Artificial Intelligence in Higher Education: Insights from Early Childhood Education and Nursing Students at a Canadian Polytechnic

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*Original Research Papers** are papers that report on original empirical research with a focus on teaching and learning. Papers may be qualitative or quantitative and include an Abstract, Introduction, Method, Results, Discussion, and Reference section, as well as any tables and/or figures.

Abstract
The integration of artificial intelligence (AI) in higher education (HE) presents both opportunities and challenges to teaching and learning efforts. This pilot study investigates the experiences of HE learners toward generative AI (genAI) at a Canadian polytechnic, focusing on early childhood education (n = 66) and nursing (n = 112) students. Employing a survey methodology, the study utilized an adapted version of the San Diego State University Student AI Survey (Goldberg et al., 2024a). Results revealed limited AI engagement, with low confidence in using genAI and a lack of awareness related to AI developments. Significant differences emerged across several of the survey subscales, with effect sizes ranging from small to large. Overall, findings highlight substantial gaps in AI literacy and understanding of its ethical use, underscoring the need for targeted education, curriculum integration, and institutional guidelines to support learners in informed and responsible AI use.

Introduction

As artificial intelligence (AI) becomes increasingly integrated in higher education (HE), its influence on learners' experiences continues to raise important questions. Emerging research indicates that AI technologies are transforming how learners interact with learning materials, instructors, and academic systems (Brodheim, 2025; Wang et al., 2023). Instructor- and learner-focused literature and research continue to evolve, critically examining the multifaceted challenges posed by AI in HE. Central concerns include the equitable and inclusive integration of AI technologies, their impact on learning, and institutions' preparedness of institutions to manage AI ethically and effectively. Additional emerging issues, such as learner overreliance on AI tools, raise questions about the authenticity of academic work and the erosion of genuine learning. The phenomenon of AI-giarism—the inappropriate use of AI to generate substantial portions of evaluative assignments has intensified instructors' anxieties surrounding academic integrity, originality of work, and learner ethical engagement (Chan, 2023; Lund et al., 2025). Scholars further emphasize the importance of addressing the broader cultural and social dimensions of AI use in educational contexts, underscoring the ethical complexities that extend beyond the

dimensions of AI use and technology implementation (Bauer et al., 2025; Lund et al., 2025; Mrabet & Studholme, 2023; Sevnarayan & Potter, 2024; Wang et al., 2023).

While instructor-focused concerns highlight the systemic challenges of AI in HE, it is equally important to be more aware of learners' points of view on AI as we consider its successful utilization for their learning in HE (Zawacki-Richter et al., 2019). Moreover, this work responds directly to a noted gap in the literature; namely, the limited representation of learner voices in discussions about AI integration in HE. While existing scholarship has documented instructor concerns and institutional challenges, few studies examine how students themselves understand, experience, and navigate AI, specifically generative AI (genAI), in their academic experiences. By capturing learners' perspectives, this study contributes essential insights that help balance instructor-centric discourse. In doing so, it provides a more comprehensive understanding of genAI's ethical, pedagogical, and practical implications, supporting the development of evidence-informed strategies that better reflect and address student needs and realities within health programs.

This article presents the findings of an adapted student survey (Goldberg et al., 2024a) designed to assess learners' perspectives on genAI in several areas: awareness and understanding; experience and usage; perceptions and attitudes; skills, education, and training; and future expectations. This study aimed to examine the perspectives of nursing (n = 112) and early childhood education students (n = 66), currently enrolled at an urban polytechnic institution. The study was guided by the central research question: **How do learners experience the use of genAI in their formal educational journey?**

Literature Review

There is a growing body of research and literature examining the adoption of AI across education, with substantial agreement on its benefits for supporting learning. A consistent finding across studies is that AI-based adaptive learning systems and writing-support tools, like grammar and spelling editors, enhance learners' writing, communication, and task completion (Crain et al., 2024; Priya & Vijayalakshmi, 2024). These tools are credited with helping create more inclusive educational environments by tailoring support to individual learner needs, improving accessibility,

and addressing diverse learning styles (Strielkowski et al., 2024).

However, the literature becomes more divided when addressing genAI tools. While some scholars acknowledge its potential to enhance learning, points of disagreement focus on the risks of overreliance. Several academics caution that defaulting to genAI, because of its ease of use and widespread availability, may undermine the development of essential human-centred skills such as critical thinking, empathy, and nuanced judgement (Bauer et al., 2025). Despite this, there is a broad consensus on the importance of integrating genAI in ways that improve educational outcomes while recognizing its limitations (Carmi, 2025; Contractor & Reyes, 2025).

Research focused on learners' perspectives is still emerging but highlights the significant influence of genAI in HE. Learners widely believe that genAI will shape their future careers, with 79% in one study emphasizing the importance and need of understanding how genAI could be used effectively and ethically (Teng et al., 2022). Yet, students have also expressed concerns about inconsistent expectations among instructors, which may inadvertently contribute to academic integrity issues arising from misunderstandings about appropriate genAI use (Guillén-Yparrea & Hernández-Rodriguez, 2024; Sevnarayan & Potter, 2024).

A recurring point of agreement across studies is the wide variability in students' AI literacy. Teng et al. (2022) found that more than half of Canadian health studies students could not accurately define genAI, often holding misconceptions about is capabilities and reliability. Learners consistently expressed the need to deepen their understanding of genAI, especially its ethical implications. Similar patterns emerge internationally. In higher education (HE), Bangladeshi nursing students described genAI as a second brain that supports their clinical decision-making but also reported frustration with their genAI literacy, emphasizing the need for more intentional genAI-related learning opportunities in their programs (Rony et al., 2025). Further, although both learners and academic staff reported high familiarity with genAI in Aslhamy et al's (2025) study, learners perceived greater benefits from genAI than their instructors did. This finding underscores the need for instructor development that keeps pace with learners' evolving experiences.

Learners' actual uses of genAI are increasingly diverse. Learners believe genAI can retrieve reliable resources and summarize complex information (Meakin, 2024), and many use it for information gathering, response generation, and self-improvement (Cavazos et al., 2025). However, Cavazos et al. (2025) also reported troubling patterns with nearly 80% of learners using genAI to cheat on exams, prioritizing convenience over learning. Additional research shows discrepancies between learners' preferences and genAI's performance. Jayawardena et al (2024) found that dental students preferred feedback from human tutors, even though expert evaluations confirmed that AI provided more accurate and clearer feedback.

Differences between learner and educator experiences are also evident. In Saudi Arabia, nursing students reported using ChatGPT for studying (72.5%), assignments (55%), and research (45%), while educators used it more for research writing (55%), curriculum development, and student support (32.5%). Educators also expressed greater ethical concerns (73%) when compared to learners (67%) (Hashish et al., 2025).

Demographic and disciplinary differences also shape AI use. Rajki et al. (2025) found that women reported AI *illiteracy* and lower genAI usage but a stronger willingness to use genAI in learning when compared to men. Students in humanities and social sciences reported greater genAI use than those in teacher education, and postgraduate students showed broader awareness and higher genAI usage than undergraduates. Cross-nationally, genAI confidence among Chinese students significantly improved creativity, self-efficacy, and learning performance, leading researchers to argue that HE institutions must expand access to genAI resources and treat AI literacy as a strategic institutional priority (Wang et al., 2023).

Collectively, this literature reflects a widespread international interest in genAI and acknowledges both its transformative potential and the ethical, pedagogical, and institutional challenges it raises. Although research on learners' direct experiences with genAI is growing, scholars consistently emphasize the need for deeper investigation into how learners interact with these technologies and how institutions can respond (Zawacki-Richter et al., 2019).

Current Study Nursing and Childhood Education Students

This study aimed to examine the perspectives of nursing and early childhood education students (ECE) currently enrolled at an urban polytechnic institution. It is hoped that the research reported in this article will help contribute to our understanding of how students perceive and use genAI in their academic journeys.

Guided by the central research question, 'How do learners experience the use of generative artificial intelligence in their formal educational journey?', this research aims to enrich the existing body of knowledge by exploring learners' experiences with genAI in academic contexts. Understanding these perspectives is essential for informing strategies that enhance learning through the effective integration of genAI, particularly considering the rapidly evolving educational landscape.

Method
Study Design
The study employed a cross-sectional, survey-based research design utilizing a modified version of the San Diego State University Student AI Survey (SDSU AI Survey) to collect data (Goldberg et al., 2024b). The original SDSU AI Survey, which was first administered in Fall 2023 by the team at San Diego State University, has been completed by over 20,000 participants to date, and has been revised to a fourth version. The instrument evaluated student responses across five subscales: awareness and comprehension of AI, prior experience and usage of AI technologies, perceptions and attitudes toward AI, AI-related skills and educational exposure, and expectations regarding the future impact of AI. Ethical approval for the study was obtained from the host institution's Research Ethics Board.

Materials
The survey consisted of six demographic items: study status (full-time/part-time), study level (diploma/undergraduate degree), year of study (Year 1, 2, 3, 4+), specific program of study (i.e., nursing, early childhood education), age, and gender (see Table 1).

Demographic descriptive statistics were computed using SPSS, alongside subgroup comparisons conducted using non-parametric tests. Specifically, Wilcoxon tests were used for overall comparisons, with Mann-Whitney tests performed

Table 1. Frequencies of Demographics
Table 1a. Study Status

Demographic item	Frequency | Percentage Combined
Full-time	164 (92.1)
Part-time	12 (6.7)
Other*	2 (1.0)

Table 1b. Study Level

Demographic item	Frequency | Percentage Combined
Diploma	92 (51.7)
Undergraduate degree	78 (43.8)
Other**	8 (4.4)

Table 1c. Year of Study

Demographic item	Frequency | Percentage Combined
Year 1	79 (44.4)
Year 2	50 (28.1)
Year 3	30 (16.9)
Year 4+	19 (10.7)

Table 1d. Specific Type of Study

Demographic item	Frequency | Percentage Combined
Nursing	112 (62.9)
Early Childhood Educator	66 (37.1)

Table 1e. Age

Demographic item	Frequency | Percentage Combined
18-25 years	121 (68.8)
26+ years	55 (31.3)
Missing	2 (1.1)

Table 1f. Gender

Demographic item	Frequency | Percentage Combined
Woman	144 (81.4)
Man	28 (15.8)
Non-binary | gender non-conforming	3 (1.7)
Missing	3 (1.7)

to identify statistically significant differences between specific groups. Demographic and descriptive statistics were used to compare the experiences of different groups of students.

Procedure

Five subscales were included on the survey and measured specific items about genAI: awareness and understanding (six items); experience and usage (eight items); perceptions and attitudes (seven items); skills, education, and training (seven items); and future expectations (five items). Respondents rated their agreement on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Surveys were administered to eligible students in October 2024 through the registrar's office via student email.

Sample

Since this was a pilot study, two specific programs were selected for recruitment and were obtained from a large polytechnic Canadian institution. The convenience sample was obtained after emails were sent to all eligible learners (N = 2341) as identified by the Registrar's Office. Early Childhood Education (ECE) (n = 66) and nursing (n = 112) learners were recruited, for a total response rate of 178 students. Most learners were full-time, studying in diploma programs, in their first year of studies, enrolled in nursing studies, and female. Among the demographic variables examined, the only statistically significant difference between the two groups was the level of study, with nursing reporting higher rates of undergraduate studies (42%) compared to their ECE counterparts (12%) (p<.001). Participants were permitted to withdraw from the study without fear of reprisal. All data completed before opting to leave the survey was used in the analysis.

Analysis

The statistical tool employed for analysis was IBM's Statistical Package for Social Science (SPSS) version 29.0.2.0. The reliability of the adapted survey was examined, yielding an overall Cronbach's alpha of .90 (Table 2). All subscales reported at or above .70 and met acceptable reliability standards (Taber, 2018).

Findings
Analysis of the Responses from the Combined Study

Of the original sample (n = 178), 133 participants provided full survey responses. Of these, 90 were enrolled in nursing

Table 2. Subscale Reliabilities for Student Survey Artificial Intelligence

Subscale	Reported Cronbach Alpha
Awareness and Understanding of AI	.80
Experience and Usage with AI	.85
Perceptions and Attitudes toward AI	.70
AI-related skills and Educational Exposure to AI	.77
Expectations regarding AI	.74

programs, while 43 were early childhood education students. The findings for each subscale from this combined sample are reported below.

Approximately 40% of students reported laptops as their primary technology device, while nearly 30% identified smartphones as the second-most-frequently used device. A majority (74%) of the combined sample (n = 133) were uncertain or did not agree that they felt capable in using genAI (M = 2.80, SD = 1.15).

Awareness and Understanding of AI
Most learners reported limited engagement with genAI-related information and practices. Specifically, 91% indicated they were uncertain or did not regularly follow news or updates about genAI, and 89% did not discuss genAI-related issues with peers. While most learners (83%) were aware of institutional expectations regarding genAI use in coursework, a substantial proportion expressed uncertainty about practical application, with 77% not knowing how to use prompts to obtain academic responses, and 74% not believing they could write an effective prompt. Furthermore, 63% were uncertain or lacked confidence in evaluating genAI-generated outputs. Knowledge gaps extended to foundational concepts, with 90% uncertain about how algorithms function and 82% unsure which genAI tools to use for academic tasks (See Table 3).

Experience and Usage of AI
A substantial proportion of learners reported limited integration of AI into their academic practices. Ninety percent indicated uncertainty or infrequent use of AI applications in coursework, and 87% were uncertain or did not perceive

AI tools as essential for academic success. Regarding academic integrity, 46% were uncertain or disagreed that they consistently acknowledged AI use in their work, and 36% were uncertain or disagreed about the necessity of verifying the validity and accuracy of AI-generated responses. As well, 58% expressed uncertainty or disagreement that AI had a positive impact on their learning experiences. Nearly three-quarters (75%) reported being uncertain or lacking knowledge on how to construct effective prompts and evaluate AI outputs. Finally, 89% stated they refrained from using AI in academic work when its use was not permitted (see Table 3).

Perceptions and Attitudes Towards AI
Learners expressed uncertainty regarding ethical, legal, and societal implications of genAI. In fact, 75% were uncertain or did not believe there were issues with genAI's adherence to copyright laws, and 63% reported similar uncertainty regarding its impact on personal privacy. Fewer learners (36%) were uncertain or did not believe that AI would enhance creativity and innovation. Trust in AI-generated information was notably low, with 71% uncertain or lacking confidence in its accuracy, while 30% felt uncertain or unconcerned about its ethical use. Furthermore, 80% were uncertain or disagreed that genAI could reduce human biases. Perceptions of genAI's influence on job security were mixed, with 36% reporting uncertainty and 43% expressing concern. With educational benefits, 44% were uncertain about their skepticism toward genAI, and 26% explicitly reported skepticism (see Table 3).

Skills, Education, and Training
A considerable proportion of learners indicated limited interest or uncertainty regarding genAI integration in their education. Specifically, 72% reported being either unsure or uninterested in receiving genAI-related training with their coursework, with 69% expressing comparable views about accessing genAI-related resources provided by the polytechnic institution. An equivalent percentage of learners also reported uncertainty or disagreement with the statement that their current curriculum lacked exposure to genAI. An overwhelming number of students (95%) were uncertain or disagreed that their teachers encouraged their use of genAI in their academic work. Seventy-nine percent of learners reported uncertainty or disagreed that they were seeking opportunities to learn more about genAI with 91% feeling uncertain or in disagreement that the polytechnic offered adequate genAI training opportunities (see Table 3).

Table 3. Subscale Descriptive Statistics

Table 3a. Awareness and Understanding of AI

Subscale (Items)	Mean	Standard Deviation
I regularly follow updates on AI	2.10	1.19
I discuss AI topics with classmates	2.02	1.12
I know the expectations for AI use in my class	4.18	1.22
I know how to prompt AI to get answers for my course work and assignments	2.48	1.25
I know how algorithms work in AI	2.02	1.27
I know which AI to use for my academic work	2.17	1.28

Table 3b. Experience and Usage of AI

Subscale (Items)	Mean	Standard Deviation
I regularly use AI apps in my courses	1.89	1.21
AI tools are essential for my academic success	1.95	1.21
I always acknowledge the use of AI in my academic work	2.88	1.45
I feel it is necessary to verify the validity and accuracy of the responses that AI generates	3.74	1.41
I know how to write an effective prompt	2.68	1.26
I know how to evaluate AI outputs	2.56	1.28
AI has positively affected my learning experience	2.59	1.30
I use AI in my academic work even when it is not permitted	1.35	.80

Table 3c. Perceptions and Attitudes Towards AI

Subscale (Items)	Mean	Standard Deviation
I worry that AI may not adhere to copyright laws	3.29	1.34
I worry about AI impacting privacy	3.41	1.40
AI can enhance creativity and innovation	3.14	1.54
I trust AI to provide accurate information	2.32	1.10
The ethical use of AI is a concern for me	3.31	1.28
AI has the potential to reduce human biases	2.78	1.13
I have concerns about AI's impact on job security	3.32	1.24

Future Expectations of AI

Nearly 60% of learners either disagreed or expressed uncertainty about genAI becoming an essential part of most professions. Furthermore, 35% were uncertain whether genAI would play a significant role in their own profession, while 22% believed it would not. Approximately 23% of learners reported uncertainty regarding whether genAI would negatively impact human creativity, while 55% expressed concern about potential effects. Likewise, a greater proportion of learners reported concern about genAI's long-term societal impact (38%) compared to those who felt uncertain (25%). More specifically, learners worried about the unforeseen risks that unregulated genAI carried (52%) (see Table 3).

Mann Whitney U Test Results for Significant Findings

Six items across the five subscales showed statistical significance between nursing and ECE students. The

Table 3d. Skills, Education, and Training

Subscale (Items)	Mean	Standard Deviation
I am interested in formal training in AI through coursework	2.75	1.34
I am interested in receiving formal training in AI through resources available at Humber	2.80	1.78
My curriculum lacks adequate exposure to AI	2.89	1.20
My Humber teachers encourage the use of AI in coursework	1.78	.98
I am actively seeking opportunities to learn more about AI	2.36	1.25
Humber offers adequate AI training opportunities	2.22	1.79
I am skeptical about the benefits of AI in my education	2.92	1.15

Table 3e. Future Expectations of AI

Subscale (Items)	Mean	Standard Deviation
AI will become an essential part of most professions.	3.14	1.27
I worry about AI negatively affecting human creativity	3.57	1.33
I have concerns about AI's long-term societal impact	3.62	1.24
Unregulated AI development may lead to unforeseen risks	3.76	1.27
AI will play a significant role in my future career	2.56	1.24

statistically significant items and their corresponding effect sizes are reported here so that the existing differences can be noted along with the magnitude of such differences. Mann Whitney U tests were employed to examine differences between groups, allowing for the assessment of statistical significance for items within each subscale (p values). Effect sizes were assessed using Cohen's criteria with r=.1 (small effect), r=.3 (medium effect), and .5 (large effect) (Cohen, 2002).

Regarding *student experience and usage of AI*, both groups indicated disagreement with the statement that they regularly used genAI applications in their coursework, however, ECE students expressed a stronger level of disagreement compared to nursing students. A Mann-Whitney U test revealed significant difference between nursing and ECE students with the regular use of applications in coursework, p<.021 and a small effect size of r=.2.

Within the *perception and attitudes subscale*, nursing students tended to disagree with the statement that genAI has the potential to reduce human biases (p<.03), whereas ECE students were more likely to express uncertainty. The differences on this item had a small effect (r=.20). Within the *skills, education, and training subscale*, both groups

generally disagreed with the statement that they actively sought opportunities to learn more about genAI, with ECE students reporting significantly stronger disagreement than nursing students with small effect (p<.05, r=.05).

Regarding *future expectations*, nursing students were uncertain about genAI becoming an essential component of most professions, while ECE students were more likely to disagree (p<.008, r=.23). Similarly, both groups disagreed that genAI would play a significant role in their own careers, with ECE students expressing stronger disagreement compared to nursing students with small effect (p<.018, r=.20).

Discussion

The findings reveal substantial gaps in learners' awareness, confidence, and practical engagement with genAI tools. Despite widespread access to technology, where laptops and smartphones were the most frequently used devices, a large number of learners reported uncertainty or disagreement regarding their capability to use genAI effectively. This aligns with prior research indicating that technological access does not necessarily translate into digital competence (Redecker, 2017).

Awareness and Understanding

The majority of learners demonstrated limited engagement with genAI-related information and practices, with a large number not following genAI news, nor discussing genAI issues with peers. These findings echo studies suggesting that low exposure to genAI concepts contributes to misconceptions and ineffective or underutilized use of genAI for learning (Luckin et al., 2016). Significant uncertainty regarding prompt creation and algorithmic understanding underscores the need for foundational AI literacy within curricula with opportunities for threading or scaffolding literacy to increase learner sophistication with genAI use (Holmes et al., 2022).

Experience and Usage

Learners reported minimal integration of genAI into academic work, with a large proportion indicating infrequent use and not perceiving genAI as essential for their academic success. The reluctance may stem from ethical concerns and lack of confidence in evaluating genAI outputs, consistent with literature emphasizing the importance of critical genAI evaluations skills (Zawacki-Richter et al., 2019), although learners in this study reported uncertainty about copyright and ethical concerns related to genAI. Uncertainty related to acknowledging genAI use does raise academic integrity considerations and concerns about honest ethical use of genAI to complete academic work.

Perceptions and Attitudes

Learners expressed skepticism toward genAI's ethical and societal implications, with a larger proportion noting they felt uncertain or disagreed that genAI would reduce human bias. These attitudes mirror broader debates on algorithmic fairness, bias, and transparency (Floridi & Cowls, 2019; Liu & Bates, 2025). Addressing these perceptions through targeted education on ethical principles related to the use of genAI, may help mitigate misconceptions and support the ethical and honest use of genAI to support learning.

Skills, Education, and Training

Both groups disagreed that they actively sought opportunities to learn more about genAI, with ECE students reporting stronger disagreement than their nursing counterparts. This is consistent with their reports that they are not reading about genAI or talking about genAI with classmates. This lack of initiative suggests that passive approaches to genAI education may be insufficient. Literature advocates for proactive strategies such as embedding genAI literacy into curricula and offering experiential learning opportunities guided by instructors with genAI competence (Luckin et al., 2016, UNESCO, 2021). It is important to note that learners perceived little support from their instructors in using genAI, which may have influenced their responses.

Future Expectations

Nursing students were more uncertain about genAI becoming essential in most professions than their ECE counterparts. Similarly, both groups doubted genAI's role in their own careers with ECE students expressing stronger disagreement. These findings indicate a disconnect between student perceptions and industry trends, as genAI is projected to influence diverse sectors (Brynjolfsson & McAfee, 2017).

As in the Teng et al. (2022) study, the findings from this study reveal a gap in learners' awareness and understanding of genAI. Despite learners' reports of their institution's clarity on genAI usage, learners reported low confidence in using genAI tools, writing effective prompts, evaluating outputs, and understanding algorithms. These findings underscore the need for targeted educational interventions, including a focused integration of AI literacy efforts in the curriculum, opportunities for peer collaboration and genAI-focused dialogue, and reinforcement of institutional guidelines for the ethical use of genAI. AI literacy has become an important issue to consider with the rapid integration of genAI across industries, including business, healthcare, and education and the recognition that it is an "integral part of a digital ecosystem" (Biagini, 2025, p. 2). The dangers of interacting with genAI in an uninformed way create risks to its ethical use as we consider privacy, biases, surveillance, access, and accuracy of content so AI literacy becomes as important as other literacy skills. AI literacy must encompass a set of competencies that extend beyond technical proficiency toward a capacity for critical evaluation and a deeper appreciation for the societal implications of genAI. A multidimensional approach helps to ensure that engagement with genAI is informed, current, responsible, and aligned with professional and ethical standards. Embedding AI literacy into curricula is essential for fostering informed and discerning users. An t online educational module for students has been created at the host institution, which covers essential content related to genAI, like foundations of AI tools, implications of AI use for studies, work, daily life, and strategies for the responsible use of AI (Humber & Humber Guelph Library, n.d.). The module, created through Library

Services, allows learners the convenience of completing content at their own pace in a virtual manner. Currently, some programs provide this learning opportunity to learners within their programs. This is a great example that meets a learner AI literacy need but should be adopted in a more deliberate manner across the whole institution.

The data indicates that learners do not regularly use genAI applications in their coursework and do not perceive these tools as essential to their academic success. Learners expressed uncertainty about acknowledging genAI use in academic work, while simultaneously recognizing the importance of verifying the accuracy of AI-generated content. These findings suggest a complex relationship between student perceptions, ethical considerations, and practical engagement with genAI technologies. It is important that educators promote the value of genAI as a learning enhancement tool so that students receive guided and focused opportunities to work with genAI. Structured hands-on training with genAI tools through simulation-based opportunities could provide meaningful, practical experiences. Learners shared that they do not consistently acknowledge using genAI in their academic work, so that its ethical use should be embedded into instruction with expectations that are clearly explained and discussed (Zhang et al., 2024). This could be because of the hesitancy to use such applications and may improve with more exposure and supported experiences in exploring genAI capabilities in their learning.

Data from this study revealed a complex, cautious perspective among learners regarding the integration of genAI in educational contexts. While they expressed moderate uncertainty about genAI's adherence to copyright laws, its impact on privacy, and its potential to foster creativity and innovation, they had a notable lack of trust in genAI's accuracy and skepticism about its ability to reduce human biases. These findings align with broader concerns in the literature, suggesting implications for educational practice and policy. Uncertainty about copyright laws is noted in recent academic discussions and highlights the risks of genAI training lending to unintentional reproduction of copyrighted material (Zhou et al., 2024). Educators should incorporate explicit instruction on intellectual property rights and what ethical, responsible use of AI-generated content looks like. It is important to consider findings in this study with learners who, like students in the Guillén-Yparrea and Hernández-Rodríquez (2024) study,

noted negative attitudes from their instructors about the use of genAI in their academic work. Instructor professional development must be considered and run in tandem with the work initiated with learners so that approaches to genAI use are more positive and grounded. Negative instructor perspectives and approaches to genAI may be affecting the learners in this study and influencing their lack of interest in instruction about genAI by the home institution or their instructors. Learners in this study were unsure about privacy issues as they related to the use of genAI. Informed concerns related to personal privacy reflect a growing awareness of how genAI systems collect and process user data. It is a concern that learners remain uninformed or unaware of such issues. The use of genAI in education must be accompanied by robust data governance policies that prioritize learner consent (Holmes & Tuomi, 2022). Institutions should adopt genAI tools that comply with privacy regulations to ensure learners are informed about how their data is used. Enterprise adopted applications that protect learners as they employ genAI is one approach that may support their learning and provide less risk to their usage of such applications. Unlike the students in the Wang et al. (2023) study, learners were also uncertain about genAI's role in enhancing creativity and innovation and while Luckin et al., (2022) suggest AI can support creative processes, others caution that over-reliance on genAI may stifle original thinking. Educators could address this by positioning genAI as a co-creative partner–encouraging students to use genAI with critical reflection and revision. Low learner scores related to trust in genAI's accuracy indicate skepticism. Selwyn (2023) notes that systems can produce plausible but incorrect information, so that learners should be taught to critically evaluate the veracity of genAI outputs and cross-reference findings with credible sources. Learners were unsure about the ethical implications of genAI and did not agree genAI would reduce human biases. Although this study did not examine instructors' perspectives on the ethical use of genAI, the uncertainty expressed by learners aligns with findings reported by Hashish et al. (2025). These findings underscore the need for ethical education that addresses algorithmic bias, fairness, and accountability as just a few of the topics for concern and consideration. Case-based learning and discussions on real-world genAI failures can help learners understand the limitations and responsibilities associated with genAI use (Williamson & Eynon, 2020). Learners expressed uncertainty about genAI's impact on job security, which may reflect broader societal anxieties about automation and workforce displacement. Institutions

should respond by emphasizing the development of genAI-resilient skills such as critical thinking, ethical reasoning, and adaptability (OECD, 2021). Framing genAI as a tool or digital assistant that augments rather than replaces human capabilities is an important effort to include in teaching–learning settings. Unlike the learners in Rony et al.'s (2025) study, and despite the growing relevance and need for genAI literacy in both professional and academic contexts, learners in this study reported low interest in formal training, with limited awareness of existing institutional resources, and minimal encouragement for genAI usage from instructors. This might suggest a disconnect between the potential of genAI usage in education and its perceived value among learners at the host institution. Learners were not interested in receiving formal genAI training through their coursework or through institutional resources. Zawacki-Richter et al. (2019) noted that students often view genAI as a peripheral to their core studies unless it is directly linked to their discipline. Institutions should embed genAI education within discipline-specific contexts. Learners' sense that the institution did not offer adequate genAI training opportunities, and its use was not encouraged by instructors, demonstrates critical barriers to the successful adoption of genAI in learning. Instructor modeling of genAI influences successful student adoption in learning environments (Chiu et al., 2023). Therefore, professional development programs should equip instructors with the skills and confidence to integrate genAI tools into their teaching practices, with the aim of normalizing their use and demonstrating their educational value. Interestingly, learners disagreed that their curriculum lacked exposure to genAI, suggesting that genAI may already be present but not clearly communicated or recognized. The disinterest of learners in this study to seek opportunities to learn more about genAI or talk about it with others may indicate a lack of confidence or perceived relevance in its use. Informal learning environments, including peer-led workshops and learner discussion forums, may foster curiosity and reduce the intimidation factor associated with formal training (Akgun & Greenhow, 2022). Such settings may allow students to explore genAI in a low-pressure, collaborative context. Learners in this study did not feel skeptical about the benefits of genAI in education, which may present an opportunity. Institutions can leverage this positive attitude by showcasing real-world examples and success stories where genAI has enhanced learning outcomes. Storytelling and case-based learning are powerful tools for building interest and trust in emerging technologies (Williamson & Eynon, 2020).

There is evidence to support the notion that genAI is playing a transformative role across many sectors, including business, healthcare, and education, to name a few. It has been described as the Fourth Industrial Revolution, so it is the responsibility of those in HE to adapt and prepare graduates to contribute in a meaningful way to genAI-driven work environments (Al-haimi et al., 2021). The findings in this study reveal a degree of uncertainty among learners regarding the role of genAI in their future careers and its broader social implications. Unlike the learners in the Teng et al. (2022) study, learners were unsure whether genAI would be essential in their professions, whether it would negatively affect human creativity, and expressed uncertainty about its long-term social impact. They were less confident that genAI would play a significant role in their future careers. These findings align with broader concerns in the literature about the ethical, creative, and regulatory dimensions of genAI. GenAI use raises questions about the erosion of human skills such as creativity, empathy, and critical thinking (Hu et al., 2024). The uncertainty expressed by learners may reflect a lack of exposure to genAI's real-world applications and the absence of structured opportunities to critically engage with its implications. Apart from case-based scenarios, as previously discussed, work integrated learning experiences are an important part of professional studies and will help learners to appreciate how genAI is reshaping operations, decision-making, and innovation in real-time situations. Creating work integrated learning opportunities along with interprofessional learner opportunities, facilitated through instruction, may also support learners to appreciate and develop skills to help them navigate ethical dilemmas, collaborate with intelligent systems, and adapt to rapidly evolving technologies in a way that is collaborative and helpful in work settings.

Limitations

The pilot nature of the study resulted in a relatively small number of participants (*n* = 178, 133 complete responses), and uneven representation between ECE (*n* = 43) and nursing (*n* = 90) students. This limits the generalizability of the findings and increases the possibility that results may reflect program-specific dynamics rather than broad student perspectives. Survey data were collected entirely through self-reported measures, which are subject to social desirability or recall bias. These factors may have influenced students' assessment of their familiarity, comfort, and attitudes towards AI. While the survey provided valuable insights, the depth and detail of responses could be elevated

through qualitative feedback, to further explore significant variations in responses. Additionally, while the survey aimed to explore students' perceptions towards AI, it could be strengthened by incorporating questions regarding student recommendations for support, training, or future steps to improve overall AI knowledge and interactions.

Recommendations

While this study sought to learn more about learners' perspectives on genAI in their academic experiences, it is important to consider and highlight recommendations that describe how instructors can support learners in their quest to use genAI in an ethical way to support their learning. Instructors play a pivotal role in shaping learners' genAI literacy and guiding them toward ethical and informed use of genAI. This responsibility extends beyond technical proficiency to include fostering critical thinking, academic integrity, and responsible engagement with genAI tools and content. To achieve these goals, institutions must prioritize structured professional development that equips instructors with both the technical and pedagogical competencies needed to integrate genAI into teaching and learning in ways that preserve educational integrity and enhance learning outcomes (Holmes et al., 2022; Liu & Bates, 2025). Professional development should include targeted programs that meet the changing needs of instructors to include competency in using various applications; understand ethical considerations like bias, privacy, copyright, and academic integrity; and pedagogical strategies that will help instructors incorporate genAI to support and enhance learning while preserving human skills and abilities (Luckin et al., 2016). Instructors should also model responsible genAI use in their own teaching practices, demonstrating transparency and ethical decision-making. This modelling reinforces institutional values and sets clear expectations for learners (Zawacki-Richter et al., 2019).

Institutions must provide clear, transparent policies on acceptable genAI use that are sensitive to change and need. These policies must balance innovation with safeguards for academic integrity, aligning with existing frameworks such as the CRAFT model (culture, rules, access, familiarity, trust) proposed by Liu and Bates (2025).

Curriculum must have genAI thoughtfully and purposefully integrated with AI ethics through case studies, scenario-based learning, critical discussions, learning modules, specialty sessions, communities of practice, and other educational endeavours. These kinds of educational approaches will help meet learners needs around structured activities for learning while offering scaffolded opportunities to build knowledge, judgment, and ethical competencies around navigating increasingly complex genAI-enhanced academic, professional, and societal environments.

It is important that institutions create spaces for dialogue for learners and instructors. GenAI ambassador programs, peer-to-peer workshops, and co-designed learning experiences can foster cultures of shared responsibility and ethical engagement with AI (Liu & Bates, 2025). Offering micro-credentials and certifications that emphasize AI literacy, knowledge and content related to ethical use, and critical thinking skills can enhance learner capabilities andconfidence, as well as signal readiness for a genAI-driven workforce (Brynjolfsson & McAfee, 2017; Redecker, 2017).

Conclusion

Gains have been made since the initial introduction of genAI into the mainstream in 2022. It is important for the educational sector to continue to explore and challenge our ways of thinking and teaching to include genAI so that our students continue to learn and engage with it in meaningful ways. Approaching its adoption as a shared responsibility will support our responses to be more proactive rather than reactive. In turn, this will support a proactive, ethical, and informed integration that supports learning while preserving academic integrity and its honest use.

Importantly, because this study involved early childhood educator and nursing students, two groups whose future practice directly affects potentially vulnerable populations, the insights gained offer substantial practical value. Embedding genAI and AI ethics into their education will strengthen their ability to critically evaluate genAI information, help them to continue to learn, and build their ability to make ethically sound decisions with the use of these emerging technologies within childcare and healthcare contexts. As these learners transition into professional roles, such preparation will enhance their capacity to support safe, equitable, and informed genAI use in their respective fields, ultimately improving outcomes for children, families, patients, and communities they will receive their care.

Conflict of Interest

The writers have no conflicts of interest.

Note on Contributors

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References

Akgun, S., & Greenhow, C. (2022). Artificial intelligence in education: Addressing ethical challenges in K-12 Settings. *AI and Ethics*, 2, 431–440. https://doi.org/10.1007/s43681-021-00096-7

Al-haimi, B., Hujainah, F., Nasir, D., & Alhroob, E. (2021). Higher education institutions with artificial intelligence: Roles, promises, and requirements. In A. Hamdan, A.E. Hassanien, R. Khamis, B. Alareeni, A. Rassazue, B. Awwad, B. (Eds.). *Applications of Artificial Intelligence in Business, Education, and Healthcare,* (pp. 221–238), Springer, Cham. https://doi.org/10.1007/978-3-030-72080-3_13

Alshamy, A., Al-Harthi, A., & Abdullah, S. (2025). Perceptions of generative AI tools in higher education: Insights from students and academics at Sultan Qaboos University. *Education Sciences, 15*(4), 501. https://doi.org/10.3390/educsci15040501

Bauer, E., Grieff, S., Graesser, A., Scheiter, K., & Sailer, M. (2025). Looking beyond the hype: Understanding the effects of AI on learning. *Educational Psychology Review, 37*(45), 1–27. https://doi.org/10.1007/s10648-025-10020-8

Biagini, G. (2025). Towards an AI-literature future: A systematic literature review exploring education, ethics, and applications. *International Journal of Artificial Intelligence in Education*, 35, 2616–2666. https://doi.org/10.1007/s40593-025-00466-w

Brynjolfsson, E. & McAfee, A. (2017, July 18). *The business of artificial intelligence*. Harvard Business Review. https://hbr.org/2017/07/the-business-of-artificial-intelligence

Brodheim, T. (2025, May 12). Shaping the future of learning: AI in higher education. *EDUCAUSE REVIEW*. https://er.educause.edu/articles/sponsored/2025/5/shaping-the-future-of-learning-ai-in-higher-education

Carmi, G. (2025). Learning with generative AI: An empirical study of students in higher education. *Educ. Sci., 15*(12), 1696. https://doi.org/10.3390/educsci15121696

Cavazos, J., Hauck, K., & Bain, C. (2025). ChatGPT goes to college: Exploring student perspectives on artificial intelligence in the classroom. *Society for the Teaching of Psychology, 52*(3), 357–368. https://doi.org/10.1177/00986283241268829

Chan, K. (2023, June 10). Is AI changing the rules of academic misconduct? An in-depth look at students' perceptions of 'AI-giarism'. *Computer Science. Computers and Society,* Ithaca Cornell University. http://arxiv.org/abs/2306.03358

Chiu, T., Moorhouse, B., Chai, C., & Ismailov, M. (2023). Teacher support and student motivation to learn with artificial intelligence (AI) based chatbot. *Interactive Learning Environments, 32*(7), 3240–3256. https://doi.org/10.1080/10494820.2023.2172044

Cohen, J. (2002). *Statistical power analysis for the behavioural sciences* (3rd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Crain, C., Ewing, A., Billy, I., & Anush, H. (2024). The advantages and disadvantages of AI in higher education. *The Business and Management Review, 15*(3), 168–178. https://doi.org/10.24052/BMR/V15NU03/ART-16

Floridi, L. & Cowls, J. (2019). A unified framework of five principles for AI society. *Harvard Data Science Review, 1*(1), 2–15. https://doi.org/10.1162/99608f92.8cd550d1

Goldberg, D., Frazee, J., Hauze, S., Knobel, C., Sheehan, J., & Sobo, E. (2024a, February 29). *San Diego State University artificial intelligence survey instrument*. The California State University ScholarWorks. https://scholarworks.calstate.edu/concern/publications/qj72pf459

Goldberg, D., Sobo, E., Frazee, J. & Hauze, S. (2024b). Generative AI in higher education: Insights from a campus-wide student survey at a large public university. In J. Cohen & G. Solano (Eds.), *Proceedings of Society for Information Technology & Teacher Education International*

Conference (pp. 757–766). Las Vegas, Nevada, United States: Association for the Advancement of Computing in Education (AACE). https://www.learntechlib.org/primary/p/224037/

Guillén-Yparrea, N. & Hernández-Rodríguez, F. (2024). Unveiling generative AI in higher education: Insights from engineering students and professors. *IEEE Global Engineering Education Conference (EDUCON)*, 1–5. https://doi.org/10.1109/EDUCON60312.2024.10578876

Hashish, E., Alsayed S., & Razek, N. (2025). Embracing Ai in academica: A mixed methods study of nursing students' and educators' perspectives on using ChatGPT. *PLOS ONE, 20*(7): e0327981. https://doi.org/10.1371/journal.pone.0327981

Holmes, W., Porayska-Pomsta, K., Holstein, K., Sutherland, E., Baker, T., & Shum, S. B. (2022). Ethics of AI in education: Towards a community-wide framework. International Journal of Artificial Intelligence in Education, 32, 5040526. https://doi.org/10.1007/s40593-021-00239-1

Holmes, W. & Tuomi, I. (2022). State of the art and practice in AI in education. *European Journal of Education, 57*(4), 542–570. https://doi.org/10.1111/ejed.12533

Hu, S., Fengfeng, K., Vyortkina, D., Hu, P., Luby, S., O'Shea, J. (2024). Artificial intelligence in higher education: Applications, challenges, and policy development and further considerations. In L.W., Perna (Ed.). *Higher Education: Handbook of Theory and Research*, (pp. 1–52). https://doi.org/10.1007/978-3-031-51930-7_13-1

Humber and Guelph-Humber Libraries. (nd). *Algorithms and you*. Humber Libraries. https://library.humber.ca/tutorials/ai-algorithms-you

Jayawardena, C., Gunathilake, Y., & Ihalagedara, D. (2025). Dental students' learning experience: Artificial intelligence vs human feedback on assignments. *International Dental Journal, 10*(75), 100–108. https://doi.org/10.1016/j.identj.2024.12.022

Luckin, R., Cukurova, M., Kent, C., & du Boulay, B. (2022). Empowering educators to be AI-ready. Computers and Education: *Artificial Intelligence, 3*, 100076. https://doi.org/10.1016/j.caeai.2022.100076

Liu, D. & Bates, S. (2025). *Generative AI in higher education. Current practices and ways forward*. Association of Pacific Rim Universities. https://www.apru.org/resources_report/whitepaper-generative-ai-in-higher-education-current-practices-and-ways-forward/

Lund, B., Lee, T.H., Mannuru, N., & Arutla, N. (2025). AI and academic integrity: Exploring student perceptions and

implications for higher education. *Journal of Academic Ethics, 23*(1), 1–21. https://doi.org/10.1007/s10805-025-09613-3

Meakin, L. (2024). Exploring the impact of generative artificial intelligence on higher education students' utilization of library resources: A critical examination. *Information Technology and Libraries, 43*(3), 1–13. https://doi.org/10.5860/ital.v43i3.17246

Mrabet, J. & Studholme, R. (2023, March 9). *GPT: A friend or foe?* Conference Proceedings, In the International Conference on Computational Intelligence and Knowledge Economy (ICCIKE), Dubai, United Arab Emirates. https://doi.org/10.1109/ICCIKE58312.2023.10131713

OECD. (2021). *State of implementation of the OECD AI principles: Insights from national AI policies*, OECD Digital Economy Papers, 311, OECD Publishing, Paris. https://doi.org/10.1787/1cd40c44-en

Priya, D. & Vijayalakshmi, R. (2024). Grammar correction AI tools for English language teachers in higher education. *IJIRT, 11*(5), 380–383. https://doi.org/10.64643/IJIRTV11I5-168294-459

Rajki, Z., Dringó-Horváth, I., & Nagy, J. (2025). Artificial intelligence in higher education: Students' artificial intelligence use and its influencing factors. *Journal of University Teaching & Learning Practice, 22*(2), 1–21. https://doi.org/10.53761/j0rebh67

Redecker, C. (2017). *European framework for digital competence of educators: DigComEdu*. Publications Office of the European Union. https://dx.doi.org/10.2760/159770

Rony, M., Ahmad, S., Das, D., Tanha, S., Deb, T., Akter, M., Khatun, M., Khalil, M., Peu, U., Parvin, M., Alrazeeni, D., & Akter, F. (2025). Nursing students' perspectives on integrating artificial intelligence into clinical practice and training: A qualitative descriptive study. *Health Science Reports*. 8:370728. https://doi.org/10.1002/hsr2.70728

Selwyn, N. (2023). Teaching in the age of artificial intelligence. In B. Bloomfield (Ed.), *Education in the 2030s: The big education challenges of our times*; No. 2 (pp. 16–18). Monash University. https://doi.org/10.26180/25583571.v1

Sevnarayan, K. & Potter, M. (2024). Generative artificial intelligence in distance education: Transformations, challenges, and impact on academic integrity and student voice. *Journal of Applied Learning & Teaching, 7*(1), 1–11. https://doi.org/10.37074/jalt.2024.7.1.41

Strielkowski, W., Grebennikova, V., Lisovskiy, A., Rakhimova,

G., & Vasileva, T. (2024). AI-driven adaptive learning for sustainable educational transformation. *Sustainable Development, 33*(2), 1921–1947. https://doi.org/10.1002/sd.3221

Taber, K. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Res Sci Educ, 48*, 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Teng, M., Singla, R., Yau, O., Lamoureux, D., Gupta, A, Hu, Z., Hu, R., Aissious, A., Eaton, S., Hamm, C., Hu, S., Kelly, D., MacMillan, K., Malik, S., Mazzoli, V., Ten, Y., Laricheva, M., Jarus, T., & Field, T. (2022). Health care students' perspectives on artificial intelligence: Countrywide survey in Canada. *JMIR Medical Education, 8*(1), e33390. https://doi.org/10.2196/33390

Wang, S., Sun, Z., & Chen, Y. (2023). Effects of higher education institutes' artificial intelligence capability on students' self-efficacy, creativity and learning performance. *Education and Information Technologies, 28*(5), 4919–4939. https://doi.org/10.1007/s10639-022-11338-4

Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology, 45*(3), 223–235. https://doi.org/10.1080/17439884.2020.1798995

Zawacki-Richter, O., Marin, V., Bond, M., & Gouverneur,

F. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators? *International Journal of Educational Technology in Higher Education, 16*(39), 1–27. https://doi.org/10.1186/s41239-019-0171-0

Zhang, X., Zhang, P., Shen, Y., Liu, M., Wang, Q, Gaševic, D., & Fan, Y. (2024). A systematic literature review of empirical research on applying generative artificial intelligence in education. *Frontiers of Digital Education 1*(3), 223–245. https://doi.org/10.1007/s44366-024-0028-5

Zhou, X., Zhang, J., & Chan, C. (2024). Unveiling students' experiences and perceptions of artificial intelligence usage in higher education. *Journal of University Teaching and Learning Practice, 21*(6), 126–145. https://doi.org/10.53761/xzjprb23