also extremely high (4.5/5). This suggests that through active engagement with AI in the creative process, students began to see AI as a tool not only for engagement but also for cognitive development and retention.

Perhaps most importantly, students' responses after completing the group project strongly suggest high student satisfaction with this mode of learning. It appeared that the graphic novel project considerably helped deepen their learning (4.5/5), their satisfaction levels after completing the project appeared very high (4.45/5), and their perception of being AI literate as an employability skill was rated as 4.0/5 overall at the end of the student group project. These findings largely align with the data reported for the three other universities in this study.

### *3.2. Qualitative Findings by University*

A thematic analysis approach (Braun & Clarke, 2006) was employed to identify recurring patterns and themes related to AI's impact on creativity, learning, and AI literacy. Coding focused on two factors:

- Creative Processes: How AI tools influenced storytelling and visual design.
- Learning Outcomes: Evidence of AI literacy development, critical thinking, and reflective engagement.

All four instructors noted the exceptionally high quality of student work. Although the comics required more time and increased effort than traditional essay-based assessments, students were keen to exceed expectations and create impressive publications that effectively depicted the application of relevant theories.

#### 3.2.1. Northeastern University Qualitative Findings

Qualitative data collected from students at Northeastern University in Fall 2023, Spring 2024, and Fall 2024 revealed a significant shift in their perceptions of generative AI before and after the comic book project. Initially, many students described feelings of intimidation, complexity, and ethical uncertainty regarding AI. As one student admitted, *"I was unaware of all the bias that is found in AI and how complex it can be to get the right result."* However, by the end of the project, most students reported feeling more confident, empowered, and curious. The process transformed AI from a black box into a collaborative tool for creativity and problem-solving.

Students who identified as more tech-savvy tended to engage more enthusiastically from the start, with one student noting, *"The more I used it, the more potential I saw—especially with tools like ChatGPT and Midjourney."* Others grew more comfortable as they discovered how to structure prompts, navigate limitations, and apply AI critically to enhance their workflow. *"AI has a lot to improve in terms of image generation,"* one student wrote, *"but once you get the hang of it, it helps so much with organizing ideas and saving time."*

The project also sparked thoughtful critiques of AI's limitations, particularly in generating consistent and coherent images. As one student observed, *"There were pros and cons to using AI for images. It made things easier, but sometimes the results were random or off—still, it pushed us to be more creative."* Despite these challenges, many students highlighted how the comic format helped solidify theoretical frameworks and enhance long-term retention. A common theme across responses was the value of applying knowledge in a visual, interactive format that felt both innovative and intellectually rigorous.

The integration of generative AI tools into the INNO 4504 capstone course at Northeastern University produced meaningful shifts in student confidence, creativity, and comprehension across both the Fall 2023 and Spring 2024 cohorts. In the initial, smaller cohort of 14 students (Fall 2023), many participants reported mixed feelings of intimidation and curiosity, reflecting a largely AI-naïve starting point. As one student noted, *"I had the*

*misconception that AI was only used for cheating, and it takes away the learning aspect. Now, I know how to use AI to aid my learning and make it better."*

The Spring 2024 cohort, expanded to 38 students, benefited from both a more experienced instructor and more sophisticated AI tools, resulting in higher overall project quality and deeper student engagement. The students were more competitive and motivated, having seen the outputs of the earlier cohort, and pushed each other to produce high-quality work.

Student reflections further illustrate this growth. One participant observed, *"Before, I thought the image generation was a gimmick and didn't see it having that much use. Now, I understand its broader applications and real-world relevance."* Another student highlighted the impact of the project on their creative confidence, noting, *"This project transformed my view of AI from a technical tool to a creative partner, pushing me to think more visually and conceptually."*

This scaling effect underscores the value of small-scale experimentation before broader implementation, reflecting a critical lesson in both innovation practice and pedagogy. It also highlights the importance of continuous improvement in both teaching methods and technology integration, as the second cohort clearly benefited from the lessons learned in the initial trial.

#### 3.2.2. Queen's University Qualitative Findings

Qualitative feedback from Queen's University students revealed meaningful insights into how AI tools influence learning outcomes, creativity, and collaboration. Their experiences with the AI-generated comic book project underscore both the potential of AI as a learning aid and the challenges that arise from its integration. This was also evident in class attendance, which averaged over 90% in each class, compared to 72% in the same course from the previous year.

Students consistently noted that AI supported their academic learning by helping them break down complex concepts and apply theory in new ways. As one student shared, *"AI explains materials you didn't understand properly without doing a lot of research—efficiency is key."* Another remarked that the comic format helped them synthesize strategies from different sources into a single plotline, reinforcing understanding in a practical, applied context.

For students with learning differences, the impact was particularly strong. One student with dyslexia described AI as *"really improving my life. . . it helped organize my thinking and learning."* These reflections suggest AI has the capacity to enhance comprehension, inclusion, and engagement across diverse learners.

The project also pushed students to think creatively. While many initially expected AI image generation to be simple, they quickly discovered the challenges of prompt engineering and the limitations of visual consistency. One student explained, *"We thought ChatGPT would give us complete images—characters interacting in specific backgrounds—but we had to pivot and build characters separately using Canva."* Other students highlighted that "*the project challenged [them] to think critically and creatively, unlike any final paper*."

Due to the iterative and technical nature of the task, students engaged in more in-depth collaboration than in traditional projects. Group success relied heavily on communication and shared decision-making. *"Without good communication, our graphics would've been useless,"* one student reflected. Another emphasized that *"working together was more fun than other classes—we had fewer boundaries, and everyone brought different ideas to the table."* These responses highlight how AI tools can foster real-world team skills when assignments are structured to require interdependence and shared problem-solving.

Despite the benefits, students expressed critical awareness of AI's limitations. Some felt that AI made it too easy to disengage or skip important learning steps. *"Sometimes I don't read through what the assignment is—I just speed through,"* one student admitted. Others

raised concerns about misinformation: "*AI presents everything as fact—it's hard to know what's real or not*."

To address these concerns, students recommended embedding reflection tasks and fact-checking activities, using AI more selectively, and developing course-specific AI tools that are "*screened*" for accuracy and inclusivity.

Overall, student reflections portray AI not as a shortcut but as a "*partner in learning*"—one that enhances *critical thinking, creativity, and collaboration*, while also demanding *ethical awareness and adaptability*. As one student concluded, "*AI can do a lot, but it's only as good as the person using it.*" This insight captures the broader educational potential of AI: a tool that, when integrated thoughtfully, supports meaningful, skill-building learning experiences.

#### 3.2.3. City St George's, University of London Qualitative Findings

The London university student group indicated how AI-supported learning experiences can foster engagement, creativity, and reflection, while also exposing challenges related to clarity, workload, and ethical concerns. These reflections were collected in response to two prompts—what students found most helpful about using AI in their learning, and what improvements they would recommend—offering a holistic view of AI's pedagogical value and its current limitations.

Students widely appreciated AI's potential to make learning more dynamic and interactive. Many described the experience as "*really fun and interactive*" and "*a creative experience unlike one I'd had before*." One student emphasized how the project allowed them to "*bring in the AI [to] give a more interesting and exciting output*," while another noted that "*it helped us create visuals we could never have made individually*."

The technology was also seen as a tool that enhanced learning depth. In the words of one participant, "*In order to create the AI you had to know the leadership theory in depth to create the most accurate prompts and understand what you were trying to get across in your story*." Others praised AI for reinforcing their understanding of key concepts: "*It helped me better understand the learning, by going over the story over and over again*," and "*AI is not so difficult nor scary as I thought*."

For students developing digital fluency, AI offered hands-on skills development. This included "*working on my image generation skills*," learning "*how to program it to create our ideal images for the comic*," and realizing that "*AI requires patience and persistence!*" For visual and reflective learners, AI provided personalized learning gains: "*As a visual learner, seeing all types of leadership styles in form of comics will retain that knowledge for longer*," and "*ChatGPT has helped me understand some of the emotions I have felt in this module*."

Students also highlighted that AI promoted teamwork: "*It allowed us to be creative and enhanced teamwork because we couldn't have done it alone*." Others echoed that the group-based challenge "*made learning more engaging, both the creation of and listening to others' research*."

Despite these benefits, students offered several suggestions for improving the learning experience. A recurring theme was the desire for greater clarity and structure early in the module. One student advised: "*Make clearer the objectives and what is expected from students*," while another noted, "*Maybe a little more direction in the first few weeks*."

Students also emphasized the importance of making the purpose and process more transparent: "*More information at start on the exact purpose of the challenge/exactly what we should be doing to inform our assessment*," and "*Make sure the emphasis is on the process not the task*." Several noted a need to clarify "*that the comic format is flexible*" and to "*highlight team dynamics over content earlier*."

Time and workload management were also highlighted. One student shared: "*I would have liked more of the workload to be spread across the module a bit more*," and others asked for protected time: "*It would be better to have some protected time in class to get some of the work done*."

Students voiced interest in more technical support and ethical discussion around AI. Suggestions included: "*Doing how to use AI tutorials*," and "*Maybe teach how to use AI effectively for learning?*" Some students questioned AI's broader implications: "*Be clear about why people are apprehensive about AI, especially generative AI. . . It is racist and sexist. . . It gives people with specific skills in AI prompts an edge*."

Finally, the emotional and cognitive load of the task was acknowledged by several participants: "*Maybe take it easier the first weeks and have some more theory*," and "*this class has my anxiety on scale 100%*."

Overall, student reflections affirm AI's ability to enrich learning through creativity, collaboration, and personalization. At the same time, they underscore the importance of scaffolding AI-integrated learning with clear expectations, ethical context, and technical support. As one student put it, the experience helped them realize that "*AI is not perfect and not that reliable hahaha, but it can be a great tool*."

#### 3.2.4. Curtin University, Australia Qualitative Findings

Qualitative reflections from a cohort of 28 postgraduate students enrolled in the MGMT5001 Human Resource Development (HRD) master's unit at Curtin University in Spring Semester 2025 reveal a profound transformation in attitudes toward generative AI. Initially uncertain and hesitant, many students expressed surprise at their own capacity for creativity and critical application of AI tools. The AI-powered graphic image training manual project not only enhanced conceptual understanding but also reshaped students' perceptions of learning, leadership, and collaboration.

Students approached the assignment with a blend of curiosity and skepticism. As one student shared, "*I was so stressed when given this assignment, how was I going to include in-text citations with graphic images?"* Another student explained, "*We never imagined that working in a group with AI would bring so much joy and unlock a new learning experience*." Others echoed this sense of discovery, noting how the project helped bridge academic theory with lived, professional experiences. Topics like aging, emotional intelligence, trust, leadership, and mindfulness were explored through Kolb's Learning Cycle, translated into compelling narratives, and brought to life using AI-generated visuals.

The collaborative nature of the project played a key role in enhancing interpersonal and cognitive skills. Students worked across industries—from law and engineering to hospitality and innovation—and engaged in robust peer-to-peer dialogue during weekly seminars. One student remarked, "*We could improve our teamwork, communication, problem-solving and decision-making skills during this project*." This collaborative process, underpinned by AI, proved to be both rigorous and emotionally resonant.

Students reported that the process of prompt crafting and image refinement deepened their engagement with course content. The challenge of maintaining character consistency in AI-generated images emerged as a common technical hurdle, yet also sparked critical thinking and iterative design. As another student noted, "*It was difficult to maintain a clear visual identity for the character. . . but the process helped me connect more deeply with the content*."

The project also prompted a major shift in students' ethical understanding of AI. Pre-project skepticism—often tied to perceptions of academic misconduct—was replaced by thoughtful engagement. "*I thought to use AI was unethical*," one student reflected, "*now after completing this team assessment, AI has a place in academia*." This evolution from fear to fluency reflects the course's success in reframing AI as a partner in knowledge creation, rather than a threat to academic integrity.

Cross-cultural creativity flourished throughout the assignment. Students were able to generate diverse characters and inclusive storylines, using AI tools ethically to represent multiple cultural identities. One student stated, "*I didn't know I could be creative*" and another

student summarized their experience as "*[a] beautiful, creative and remarkable learning journey.*" This not only enriched the storytelling process but also demonstrated AI's potential to support inclusion and representation when guided by thoughtful, student-generated inputs.

Students concluded the project with a strong sense of ownership and purpose. Many expressed excitement at the real-world applicability of their work, noting its usefulness for communicating complex or sensitive topics in professional settings. "*Now that I know how to instruct ChatGPT*," one student said, "*I want to do this again and again… I feel I can do anything*." This underscores the potential of GenAI to serve as a pedagogical and professional bridge—linking creativity, communication, and applied learning.

In summary, the integration of AI into Curtin University's HRD curriculum transformed student perceptions, enhanced critical and collaborative skills, and redefined the role of creativity in postgraduate education. The project demonstrated how generative AI, when used ethically and thoughtfully, can deepen theoretical understanding, foster cross-cultural dialogue, and open new avenues for personal and professional growth.

## 4. Discussion

This study contributes new empirical research to investigate the potential benefits of using GenAI for student learning. The graphic novel assignment substantially enhanced student engagement by transforming learning into a creative, collaborative, and personally meaningful experience. Students were encouraged to move beyond the constraints of traditional academic formats and explore storytelling, design, and teamwork through the use of generative AI tools. The open-ended nature of the project empowered students to take ownership of their work, fostering a deeper emotional and intellectual connection to the task. Many found the experience energizing, describing it as "*fun*," "*transformative*," and highly relevant to their future careers. Even students who initially felt intimidated by AI reported newfound confidence and enjoyment as they realized its potential to amplify—not replace—their own ideas and creativity.

In terms of comprehension, the project required students to engage deeply with academic content by translating theories, models, and discussions into coherent narratives. This process involved synthesizing material from diverse sources and applying it within novel, multimodal formats. By scripting their comics and generating visual representations of abstract concepts, students were able to break down complex ideas into more accessible forms. The assignment also cultivated a range of soft skills—including communication, leadership, and collaboration—which supported a more embodied understanding of course themes. For many, this hands-on engagement helped shift AI from an intimidating tool into an interactive learning partner, fostering critical thinking and deeper conceptual insight.

The project also contributed to stronger retention of course material by embedding learning in a memorable, iterative process. Rather than passively memorizing information for exams, students actively worked with content through storytelling, peer dialogue, and creative experimentation. This multidimensional approach—combining text, visuals, and group discussion—appeared to help students internalize key concepts more effectively. Visual learners in particular seemed to have benefited from seeing abstract theories come to life in AI-generated imagery. The repeated, trial-and-error nature of prompt engineering and narrative construction appeared to have reinforced learning over time, while also allowing space for reflection and adaptation. As a result, students seemed more likely to retain not just the facts, but the meanings behind the concepts, long after the project's completion.

### *4.1. Contributions to Theory*

The findings of this study highlight important pedagogical considerations when designing learning activities using generative AI. The participatory design (PD) framework was central

to this project. Participatory design approaches are effective in demystifying AI, empowering students to engage critically and creatively with AI tools. Students were not merely participants but co-creators, engaging with AI tools to produce discipline-specific comic books. Faculty members guided the process, allowing students significant autonomy in how they incorporated AI-generated content into their projects. This approach fostered a collaborative learning environment where students could experiment with AI-generated narratives, visuals, and character designs, while reflecting on the role of AI in the creative process.

Key elements of the participatory design approach included:

- Collaborative Decision-Making: Students chose which AI tools to use and how to integrate them into their comics.
- Iterative Development: The comic books were developed through iterative feedback loops, with students refining their work based on peer and faculty input.
- Critical Reflection: Students engaged in reflective writing to document their experiences with AI, discussing ethical concerns, creative ownership, and the perceived value of AI-generated contributions.

This approach aligns with DiSalvo et al. (2017), who argue that participatory design in education promotes deeper learning by involving students in the creation of learning materials and processes. In this case, the comic book project became both a learning tool and a learning outcome, with students reflecting on the creative process as part of their learning journey.

Moreover, the participatory nature of the project provided a safe environment for students to explore AI's potential and limitations without fear of judgment or failure. This is particularly important given that AI can be intimidating for students unfamiliar with its applications. The supportive, iterative structure of the project demystified AI, transforming it from a source of anxiety into a tool of creative empowerment.

Aligned with Vygotsky's (1978) constructivist theory and the concept of the zone of proximal development (ZPD), students at all four participating institutions indicated how AI tools provided meaningful scaffolding in their creative and academic work. Students actively constructed knowledge by using AI to test ideas, revise narratives, and generate visual representations of theoretical content. These practices reinforce the role of AI not as a substitute for thinking but as a facilitator of deeper, student-led inquiry and reflection.

The project supports recent research advocating for AI as a catalyst for creative expression and narrative design. Students utilized AI to explore storytelling from a managerial and entrepreneurial perspective, with the integration of AI-generated images and narratives aligning with Paivio and Begg's (1971) dual coding theory, which demonstrates how multimodal expression enhances comprehension and recall. Notably, neurodiverse students reported increased comfort and clarity when using AI, supporting its role in expanding equitable access to learning.

All four institutions observed that the technical and creative demands of using AI tools required high levels of coordination, peer feedback, and negotiation, mirroring real-world collaborative settings. Using generative AI in learning can deepen interpersonal learning, while also reinforcing metacognitive and ethical reasoning. Students are increasingly calling for AI literacy training and guidelines on misinformation and stereotype bias, echoing the findings of Larson et al. (2024) on the need to balance automation with critical thinking and ethical awareness.

An emergent contribution from this international, cross-institutional project is its demonstration of participatory design as a driver of cross-cultural learning. Students engaged in shared methodologies, using AI tools to create comics grounded in disciplinary learning while interpreting the assignment through their own cultural and academic lenses.

This variation encouraged students to explore how AI could reflect, reinforce, or challenge their values, such as inclusivity, ethical representation, and collaboration.

The comic assignment seemed to have become a medium through which cultural narratives and local academic norms were negotiated, offering rich opportunities for comparative insight. For instance, students raised concerns about stereotypical AI image outputs and called for more diverse representation, particularly in race and gender. Their suggestions—such as embedding inclusive training datasets and creating custom GPTs grounded in local curricula—seem to underscore a growing awareness of the cultural politics of AI in education and a student-driven desire to make AI both more accurate and socially responsive.

### *4.2. Contribution to Practice*

The present study also offers a series of recommendations for educators interested in incorporating GenAI in university classroom settings, before, during, and after inviting students to engage with scholarly ideas through the use of AI-enabled graphic stories.

#### 4.2.1. Before

Educators should consider the following:

- Plan to offer technical support to all students to level out variation in AI-enabled learning literacy.
- Take extra care to clarify which aspects of the AI-enabled graphic story project are formally assessed and what outputs are expected of the students. The introduction of GenAI into a student project adds a new layer of complexity for students that needs to be carefully managed. Develop rubrics that reflect the novel expectations of the deliverables.
- Ensure they have sufficient knowledge or access to knowledge of the technology to be able to field technical student queries.
- Position the ability to effectively and ethically use AI as a needed life skill. AI will only replace those who do less than the AI.

#### 4.2.2. During

- Build time into student contact time to enable iterative learning, as GenAI-enabled learning may bring with it unforeseen technical, theoretical, or logistical challenges.
- Encourage peer feedback to foster peer-to-peer learning. Students can support one another to improve their projects as well as to learn about the areas of focus covered by others. Consider rewarding students for teaching their GenAI insights and knowledge to their peers.
- Incorporate self-reflection for students to document their progress and learning.
- Use humor as much as possible to help decrease technology anxiety among students who are comparatively less technologically literate.

#### 4.2.3. After

- Have students review their reflections throughout the project and identify key areas of learning and personal growth. Add to this a final reflection on whether they felt an assignment of this nature was impactful.
- Incorporate opportunities for showcasing student-generated graphic stories across the classroom and beyond. Students are likely to spend more time with their GenAI-created comic books than with other academic group projects and may welcome sharing their learning more publicly.
- Challenge students to think about how this method could be applied in their careers (e.g., employee manuals, instructions, pitching ideas, etc.).

### 4.3. Study Limitations and Suggestions for Follow-Up Research

While this study offers valuable insights into the integration of generative AI in higher education, it also has several limitations. First, it does not include longitudinal data, leaving the long-term effects of AI on students' creativity, critical thinking, and academic development unexplored. The findings, based on four distinct university settings, may not be generalizable across all disciplines or institutions. Although the project was effective in individual classrooms, scalable models for broader implementation while maintaining pedagogical integrity remain underdeveloped. Institutional differences in assignment design also influenced the study; some universities graded the comic book project summatively, while others used it as a formative assessment, resulting in varied evaluation rubrics. Another limitation of the study was the fact that pre- vs. post-participation survey data were only available in three out of the four case studies. Disparities in funding further impacted implementation, with some institutions able to provide paid access to generative AI tools while others relied solely on free versions. Finally, post-project survey participation was limited, largely due to its timing near final exams and graduation, which may have introduced nonresponse bias.

This study opens several promising avenues for future inquiry. First, longitudinal research is needed to assess the sustained impact of AI integration on students' creativity, critical thinking, and academic development over time. Second, further exploration is warranted into how AI can be applied in other multimodal and experiential learning contexts, including simulations, performance arts, and design-based disciplines. Finally, there is a need to investigate scalable models for creative AI integration that are adaptable across diverse institutional settings while maintaining pedagogical integrity and student-centered values. Future research should investigate the long-term effects of AI integration on creativity and learning, assess AI's role in other multimodal learning contexts, and explore strategies for scaling creative AI projects across diverse educational settings.

## 5. Conclusions

The findings from this cross-institutional study offer valuable guidance for educators and institutions seeking to meaningfully integrate AI into teaching and learning. By combining creative expression, collaborative inquiry, and digital fluency, the project illustrates how AI may serve as both a tool and a context for deeper pedagogical transformation. The study contributes novel empirical insights into the benefits of GenAI and invites further studies exploring the observed improvements in student engagement, comprehension, and retention.

Educators are encouraged to design assignments that leverage AI's generative and multimodal capabilities, especially in ways that promote collaborative creativity. The use of AI-assisted storytelling, such as comic creation, provides students with opportunities to engage theoretical concepts through visual, narrative, and interactive formats. This multimodal approach not only enhances comprehension and retention but also redefines students' relationships with academic content, transforming passive consumers into active creators.

By combining storytelling, AI technology, and collaborative pedagogy, this project advances a model of AI-enabled active learning that is highly participatory, reflective, and adaptable. It expands the educational literature on generative AI by demonstrating how these tools can be effectively integrated into project-based learning to foster critical thinking, creativity, inclusive collaboration, and cross-cultural dialogue. As students become co-creators of knowledge alongside AI, the classroom transforms into not only a site of content mastery but also one of global experimentation and innovation.

Ultimately, the project emphasizes that AI, when intentionally integrated, enhances educational outcomes, promotes lifelong learning, and requires educators to evolve alongside

technological advances. The core message of this paper to education science researchers and practitioners is: *We won't lose our jobs to AI, but to those who know how to use AI.*

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