Digital Readiness, AI Self-Efficacy and Perceptions of Generative AI among First-Year Students in a Non-STEM Language Programme

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ABSTRACT

Generative AI (GenAI) tools are now part of everyday university study, yet first-year students tend to enter higher education with informal, self-taught digital skills rather than structured AI training. Guided by the Technology Acceptance Model (TAM) extended with AI self-efficacy, this exploratory study examined first-year non-STEM undergraduates' digital readiness and confidence in using AI (RQ1), their perceptions of the ease of use and usefulness of GenAI (RQ2), and the relationships among digital readiness, perceived usefulness and confidence (RQ3). A purposive sample of 40 first-year students from three Social Sciences and Humanities classes at a Malaysian public university completed an online survey adapted from established instruments (α = .74–.94). Students reported high digital readiness (M = 4.19, SD = 0.49) and descriptively lower confidence in using AI (M = 3.70, SD = 0.66), with the lowest confidence in navigating AI tool interfaces and distinguishing AI-generated from human-written content (fewer than half agreed). Perceptions of usefulness (M = 3.88, SD = 0.67) and ease of use (M = 3.79, SD = 0.63) were moderately positive. Digital readiness, perceived usefulness and confidence were significantly and moderately interrelated (r = .48–.50, all $p < .01$), and perceived ease of use was strongly related to all three (r = .64–.68). The findings suggest that general digital readiness provides a foundation for, but does not guarantee, confident and critical use of GenAI. Structured AI literacy support early in the curriculum is recommended. Given the small single-site sample, the findings are preliminary.

Keywords: generative AI; TAM constructs; AI self-efficacy; digital readiness; perceptions of usefulness, first-year non-STEM students

INTRODUCTION

Generative AI (GenAI) tools such as ChatGPT, Gemini and Copilot have quickly become part of how university students draft, research and revise their work. Students generally view these tools positively, valuing support for writing, brainstorming and personalised learning, while also voicing concerns about accuracy and academic integrity (Chan & Hu, 2023). Their readiness to use the tools well, however, is uneven. A transnational survey of 1,800 university students found clear differences in AI literacy by nationality, discipline and degree level (Mansoor et al., 2024), and similar variation has been reported among Malaysian university students (Teoh et al., 2025). First-year students in particular tend to arrive with informal, self-acquired digital skills rather than formal training (Mustapha et al., 2023). Feeling comfortable with technology in general may therefore not mean feeling confident to use AI well for academic tasks.

Policy bodies have responded quickly. UNESCO's first global guidance on GenAI in education calls for a human-centred approach that protects human agency and asks institutions to validate GenAI tools for their ethical and pedagogical appropriateness (Miao & Holmes, 2023). Its AI competency framework for students, although designed mainly for school education, places critical judgement of AI and a human-centred mindset at the core of what learners need (Miao & Shiohira, 2024). In Malaysia, the Ministry of Science, Technology and Innovation launched the National Guidelines on AI Governance and Ethics in 2024, setting out seven principles for responsible AI use (MOSTI, 2024), and the Ministry of Higher Education issued

guidelines on the use of generative AI in teaching and learning in 2024 (Ministry of Higher Education Malaysia, 2024). These guidelines ask higher education providers to state clearly when and how students may use GenAI, and to plan and run training that builds GenAI literacy among both academic staff and students, including the digital competence to engage with technology confidently, critically and safely. These policies assume that students can use AI confidently, critically and responsibly, yet little is known about how confident first-year students actually feel in doing so.

The Technology Acceptance Model (TAM; Davis, 1989) explains adoption through perceived ease of use and perceived usefulness. TAM is the dominant model of technology acceptance in education (Granić & Marangunić, 2019) and has been extended for GenAI with AI self-efficacy, which can be measured separately from general digital confidence (Morales-García et al., 2024; Park et al., 2026). Two gaps remain. First, research on AI in higher education has been concentrated in Computer Science and STEM disciplines (Zawacki-Richter et al., 2019), and recent GenAI adoption studies continue this pattern (BinJwair, 2025); first-year students in non-STEM, language-based programmes in Malaysia remain underexplored. Second, few studies examine students' general digital readiness and their AI-specific confidence side by side, or how both relate to their perceptions of usefulness, even though these beliefs form the starting point for adoption. This paper therefore examines these antecedent beliefs; students' behavioural intention and actual use are not analysed here.

To address these gaps, this study pursued three objectives: (RO1) to describe first-year non-STEM undergraduates' digital readiness and confidence in using AI; (RO2) to describe their perceptions of the ease of use and usefulness of GenAI; and (RO3) to examine the relationships among digital readiness, perceived usefulness and confidence in using AI. Accordingly, the study asks:

RQ1: What are first-year non-STEM undergraduates' levels of digital readiness and confidence in using generative AI for university coursework?

RQ2: How do first-year non-STEM undergraduates perceive the ease of use and usefulness of generative AI tools for their academic work?

RQ3: Is there a significant relationship among digital readiness, perceived usefulness and confidence in using generative AI?

LITERATURE REVIEW

The Technology Acceptance Model and Generative AI

TAM posits that perceived usefulness (the belief that a technology will improve performance) and perceived ease of use (the belief that using it will be free of effort) drive the intention to adopt it (Davis, 1989). Its core logic was later integrated into the Unified Theory of Acceptance and Use of Technology (UTAUT), in which performance expectancy and effort expectancy, the counterparts of usefulness and ease of use, are central determinants of adoption (Venkatesh et al., 2003). In educational settings, a systematic review identified TAM and its extensions as the leading framework for explaining learners' acceptance of technology (Granić & Marangunić, 2019). For GenAI specifically, Park et al. (2026) found that ease of use, usefulness and self-efficacy predicted college students' intention to use AI tools, explaining 55.4% of the variance, and Todua and Kartsivadze (2026) found that ease and usefulness predicted students' attitudes towards ChatGPT. A recent systematic review of 54 empirical studies on students' acceptance of ChatGPT in higher education confirmed that perceived usefulness and its UTAUT counterpart, performance expectancy, have the most consistent influence on behavioural intention, and stressed that user diversity and context must be considered when applying TAM to GenAI (Yang, 2026). Meta-analytic work supports TAM's core paths for GenAI in higher education (Pinto et al., 2025; Xue et al., 2026). In a meta-analysis of 27 studies (N = 12,124) on TAM in AI in education, Xue et al. (2026) found large positive correlations for all core TAM paths: perceived ease of use with perceived usefulness (r = .63), perceived usefulness with behavioural intention (r = .69) and perceived ease of use with behavioural intention (r = .56). These

relationships were, however, weaker in higher education than in school settings, a reminder that findings from other contexts may not transfer directly to university students.

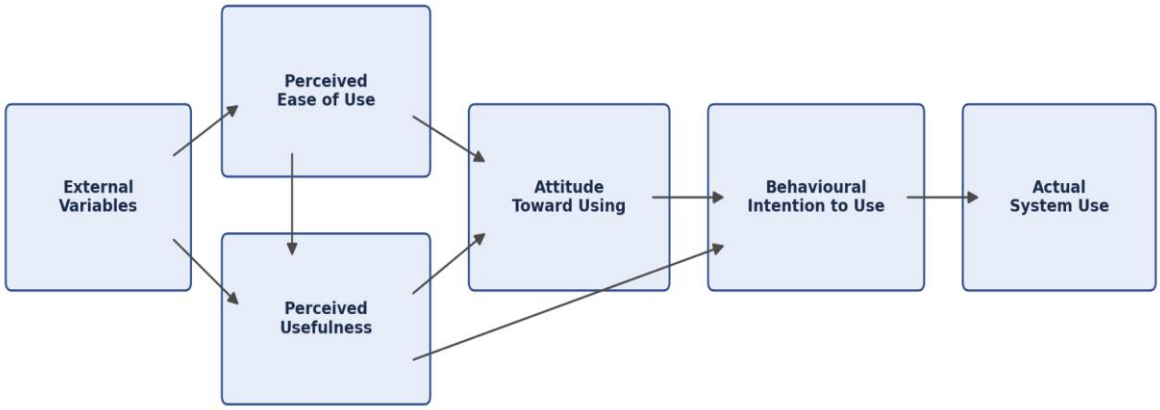

Figure 1 The Technology Acceptance Model (adapted from Davis, 1989)

TAM was, however, designed for predictable information systems. GenAI produces opaque and variable outputs, so users must judge whether outputs are correct rather than rely on usability alone (Al-Abdullatif, 2024; Buçinca et al., 2021; Vasconcelos et al., 2023). Ease of use can even encourage overreliance, where students are satisfied with a tool while accepting its errors (Pitts et al., 2025). Constructs such as AI literacy, trust and self-efficacy have therefore been added to TAM to explain GenAI adoption more fully (Al-Abdullatif, 2024; Ursavaş et al., 2025). AI literacy has been defined as the competencies that allow people to critically evaluate AI, communicate and collaborate effectively with it, and use it as a tool (Long & Magerko, 2020); these competencies go well beyond finding a tool easy to use.

Digital Readiness and Confidence in Using AI (RQ1)

Self-efficacy, rooted in Bandura's social cognitive theory, is a person's belief in their capability to carry out the actions needed to reach a goal, and it shapes motivation and willingness to adopt new technology (Bandura, 1997; Xia et al., 2025). In technology research, Compeau and Higgins (1995) showed that computer self-efficacy influences people's outcome expectations, their anxiety and their actual computer use, establishing self-efficacy as a key individual factor in adoption. General digital competence is largely procedural, such as uploading files to a learning management system, whereas working with GenAI requires iterative prompting and critical evaluation of uncertain outputs (Chiu, 2025; Kusuma et al., 2025). Validated measures such as the GSE-6AI confirm that AI self-efficacy is distinct from general digital confidence (Morales-García et al., 2024). For language students, this distinction matters: fluent everyday technology use may create an illusion of competence, leading to uncritical acceptance of AI-generated language rather than reflective learning (Fansury, 2025; Manurung et al., 2025). While general digital readiness reflects a learner's basic skills, comfort, and ability to navigate predictable digital platforms (like school portals and cloud systems), AI self-efficacy is a more complex and specific concept. Unlike standard educational software that responds predictably to fixed commands, generative AI tools produce varying, unpredictable results that require careful thinking, adjusting instructions step-by-step, and critically evaluating the facts. Consequently, in this study, AI self-efficacy, termed confidence in using AI; is defined as students' personal belief in their ability to perform the specific tasks required to use GenAI effectively and responsibly. Because self-efficacy is task-specific (Bandura, 1997), these tasks were drawn from the dimensions of AI literacy (Long & Magerko, 2020): operational tasks (writing prompts, navigating tools, troubleshooting), evaluative tasks (judging AI capabilities and limitations, adapting prompts, distinguishing AI-generated text) and ethical tasks (identifying bias, following ethical guidelines). The construct therefore measures confidence in performing AI-literacy tasks, not AI literacy itself. RQ1 therefore describes both forms of confidence.

Perceived Ease of Use and Usefulness (RQ2)

Students' perceptions of GenAI's ease and usefulness are generally positive. University students value GenAI for writing and brainstorming support, personalised learning and research assistance (Chan & Hu, 2023), and performance expectancy, the UTAUT counterpart of usefulness, has been among the strongest drivers of students' acceptance of ChatGPT (Strzelecki, 2024). However, these perceptions may differ for first-year students in language-based programmes, who are still developing the disciplinary and linguistic skills needed to judge whether AI output is actually useful. RQ2 describes how this group perceives the ease of use and usefulness of GenAI for their academic work.

Readiness, Usefulness and Confidence (RQ3)

TAM extensions treat individual characteristics such as self-efficacy and prior digital experience as external variables that shape perceptions of a technology (Davis, 1989; Granić & Marangunić, 2019). Self-efficacy has been linked to perceived usefulness and intention among university students using AI tools (Park et al., 2026; Seo et al., 2024; Wang et al., 2023), and Türk et al. (2025) found that AI self-efficacy mediated the link between attitudes towards AI and its acceptance. Less is known about how general digital readiness fits into these relationships for first-year students. RQ3 therefore tests whether digital readiness, perceived usefulness and confidence in using AI are significantly related.

METHODOLOGY

This study used a descriptive and correlational quantitative design. A purposive sample of 40 first-year students was drawn from three non-STEM classes in a Social Sciences and Humanities programme at a Malaysian public university. We collected data through an anonymous online survey over five days. Participation was voluntary, and we report results only in aggregate. We administered the survey through Google Forms. The first page presented an informed consent statement explaining the purpose of the study, that participation was voluntary and anonymous, and that responses would be used for research purposes only. Only students who indicated their agreement on this page could proceed to the questionnaire; completion of the survey was therefore taken as informed consent.

The constructs analysed in this paper were measured on the same five-point Likert scale (1 = strongly disagree, 5 = strongly agree): digital readiness (5 items), perceived ease of use (4 items), perceived usefulness (5 items) and confidence in using AI, i.e. AI self-efficacy (10 items). Items were adapted from Park et al. (2026), Alsaffar (2025) and Seo et al. (2024). Adaptation involved rewording items to refer to generative AI tools and to students' academic tasks. Items were assigned to constructs according to their focus: items about general digital technologies and learning platforms were assigned to digital readiness, and items phrased as capability judgements about specific AI tasks ("I can…") were assigned to AI self-efficacy. Each self-efficacy item correlated well with the rest of the scale (corrected item–total r = .65–.84), and removing any item did not raise reliability, supporting its treatment as a single scale. Because this was an exploratory study, the adapted items were not subjected to a separate expert content review or pilot test before data collection; this is acknowledged as a limitation. The survey also contained items on frequency of AI use (measured on a different, frequency-based scale), future intentions, and perceived risks and ethical concerns; these are analysed separately in companion papers and are not combined with the Likert constructs here.

The items for Digital Readiness measure basic practical skills and how prepared people feel to use modern educational technologies, where item 'Have the technical skills to interact with and use AI-based systems' tests basic technical use at a beginner level. In contrast, the 10 items measuring Confidence in using AI measure more advanced, specific thinking and judging skills (e.g., distinguishing AI from human text, making ethical choices, using prompting strategies, and recognising errors). For RQ1 and RQ2, item-level and construct-level means, standard deviations and percentages of agreement were calculated. Percentage of agreement is the proportion of students who chose 4 (agree) or 5 (strongly agree); it is reported alongside the mean and SD because it shows how widely a view is shared, and because a mean near 4 can hide a large

proportion of neutral responses. The comparison between digital readiness and AI self-efficacy in RQ1 is descriptive; no inferential test of the difference was conducted. For RQ3, Pearson correlations were computed among the composite scores for digital readiness, perceived usefulness and confidence in using AI. Perceived ease of use was not part of RQ3, which focuses on the two individual-difference beliefs (readiness and confidence) and on usefulness, the belief most consistently linked to GenAI acceptance (Xue et al., 2026; Yang, 2026). Because ease of use is central to TAM, its correlations with the other three constructs are also reported for completeness; Spearman correlations gave the same pattern of significance. Internal consistency was acceptable to excellent (Cronbach's α = .74–.94; Table 1). Given the exploratory design and small sample, results should be read as indicative.

FINDINGS AND DISCUSSION

RQ1: Digital Readiness and Confidence in Using AI

Table 1 Digital readiness and confidence in using AI: item and construct statistics (n = 40)

Item	M	SD	% agree
Digital Readiness (α = .74; 4-item composite)	**4.19**	**0.49**	–
Confident using various digital technologies for university studies	4.30	0.61	97.5
Previous experience with digital tools prepared me for AI-powered learning	4.15	0.53	97.5
Easy to adapt to new digital learning platforms (e.g., Moodle, Canvas)	4.15	0.77	92.5
Have the technical skills to interact with and use AI-based systems (reported; excluded from composite)	3.88	0.88	85.0
Comfortable exploring new digital tools I have not used before	4.17	0.68	95.0
Confidence in Using AI (α = .94)	**3.70**	**0.66**	–
Evaluate the capabilities and limitations of AI tools	3.77	0.73	65.0
Identify potential biases and ethical issues in AI-generated content	3.80	0.79	62.5
Write clear and effective prompts to get desired results	3.67	0.83	60.0
Apply AI tools to support academic learning and research	3.85	0.77	67.5
Troubleshoot common issues while using AI	3.65	0.83	57.5
Explain the basic logic of how AI models generate information	3.65	0.89	52.5
Navigate AI tool interfaces and settings with ease	3.55	0.85	47.5
Adapt prompting strategy based on the quality of AI output	3.62	0.81	57.5

Accurately distinguish AI-generated from human-generated content	3.60	0.84	47.5
Follow ethical guidelines when using AI for academic assignments	3.80	0.79	67.5

Note: % agree represents the collapsed proportion of respondents selecting 'Agree' (4) or 'Strongly Agree' (5)

Students reported high digital readiness (M = 4.19, SD = 0.49). Almost all agreed that they were confident in using digital technologies for their studies (97.5%) and that their previous experience had prepared them for AI-powered learning (97.5%). The lowest readiness item, having the technical skills to use AI-based systems (M = 3.88), was the one most directly about AI, which is why it was excluded from the composite. Confidence in using AI was descriptively lower (M = 3.70, SD = 0.66), and every confidence item (M = 3.55–3.85) fell below the digital readiness mean. Because no inferential test was conducted, this difference is presented as a descriptive observation rather than a statistically established gap. Students were most confident in applying AI to support their learning (M = 3.85) and following ethical guidelines (M = 3.80), and least confident in navigating AI interfaces (M = 3.55) and distinguishing AI-generated from human-written content (M = 3.60), where fewer than half agreed (47.5%). At a descriptive level, a noticeable difference emerges between students' high general digital readiness (M=4.13) and their more moderate confidence in using AI (M=3.70). Because no inferential test of the difference was conducted, this variation is presented as an exploratory descriptive observation based on sample central tendencies rather than a statistically established gap, aligning with recent literature suggesting that procedural digital skills do not automatically translate into evaluative AI self-efficacy.This descriptive pattern is consistent with treating confidence in using AI as distinct from general digital confidence (Compeau & Higgins, 1995; Morales-García et al., 2024), and it echoes Teoh et al. (2025), who found that first-year students in Malaysia trailed senior students in AI knowledge readiness. Two cautions apply when reading these self-ratings. First, self-reported confidence can overstate actual competence: Das et al. (2026) found that first-year engineering students with more GenAI experience reported higher confidence but scored lower on an objective GenAI literacy test. Our mean of 3.70 may therefore be an optimistic estimate of students' real capability. Second, low confidence is not necessarily miscalibrated. In a blind test at a UK university, 94% of AI-written examination answers went undetected by experienced markers (Scarfe et al., 2024), so students' uncertainty about distinguishing AI-generated from human-written text may reflect a realistic reading of a genuinely difficult task rather than a lack of skill alone. The weakest areas, recognising and evaluating AI output, are exactly the critical-evaluation competencies that define AI literacy (Long & Magerko, 2020), and they matter particularly for language students who must judge the quality of AI-generated text (Fansury, 2025). They are also the competencies that UNESCO places at the centre of AI education (Miao & Shiohira, 2024), and that Malaysian higher education guidelines rely on when they ask students to use AI ethically and uphold academic integrity (Ministry of Higher Education Malaysia, 2024).

RQ2: Perceived Ease of Use and Usefulness

Table 2 Perceived ease of use and usefulness: item and construct statistics (n = 40)

Item	**M**	**SD**	**% agree**
Perceived usefulness (α = .91)	**3.88**	**0.67**	–
Using AI tools helps me complete academic assignments faster	4.00	0.82	72.5
Using AI tools increases my overall productivity in my	3.73	0.78	57.5

studies			
AI tools help me manage my study time more effectively	3.77	0.83	62.5
Integrating AI tools into academic tasks makes learning more efficient	3.88	0.72	67.5
AI tools are useful for optimising my workflow when assignments are due	4.03	0.77	72.5
Perceived ease of use (α = .84)	**3.79**	**0.63**	–
Learning to operate and navigate new AI tools is straightforward	3.70	0.76	57.5
Easy to instruct AI tools to perform specific academic tasks	3.77	0.86	67.5
Interactions and responses from AI tools are clear and easy to understand	3.85	0.74	70.0
Easy for me to become skilful and proficient at using AI tools	3.85	0.70	72.5

Students perceived GenAI as moderately useful (M = 3.88, SD = 0.67) and moderately easy to use (M = 3.79, SD = 0.63). Usefulness was rated highest for saving time: optimising workflow when several assignments were due (M = 4.03) and completing assignments faster (M = 4.00), each endorsed by 72.5% of students. It was rated lowest for increasing overall productivity (M = 3.73; 57.5%). Students therefore see GenAI mainly as a time-saving aid rather than as something that improves the quality of their learning, which echoes the benefits students emphasise in other studies. Ngo (2023) found that university students in Vietnam named saving time as a leading benefit of ChatGPT, alongside access to information and personalised feedback, and Chan and Hu (2023) reported similar priorities in Hong Kong. Our ratings were, however, more moderate than those of Malaysian student teachers, who rated the benefits of ChatGPT at M = 4.19 (Noordin & Nazarudin, 2024). Differences in instruments make direct comparison tentative, but the gap is consistent with our sample being in their first year, with less academic experience against which to judge what AI adds. Ngo (2023) also found that students' main concern was being unable to assess the quality and reliability of AI sources, which parallels the low confidence in evaluating AI output found under RQ1. Because usefulness is the most consistent driver of GenAI acceptance across the literature (Yang, 2026), the tempered usefulness ratings of these first-year students suggest that their eventual adoption may depend on seeing clearer academic value beyond saving time. For ease of use, students found AI responses clear (M = 3.85) and felt they could become proficient (M = 3.85), but learning to operate and navigate new AI tools was rated lowest (M = 3.70; 57.5%). This is consistent with the low confidence in navigating AI interfaces found under RQ1. Very few students disagreed with any usefulness or ease item (0–5%), so perceptions were positive overall but tempered, with many students choosing the neutral midpoint.

RQ3: Relationships Among Digital Readiness, Perceived Usefulness and Confidence

Table 3 Pearson correlations among digital readiness, perceived usefulness, confidence in using AI and perceived ease of use (n = 40)

Relationship	**r**	**p**	**Strength**
Digital readiness ↔ Confidence in using AI	.497	.001	Moderate

Confidence in using AI ↔ Perceived usefulness	.486	.002	Moderate
Digital readiness ↔ Perceived usefulness	.484	.002	Moderate
Supplementary: Perceived ease of use ↔ Perceived usefulness	.684	< .001	Strong
Supplementary: Perceived ease of use ↔ Confidence in using AI	.652	< .001	Strong
Supplementary: Perceived ease of use ↔ Digital readiness	.635	< .001	Strong

All three relationships were positive, moderate and statistically significant (r = .48–.50, all p < .01). Digital readiness was related to confidence in using AI, r(38) = .50, p = .001: students who are more comfortable with digital technology in general also tend to feel more confident with AI. However, a correlation of this size means that readiness accounts for only about a quarter of the variation in AI confidence, so a high level of digital readiness does not guarantee a high level of AI confidence. This mirrors the gap observed in RQ1. Confidence in using AI was also related to perceived usefulness, r(38) = .49, p = .002, consistent with studies showing that students who feel more capable with AI see more value in it (Park et al., 2026; Seo et al., 2024; Wang et al., 2023). The strength of this link, however, was clearly weaker than in some recent work. Among first-year students at a Saudi university, most of them in STEM programmes, Alghamdi (2025) found that AI self-efficacy correlated very strongly with perceived educational value (r = .81 for creativity) and that perceptions of GenAI's benefits for critical thinking differed between STEM and non-STEM students. One possible explanation for our more modest correlation is disciplinary: for language students, whether AI output is useful depends heavily on their own still-developing language and disciplinary judgement, not only on how confident they feel operating the tool. With n = 40, though, the 95% confidence interval around r = .49 is wide (.21 to .69), so this difference should be tested in larger, cross-disciplinary samples. Digital readiness was related to usefulness, r(38) = .48, p = .002, supporting the TAM view that individual characteristics act as external variables shaping how students perceive a technology (Davis, 1989; Granić & Marangunić, 2019).001) While RQ3 focused primarily on readiness, confidence and usefulness, perceived ease of use was examined as a supplementary benchmark to evaluate TAM's structural coherence in this context. In GenAI research, perceived usefulness consistently emerges as the primary determinant of adoption intention, whereas ease of use tends to exhibit more variable influence given the intuitive conversational interfaces of modern large models (Yang, 2026). As shown in the supplementary rows of Table 3, perceived ease of use nevertheless correlated strongly with perceived usefulness (r=.68, p<.001), confidence (r=.65, p < .001), and digital readiness (r= .68, p < .001). The observed ease of use-usefulness correlation (r = .68) aligns closely with the pooled effect size (r= .63) documented in Xue et al.'s (2026) meta-analysis of TAM in educational AI. This demonstrates that while conversational GenAI tools may be perceived as easy to operate, usability in language-based academic tasks remains tightly coupled with students' evaluative confidence and perceived utilitarian value. Because the design is correlational, these results show association, not cause and effect. Taken together, we interpret these relationships as evidence that digital readiness is a necessary starting point for confident AI use but not a sufficient one: in our sample, being comfortable with technology in general did not automatically make students confident or discerning users of AI.

CONCLUSION AND IMPLICATIONS

Across the three research questions, a consistent pattern emerges indicating an observed descriptive divergence between first-year non-STEM students' general digital readiness and their AI-specific confidence. First-year non-STEM students arrive with high general digital readiness, but their confidence in using AI is descriptively lower, especially in navigating AI tools and judging AI-generated content (RQ1). They see GenAI as moderately easy and useful, mainly as a way to save time (RQ2). Readiness, usefulness and confidence are moderately interrelated, so general digital comfort supports, but does not ensure,

confident and critical use of AI (RQ3). As language educators, we see this gap most clearly in the skills our students reported as weakest. For us, as lecturers, the finding is a reminder that students' ease with everyday digital tools should not be mistaken for readiness to judge what AI produces. In our view, the practical implication is that early AI literacy support should build the specific skills students feel least confident about, such as evaluating and recognising AI output, navigating tools and prompting effectively, rather than assuming these follow from general digital skills (Chan & Hu, 2023; Long & Magerko, 2020). This aligns with UNESCO's call for a human-centred approach that builds learners' capacity to judge AI critically (Miao & Holmes, 2023; Miao & Shiohira, 2024), and with the Ministry of Higher Education's requirement that providers plan GenAI literacy training for students (Ministry of Higher Education Malaysia, 2024). Our findings suggest where such training should start for first-year language students, in line with national principles for responsible AI use (MOSTI, 2024). The study is limited by its small, purposive, single-institution sample, its self-reported measures and its cross-sectional design, so the results are exploratory. The adapted instrument was not content-validated by experts or piloted before use, the readiness–confidence gap was not tested inferentially, and the sample was too small for factor analysis to confirm the construct boundaries. Future research should use larger, multi-institution samples, establish the content validity of the adapted instrument through expert review and piloting, confirm the measurement model with confirmatory factor analysis, test the readiness–confidence difference statistically and follow students over time to see whether AI confidence catches up with digital readiness as they progress.

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