

Bridge or Barrier? How Digital Competence Predicts Student Attitudes Toward Generative AI Ethics and Usage

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Abstract

With the rapid rise of Generative Artificial Intelligence (GenAI), it is important to examine how GenAI, digital competency, and ethics intersect. The Philippines has few studies that analyze these three categories together; this study seeks to understand better how they interact. It used Structural Equation Modelling to conduct a quantitative correlational investigation on this topic. Stratified random sampling was used to poll 498 college students from diverse institutions in Isabela, Philippines, to ensure demographic and intellectual diversity. Students' digital competencies, GenAI adoption, and ethical concerns were assessed via an online questionnaire. The study found that students exhibited high digital competence ($M = 3.48$) and a moderate desire to employ Generative AI ($M = 3.24$), but moderate ethical concerns ($M = 3.15$). Males were more willing to use GenAI than females ($p = 0.011$), and fourth-year students exhibited greater ethical concerns and a greater willingness than first-year students. The regression study showed that willingness to use and moral concerns explained 33.2% of the variance in digital competence. Overall, students are technically ready to use GenAI, but their digital competence and ethical application of it remain lacking. Higher education institutions should offer comprehensive professional development and an inclusive curriculum that integrates technical instruction with a strong moral foundation. The gender gap and changing requirements of students at different year levels should be the focus of these activities.

Keywords: Generative Artificial Intelligence (GenAI), digital competence, higher education, ethical concerns, technology adoption

1. Introduction

Generative Artificial Intelligence (GenAI)—especially in higher education—is an intriguing trend in the Philippines. As educators, students, and institutions negotiate this new world, digital competency and willingness to adopt GenAI are crucial. Digital competence—the skills needed to use digital tools efficiently—is essential for the uptake and integration of GenAI into education.

Technology in education requires additional teacher training to boost digital competency and student learning, especially with generative AI. To employ GenAI effectively in learning situations, Hazaimah & Al-Ansi (2024) advised teachers, instructors, and professors to integrate technical and critical skills. Kubota et al. (2025) found that inadequate digital literacy and a strong belief that classical AI and GenAI are the biggest barriers to GenAI implementation. This situation emphasizes the need for targeted digital literacy training for students and faculty in Philippine higher education.

According to Aghaee et al. (2024), educators who create curricula and evaluate students must form their own opinions on AI technology. They believe educators' current methods for teaching and fostering researchers' academic integrity will significantly affect the application of AI in education. It also addresses two risks to educators' scholarly integrity and the use of AI technologies such as GenAI. Raney (2025) adds that teachers

need systematic and disciplined training in digital literacy and ethics for AI to work in education. He emphasizes that teachers' AI literacy needs institutional and pedagogical support. Teachers' AI skills and preparation affect their use and comfort with AI. According to these findings, all instructors require a comprehensive professional development program with digital and ethical components.

Caner (2025) examined how undergraduate students feel about utilizing AI-driven applications to help them write academic papers. This study used a revised version of UTAUT2, the most used technology acceptance model. The results reveal that pupils with high digital competency have a far more positive attitude toward AI technology and must be taught how to enhance their digital abilities to benefit from AI. Bhimavarapu (2025) explored how demographics and digital literacy affect students' attitudes toward AI use and emphasized the need to improve digital competencies to improve students' perceptions of digital technologies.

According to Zaidy (2024), ethical issues must be considered while implementing AI in education. This study found that many students distrust the credibility of AI-created work and its impact on academic honesty. This dual push for digital literacy and ethics is part of an education campaign for responsible use.

According to Villarino (2024), rural higher education institutions in the Philippines lack sufficient infrastructure and digital resources, thereby preventing their students and stakeholders from integrating GenAI into their educational experiences. Policymakers will need to understand how socioeconomic status influences both students' and staff members' digital capacity, as well as their willingness to use GenAI to create equitable access to education. In contrast to Villarino's findings, Adewusi et al. (2025) report differences in access to AI-based educational resources; therefore, specific actions are needed to create equity in this area.

Psychological characteristics are also important for both students and staff in determining the extent to which GenAI will be accepted within higher education. Kanont et al. (2024) agree with this statement, noting that psychological characteristics, including perceived ease of use, subjective trust, and cultural context, largely determine students' and staff's acceptance of technology in higher education. Therefore, while GenAI can be beneficial to students, their perception of its value and relevance to their educational experience will affect their acceptance. Zhang (2025) characterizes the generational models of GenAI acceptance as flawed for failing to account for psychological variables, such as ethics and trustworthiness. Therefore, the next generation of GenAI acceptance models will need to consider these variables.

Alrayes et al. (2024) have examined psychological aspects that may affect GenAI student involvement and acceptability. They also stressed the importance of understanding how students' mental health affects their use of GenAI tools. Suh and Ahn (2022) examined students' views on AI in education. They found that positive student attitudes increase adoption and engagement with GenAI tools using quantitative methods.

Ethical and societal standards regarding the use of technology contextualize higher education AI. Harris (2024) noted that higher education institutions are increasingly concerned about how widely AI tools are used, which is compounding the conflict among digital literacy, academic integrity, and students' employability.

Much research has examined the design and usage of technology in higher education, but little is known about the significant link between digital competency and GenAI use in the Philippines. Much current research provides an educator's perspective and a singular dimension of student engagement. However, it does not examine the interconnectedness of digital literacy, willingness to use GenAI, ethical considerations for AI use, and their impact across different groups.

Philippine higher education students encounter several obstacles, especially in technological economics and its effects on education and student life. These potentialities and difficulties can be addressed by developing a substantial body of knowledge regarding generative AI (GenAI) and its relationship to higher education's social infrastructure in the Philippines. This research examined how digital capacity affects student attitudes regarding GenAI adoption in Philippine higher education and its implications for policy and practice as the industry rapidly evolves.

Furthermore, it examined the relationship between digital competence and students' willingness to adopt GenAI, as well as the ethical concerns they encountered, shedding light on opportunities and challenges for students in higher education institutions in the Philippines. As higher education institutions continue to develop digital literacy and address socio-economic barriers, there are also opportunities to build the capabilities needed to interact successfully with GenAI technologies. This study sought to further understand the algorithmic frontier of higher education in the Philippines by addressing the following research questions:

- 1) What is the level of higher education students' digital competence, willingness, and ethical concerns on the use of generative AI technologies?
- 2) Is there a significant difference in the level of competence, willingness, and ethical concerns of the use of generative AI technology when grouped according to their profile?

- 3) To what extent does digital competence predict the willingness to adopt GenAI and ethical concerns on the use of GenAI?
- 4) How do the indicators contribute to their respective latent constructs of Digital Competence, Willingness, and Ethical Concerns?

2. Methodology

2.1 Research Design

Using a quantitative-correlational research design and Structural Equation Modeling, this study investigates Filipino students' digital skills and readiness to use generative artificial intelligence in their studies. This correlational design indicates that digital competencies, AI ethics, and demographics influence students' inclination to use GenAI technology. Using SEM to investigate how these factors interact and which combinations of interrelated factors predict students' willingness to use GenAI technology in their studies provides a more integrated view of the literature on multidimensional technology adoption in higher education.

2.2 Research Locale

This investigation was conducted in Isabela, Cagayan Valley, Philippines. Isabela's specific demographics and socioeconomic variables affect how digital competency is implemented across educational institutions and the adoption of GenAI. The location of Isabela allows the study of rural areas, which show the digital gap in technology and education. This study examined GenAI's difficulties and prospects for a developing yet fast-changing place.

2.3 Respondents of the Study

Stratified random sampling was used to select 498 college students from various colleges in Isabela, Philippines. This sampling method balances student demographics, academic fields, and geographic areas. Many remote institutions encounter obstacles due to the "digital divide," so this sampling method allows the research to collect diverse digital literacy levels across varying levels of technical access. This research can help explain how subpopulations perceive generative artificial intelligence.

2.4 Instrument

The current study used a structured survey to analyze GenAI adoption based on digital competency, GenAI acceptance, and AI ethics. DigComp provides a foundation for establishing the Philippine Digital Competencies scale. GenAI adoption was based on technology acceptance models and AI ethics. Before distribution, a small pilot study with potential participants validated the questionnaire's phrasing, clarity, soundness, and stability.

2.5 Data Gathering Procedure

It took several steps to collect data from students, starting with institutional consent. An online structured questionnaire allowed respondents to complete it, increasing the likelihood of a higher response rate. Anonymity increased respondents' engagement in data collection. Data was collected over one academic semester.

The researcher used Jamovi to analyze quantitative data. It started with descriptive data on respondents' demographics, digital competency, willingness to adopt GenAI, and ethical concerns encountered when using GenAI. SEM was then used to evaluate the hypothesized correlations between digital competence, ethical concerns, and GenAI preparedness in students. This analytical method enhances comprehension of direct and indirect interactions among variables. It shows how these factors interact in Philippine higher education is more complicated.

2.6 Ethical Considerations

The entire process depends on ethics. Before starting our research, the researcher obtained informed consent from all participants to ensure they understood its goals, how it would be conducted, and their rights, including the right to withdraw. Student response data and organizational information were stored safely and anonymously. Institutional ethical principles and rules for human subject research apply to this study. This research required institutional review board approval before data collection.

3. Results and Discussion

Table 1. Level of higher education students' competence, willingness, and ethical concerns on the use of generative AI technologies

	Mean	SD
Digital Competence	3.48	0.842

Willingness to Use Generative AI Technologies	3.24	0.798
Ethical Concerns about Generative AI Technologies	3.15	0.765

Table 1 shows an average score of 3.48; college-level students demonstrate strong Digital Competence and a grasp of Generative AI technology. As students become more comfortable with technology-based learning environments, educators are increasingly focusing on digital literacy. Students' average score was 3.24, showing a moderate desire to adopt Generative AI technology for learning. In contrast, the lowest mean score for ethical concerns related to Generative AI technology was 3.15, indicating that students may be hesitant to accept it due to ethical concerns fully. Data indicate the need to educate students about AI and establish an ethical framework for its use. Academics require improved information on how to use AI in the classroom (Francis et al., 2025).

The three sectors' identical average ratings indicate that educational systems must prioritize the ethical implications of technology. According to the study, technology's ethical implications will influence how users use it, so educational programs must promote digital literacy and morality. GenAI has an optimistic outlook, but this study shows that students need better ethical training in technology. Prior research has shown that integrated courses must address the use and ethics of GenAI. This will help pupils adopt technology holistically (Seba et al., 2025). Quality education that includes AI ethics is needed as Philippine schools enhance digital literacy.

Table 2. Significant difference in the level of competence, willingness, and ethical concerns of the use of generative AI technology: Sex

Independent Samples T-Test				
		Statistic	df	p
Digital Competence	Student's t	0.521	496	0.603
Willingness to Use Generative AI Technologies	Student's t	-2.545 ^a	496	0.011
Ethical Concerns about Generative AI Technologies	Student's t	-0.968	496	0.334

Note. $H_a \mu_{Female} \neq \mu_{Male}$

^a Levene's test is significant ($p < .05$), suggesting a violation of the assumption of equal variances

Group Descriptives						
	Group	N	Mean	Median	SD	SE
Digital Competence	Female	269	3.50	3.57	0.791	0.0482
	Male	229	3.46	3.43	0.900	0.0595
Willingness to Use Generative AI Technologies	Female	269	3.16	3.13	0.710	0.0433
	Male	229	3.34	3.25	0.882	0.0583
Ethical Concerns about Generative AI Technologies	Female	269	3.12	3.00	0.766	0.0467
	Male	229	3.19	3.00	0.765	0.0505

Table 2's Independent Samples T-Test (Welch's T-Test) results reveal differences in the views of college-aged men and women on GenAI technology. GenAI awareness and concerns are not statistically different across male and female college students ($p > 0.05$). There is a statistically significant difference in the utilization of GenAI technology between male and female college students. Male college-aged students' mean willingness to utilize GenAI was $M = 3.34$, with an SD of 0.882, while female students' mean was $M = 3.16$, with an SD of 0.710.

This comparison yields a t-test of -2.545 and a p-value of 0.011. Even while men and women are equally knowledgeable and ethical about GenAI, these findings suggest that men are more likely to use new technology in education. Findings also suggest creating an inclusive atmosphere for college-aged female students to empower them to use GenAI technology. Thus, institutions must develop programs and regulations to help female students accept instructional technology.

The apparent gender inequality in technology adoption is consistent with the Gender Technology Disparity literature (Caner, 2025), which shows that men are more confident in technology and more likely to adopt it, as demonstrated by results (Chaamwe, 2025). This has major consequences for classroom AI use because, as the gender gap in technology use closes, men will increasingly use AI. Both genders are aware of and concerned about GenAI's ethical aspects, but males may be better at applying that knowledge to practice, so both need equal educational interventions.

Additionally, this survey emphasizes the necessity for all student demographics to improve their digital skills. The desire among academics, administrators, and students to adopt AI technology affects their ethical judgment regarding its use in their professions and teaching for two reasons. Therefore, higher education institutions must provide comprehensive training to support the moral development of AI and to boost students' comfort and desire to use AI technology, especially among female students. These actions will help educational institutions integrate GenAI into the academic landscape and develop new pedagogical options based on this technology (Zhang, 2025; Cutillas et al., 2025).

Table 3. Significant difference in the level of competence, willingness, and ethical concerns of the use of generative AI technology: Year Level

One-Way ANOVA (Welch's)					
		F	df1	df2	p
Digital Competence		2.88	3	265	0.036
Willingness to Use Generative AI Technologies		3.07	3	265	0.028
Ethical Concerns about Generative AI Technologies		2.69	3	268	0.047

Post Hoc Tests					
Games-Howell Post-Hoc Test – Digital Competence					
		First Year	Fourth Year	Second Year	Third Year
First Year	Mean difference	—	-0.262	-0.0632	-0.2434
	p-value	—	0.083	0.918	0.121
Fourth Year	Mean difference	—	—	0.1990	0.0189
	p-value	—	—	0.237	0.998
Second Year	Mean difference	—	—	—	-0.1802
	p-value	—	—	—	0.319
Third Year	Mean difference	—	—	—	—
	p-value	—	—	—	—

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Games-Howell Post-Hoc Test – Willingness to Use Generative AI Technologies

		First Year	Fourth Year	Second Year	Third Year
First Year	Mean difference	—	-0.318*	-0.136	-0.14189
	p-value	—	0.014	0.461	0.516
Fourth Year	Mean difference	—	—	0.182	0.17638
	p-value	—	—	0.272	0.377
Second Year	Mean difference	—	—	—	-0.00546
	p-value	—	—	—	1.000
Third Year	Mean difference	—	—	—	—
	p-value	—	—	—	—

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Games-Howell Post-Hoc Test – Ethical Concerns about Generative AI Technologies

		First Year	Fourth Year	Second Year	Third Year
First Year	Mean difference	—	-0.271*	-0.163	-0.1358
	p-value	—	0.027	0.286	0.523
Fourth Year	Mean difference	—	—	0.108	0.1349
	p-value	—	—	0.665	0.549
Second Year	Mean difference	—	—	—	0.0274
	p-value	—	—	—	0.992
Third Year	Mean difference	—	—	—	—
	p-value	—	—	—	—

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

A one-way ANOVA showed statistically significant differences between students of different years in the four areas tested. This confirmed that students' exposure to and experience with generative AI change over time. First-year students were less inclined to employ generative AIs ($p = .014$) and more ethically concerned ($p = .027$) than fourth-year students. As students gain experience, their comfort and concerns with generative AI increase (Nam & Bai, 2023). Only a small variation in generative AI expertise was observed between first- and fourth-year students ($p = .036$). This suggests that incoming students have a baseline of knowledge and do not change their understanding of generative AI as they progress through their studies. Tailored educational programs should be developed to meet the needs and concerns of students at various stages of their education, with a focus on ethical issues and practical applications.

While a relatively high level of knowledge was associated with moderate acceptance of Generative AI, universities need to develop support mechanisms to educate students about the technology and, more importantly, help them address ethical considerations. These channels include workshops, policy conversations, and justification projects. Education stakeholders recognize that Generative AI's ethical implications must be clearly considered by assisting students' critical analysis of its use. This stance promotes AI education that keeps

up with AI technology while maintaining academic integrity.

Table 4. Extent of digital competence predicts the willingness to adopt GenAI and ethical concerns about the use of GenAI

Model Fit Measures

Model	R	R ²
1	0.577	0.332

Note. Models estimated using sample size of N=498

Model Coefficients - Digital Competence

Predictor	Estimate	SE	t	p
Intercept	1.247	0.1460	8.54	<.001
Willingness to Use Generative AI Technologies	0.395	0.0471	8.37	<.001
Ethical Concerns about Generative AI Technologies	0.303	0.0492	6.15	<.001

Table 4 shows that willingness to employ and ethical concerns regarding generative AI predict students’ digital skills. The regression analysis showed a moderately significant positive association (R = .577) and that 33.2% (R² = .332) of the variance in students’ digital competence was explained. Both variables were significant (p < .001), with willingness to use having a greater impact (Estimate = 0.395) than ethical concerns (Estimate = 0.303). Thus, students’ ethical knowledge of generative AI depends on their adoption of it.

Examining the factors shows how students’ technological willingness to adopt can improve their digital skills. The positive correlation between willingness to adopt and digital competency over time is consistent with previous studies that show students who are interested in AI technologies are more likely to improve their digital competency as they progress through school (Hashish et al., 2025). Aljamaan et al. (2025) found that students are becoming more aware of the ethical implications of using new technologies in school. This study supports Maqbool et al. (2025), who found that higher academic levels are associated with greater prior exposure to digital tools and increased use of AI technology, suggesting that a willingness to use Generative AI fosters the development of critical digital skills.

This research is important for educational institutions that want to foster ethical and technological practice. Generative AI ethics must be discussed in the curriculum to prepare students for technical competence and digital citizenship. Curriculum makers and educators must consider the ethics of Generative AI as well as its technology (Baharin, 2025). Educational institutions can integrate technology more fully by including ethical debates. The integrated approach promotes technological skills that boost academic performance and ethical frameworks that enable people navigate complex digital contexts (Hammood, 2025).

Model Fit

Test for Exact Fit

χ^2	df	p
1030	149	<.001

Fit Measures

CFI	TLI	RMSEA	RMSEA 90% CI	
			Lower	Upper

Test for Exact Fit

χ^2	df	p
1030	149	<.001

Fit Measures

CFI	TLI	RMSEA	RMSEA 90% CI	
			Lower	Upper
0.938	0.928	0.0799	0.0753	0.0846

Factor Covariances

		Estimate	SE	Z	p
	Knowledge	1.000 ^a			
Knowledge	Willingness	0.713	0.0184	38.8	<.001
	Ethical Concerns	0.728	0.0194	37.4	<.001
Willingness	Willingness	1.000 ^a			
	Ethical Concerns	0.737	0.0194	38.0	<.001
Ethical Concerns	Ethical Concerns	1.000 ^a			

^a fixed parameter

The tables show the Covariance factors and Model Fit Measures resulting from a Confirmatory Factor Analysis (CFA) for the purpose of confirming the overall structure or integrity of your model, not necessarily the individual contribution of each indicator. In order to evaluate how much an indicator contributes directly to Digital Competence (labeled Knowledge), Willingness, and Ethical Concern, typically a Factor Loadings table would be reviewed. However, the Factor Covariance Table provides evidence that these three latent constructs are very distinct and yet significantly correlated (ranging from 0.713 to 0.737; $p < .001$), which reflects that the indicators consisting of each of the constructs are working in unison or “in tandem,” therefore a change in one latent area should closely match a change in the others. In addition, the Fit Measures were generally acceptable, including CFI: 0.938, TLI: 0.928, and RMSEA: 0.0799; indicating that the indicators have been grouped in such a manner as to adequately represent their respective constructs.

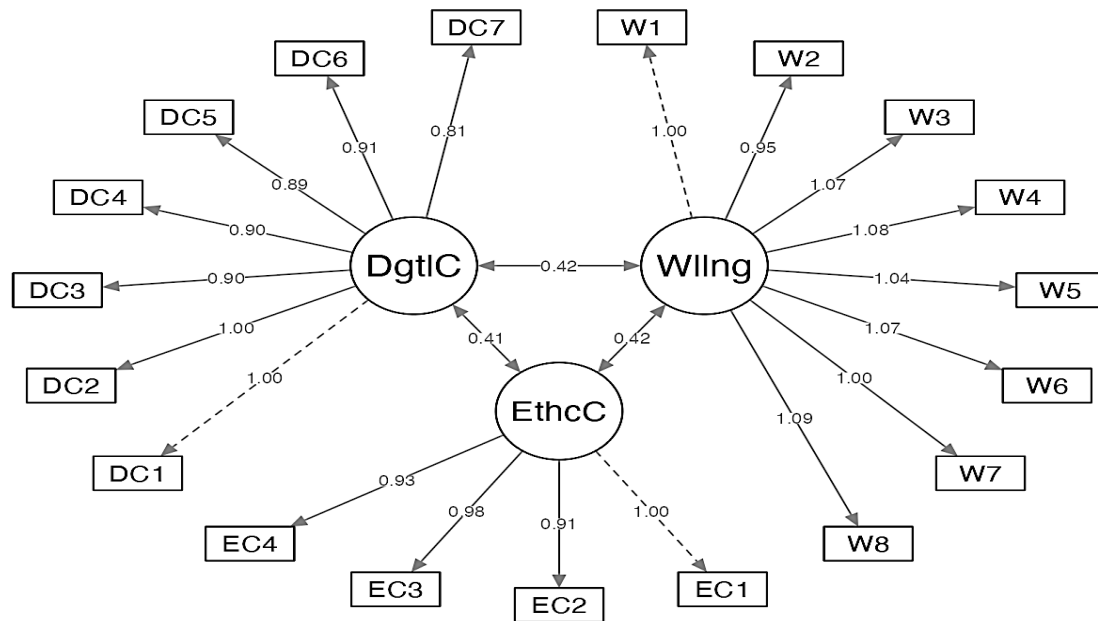


Figure 1. Path Model for Digital Competence, Willingness, and Ethical Concerns

Note: The circle layout requires the rotation to be 'Exogenous Top' or 'Exogenous Bottom'. Rotation has been set to 'Exogenous Top'.

Path model studies show how digital competence, willingness to use, and ethical concerns affect the adoption of generative AI in higher education. Path analysis shows that all constructs are positively correlated, with willingness to use and ethical concerns having the strongest correlation of 0.42. It is believed that ethical knowledge will directly enhance student engagement with generative AI. In addition to ethical concerns, digital competence is associated with willingness to use at 42%. Students become more confident and likely to employ AI tools as their digital skills develop. At 0.41, digital competencies correlate with ethical concerns, showing that they are essential for understanding and managing AI's ethical difficulties (Fang, 2023).

In structural models of the latent variables and their measured indicators, DC1-DC7, W1-W8, and EC1-EC4, the measured constructs have high factor loadings ranging from 0.81 to 1.09. All three surveys represent each construct category well, as shown by their high factor loadings. The model's validity is supported by modest levels of representation for each concept, which capture students' opinions of digital competency, willingness to adopt generative AI, and ethical concerns about it. The correlation between theoretical constructs and measured indicators supports this study's quantitative measures and model fit (Caner, 2025; Zhang, 2025).

Thus, as students' digital literacy rises, so will their readiness to use generative AI and their knowledge of AI ethics. This complements existing research on the need for higher education digital literacy and ethics programs (Bahçekapılı, 2025). Thus, this research emphasizes the need for institutions to create comprehensive training plans that improve students' technical skills and ethical thinking as they encounter generative AI to prepare them for the potential challenges of greater use of generative AI in academia (Belguith, 2025).

4. Implications for Teacher Education and Teaching

Based on the data provided regarding students' digital competence, willingness, and ethical concerns toward generative AI (GenAI), here are the implications for teacher education and a formal conclusion for this research.

- 1) Findings indicate that the teacher education model should evolve from the traditional model of simply providing technical knowledge and skills to a new model that incorporates an ethical framework grounded in the ethics of technology use in the classroom. Since the average student has already achieved some level of digital literacy, teacher educators should focus on creating "tailored educational programs" specific to each student's level of digital competence, and that place greater emphasis on the ethical issues of using technology in the classroom, particularly regarding AI.
- 2) The faculty and administration should implement programs and initiatives designed to support and empower female students. Results indicate that female students are less likely to adopt GenAI, even though their awareness and knowledge of GenAI are similar to those of their male counterparts, suggesting a gender gap. Furthermore, teaching should move toward an integrated approach in which students learn

about ethics and technology concurrently, developing the knowledge, skills, and ability to become responsible citizens who can navigate the complex digital environment.

- 3) Since first-year students exhibit greater reluctance and more ethical concerns when exposed to AI technology than fourth-year students, teacher educators should follow a scaffolded model for AI exposure. Students should be exposed to and supported in building comfort with using AI from the early stages of their collegiate studies through graduation. In addition, the study revealed that digital competence is a strong predictor of willingness to use AI technology and of the development of ethical awareness surrounding its use. Providing students with the opportunity to develop their technical competence will help them become more responsible and ethical users.

5. Conclusion

The research analyzed how developing digital competence affects the propensity to embrace generative artificial intelligence (GenAI) and students' perceptions of the ethical implications of AI technologies on college campuses. The study's primary finding was that although most students understand the functionality of this technology, there exists a "paradox" between technical ability and willingness to use these technologies, with demographic differences by gender and year in school. Further, the authors concluded that students' ethical awareness does not prevent them from wanting to use this type of technology, but rather increases their willingness to do so. Furthermore, as digital competence increases, students' awareness and readiness to navigate and regulate the ethical complexities of AI also increase. If institutions are to maximize the benefits of JunAI and achieve a seamless integration of this technology, institutions must create "equitable & productive" environments that nurture technical ability and social responsibility.

It is recommended that future research define the "support mechanisms" that provide women with the resources needed to overcome obstacles to adoption. For example, investigating the policy discussions and workshop formats that work best to facilitate success for women will provide a blueprint to strengthen women in this area. Longitudinal research could provide insights into changes in attitudes and AI adoption levels among first- and fourth-year students. This would provide valuable information about how and why the "marginal differences" identified between first- and fourth-year students are evolving as AI's presence in secondary education increases. Additionally, further investigation into faculty preparedness and its impact on student perceptions of AI would contribute to a broader understanding of the educational landscape.

References

- Adewusi, M., AINEBYOONA, C., Odekeye, T., & NGOMA, M. (2025). AI in Universities: The Good, the Bot, and the Ugly Truths. <https://doi.org/10.21203/rs.3.rs-6883202/v1>
- Aghaee, N., Vrågård, J., & Brorsson, F. (2024). Generative AI in Higher Education: Educators' Perspectives on Academic Learning and Integrity. *European Conference on E-Learning*, 23(1), 406-414. <https://doi.org/10.34190/ece.l.23.1.3090>
- Aljamaan, F., Mubarak, M., Altamimi, I., Alanteet, A., Alsaman, M., Dasuqi, S., ... & Temsah, M. (2025). Generative Artificial Intelligence Integration in Medical Education: A Cross-Sectional Survey of Medical Students' Perceptions and Attitudes in Saudi Arabia. <https://doi.org/10.21203/rs.3.rs-6222830/v1>
- Alrayes, A., Henari, T., & Ahmed, D. (2024). ChatGPT in Education — Understanding the Bahraini Academics' Perspective. *The Electronic Journal of E-Learning*, 22(2), 112-134. <https://doi.org/10.34190/ej.e.l.22.2.3250>
- Baharin, A. (2025). Exploring the Adoption of Generative Artificial Intelligence by TVET Students: A UTAUT Analysis of Perceptions, Benefits, and Implementation Challenges. *Journal of Information Systems Engineering & Management*, 10(19s), 429-437. <https://doi.org/10.52783/jisem.v10i19s.3052>
- Bahçekapili, E. (2025). Generative AI and digital literacy: Unravelling user intentions through PLS-SEM and machine learning. *Journal of Information Science*. <https://doi.org/10.1177/01655515251396900>
- Belguith, M. (2025). Adoption of AI in entrepreneurship education: University teachers' perceptions. *International Journal of Advances in Educational Research*, 2(1), 1-24. <https://doi.org/10.62941/ijaer.v2i1.151>
- Bhimavarapu, U. (2025). Digital Literacy and Critical Thinking Enhancing Student Perspectives on Artificial Intelligence. In *Exploration of K-12 Teaching and Learning for Teacher Educators*, 107-120. <https://doi.org/10.4018/979-8-3693-9370-3.ch005>
- Caner, S. (2025). Modeling ChatGPT Adoption Among Undergraduates: An Integrated UTAUT2 and Digital Competence Framework. *Sage Open*, 15(2). <https://doi.org/10.1177/21582440251343340>
- Chaamwe, N. (2025). Investigating the Factors Influencing Students' Adoption of Generative AIs in Universities: A Case of the Copperbelt University. *Zambia Ict Journal*, 8(1), 47-53.

<https://doi.org/10.33260/zictjournal.v8i1.340>

- Cutillas, A., Balili, E., Rellin, E., Remo, M., Quindala, E., & Bacalso, F. (2025). Analyzing alternative academic assessments (AAAs) in universities with cheat-proofing behaviors and instructor-formulated mechanics in an AI-dependent setting. *Environment and Social Psychology*, 10(5). <https://doi.org/10.59429/esp.v10i5.3265>
- Fang, X. (2025). Research on the Ethical Adoption of College Students' Learning Applications of Generative Artificial Intelligence. *Journal of Computer Assisted Learning*, 41(6). <https://doi.org/10.1111/jcal.70146>
- Francis, N., Jones, S., & Smith, D. (2025). Generative AI in Higher Education: Balancing Innovation and Integrity. *British Journal of Biomedical Science*, 81. <https://doi.org/10.3389/bjbs.2024.14048>
- Hammood, W. (2025). Investigating Factors Affecting AI Adoption in Higher Education Using Structural Equation Modelling (SEM). *KHWARIZMIA*, 2025, 50-57. <https://doi.org/10.70470/khwarizmia/2025/006>
- Harris, J. (2024). Process over product. *Pacific Journal of Technology Enhanced Learning*, 6(1), 16-17. <https://doi.org/10.24135/pjtel.v6i1.190>
- Hashish, E., Alsayed, S., & Razek, N. (2025). Embracing AI in academia: 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>
- Hazaimah, M. & Al-Ansi, A. (2024). Model of AI acceptance in higher education: arguing the perspectives of teaching staff and students. *International Journal of Information and Learning Technology*, 41(4), 371-393. <https://doi.org/10.1108/ijilt-01-2024-0005>
- Kanont, K., Pingmuang, P., Simasathien, T., Wisnuwong, S., Wiwatsiripong, B., Poonpirome, K. & Khlaisang, J. (2024). Generative-AI, a Learning Assistant? Factors Influencing Higher-Ed Students' Technology Acceptance. *The Electronic Journal of E-Learning*, 22(6), 18-33. <https://doi.org/10.34190/ejel.22.6.3196>
- Kubota, K., Aishima, M., & Fujita, T. (2025). Harnessing Generative AI in Nursing Informatics: A Theoretical Critique and Policy Innovation Perspective from Japan. *International Nursing Review*, 72(3). <https://doi.org/10.1111/inr.70108>
- Maqbool, T., Ishaq, H., Shakeel, S., Nisa, A., Rehman, H., Kashif, S., ... & Jamshed, S. (2025). Future pharmacy practitioners' insights towards integration of artificial intelligence in healthcare education: Preliminary findings from Karachi, Pakistan. *Plos One*, 20(2), e0314045. <https://doi.org/10.1371/journal.pone.0314045>
- Nam, B. & Bai, Q. (2023). ChatGPT and its ethical implications for STEM research and higher education: a media discourse analysis. *International Journal of Stem Education*, 10(1). <https://doi.org/10.1186/s40594-023-00452-5>
- Ranes, B. (2025). AI integration in facilitating learning: Its benefits, challenges, and strategies for enhancement. *Divine Word International Journal of Management and Humanities (Dwijmh)*, 4(3), 2095-2109. <https://doi.org/10.62025/dwijmh.v4i3.181>
- Seba, F., Isola, M., Mills, L., Zalake, M., & Krive, J. (2025). Incorporating Generative AI Into a Health Informatics Curriculum to Build 21st Century Competencies: Multisite Pre-Post Study. *Jmir Medical Informatics*, 13, e76507-e76507. <https://doi.org/10.2196/76507>
- Suh, W. and Ahn, S. (2022). Development and Validation of a Scale Measuring Student Attitudes Toward Artificial Intelligence. *Sage Open*, 12(2). <https://doi.org/10.1177/21582440221100463>
- Villarino, R. (2025). Artificial Intelligence (AI) integration in Rural Philippine Higher Education. *International Journal of Educational Research and Innovation*, (23). <https://doi.org/10.46661/ijeri.10909>
- Zaidy, A. (2024). The Impact of Generative AI on Student Engagement and Ethics in Higher Education. *Journal of IT, Cybersecurity, & AI*, 1(1), 30-38. <https://doi.org/10.70715/jitcai.2024.v1.i1.004>
- Zhang, X. (2025). Integrating AI Literacy with the TPB-TAM Framework to Explore Chinese University Students' Adoption of Generative AI. *Behavioral Sciences*, 15(10), 1398. <https://doi.org/10.3390/bs15101398>

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