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Preparing Students for a Global Workforce: Artificial Intelligence Literacy, Employability Readiness, and Learning Experiences in Technical Higher Education

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ABSTRACT

This study examined the relationship between artificial intelligence (AI) literacy and employability readiness among technical higher education students and explored how learning experiences shape this relationship. Using a sequential explanatory mixed-methods design, quantitative data were collected from 336 students through validated surveys and analyzed using descriptive statistics, Spearman's correlation, and multiple regression. Qualitative data from interviews with 15 students, six faculty members, and six administrators were analyzed thematically. Findings indicated high levels of AI literacy and employability readiness; however, AI literacy was not significantly associated with employability readiness and did not predict workforce preparedness. Qualitative results showed that employability readiness was primarily developed through internships, projects, teamwork, communication activities, and technical training, while AI supported learning efficiency and engagement. The study suggests that AI literacy contributes to workforce preparation when integrated with experiential learning and broader professional skill development.

Keywords: artificial intelligence literacy, employability readiness, technical higher education, work-based learning, workforce preparation, learning experiences, sequential explanatory mixed methods

INTRODUCTION

The rapid advancement of artificial intelligence (AI) is transforming industries, occupations, and the competencies expected of graduates entering the global workforce (Lyapin, 2023). Across sectors, employers increasingly seek individuals who can not only use AI-enabled technologies but also critically evaluate, adapt to, and collaborate with intelligent systems in complex professional environments (Babashahi et al., 2024). Consequently, higher education institutions face growing pressure to prepare students for a labour market characterized by technological disruption, digital transformation, and evolving skill requirements (Aguilar & George, 2021). Within this context, AI literacy has emerged as a critical educational priority, extending beyond technical proficiency to encompass the knowledge, skills, attitudes, and ethical awareness necessary for responsible engagement with AI technologies (Choi et al., 2025). Simultaneously, employability readiness remains a central outcome of higher education, reflecting graduates' preparedness to navigate contemporary workplaces and sustain lifelong professional development (Ng, 2022). As institutions worldwide seek effective strategies to prepare future professionals, understanding the relationship among AI literacy, employability readiness, and students' educational experiences has become an increasingly important area of inquiry (Al Yakin et al., 2025).

These challenges are particularly relevant in technical higher education, where students are expected to develop specialized competencies aligned with industry needs while adapting to rapidly changing technological environments (Mirman, 2024). In many developing and emerging economies, including the Philippines, higher education institutions are responding to national and global calls for workforce modernization through the integration of digital technologies and AI-related learning opportunities (Sy, 2025). Technical higher education institutions occupy a unique position within this landscape because they serve as critical pathways for producing industry-ready graduates in fields closely linked to technological innovation and economic development (Zhang, 2024). However, the extent to which students acquire meaningful AI literacy and perceive themselves as prepared for future employment may vary considerably depending on institutional resources, curriculum design, learning environments, and access to emerging technologies (Al Yakin et al., 2025). Although these contextual realities are shaped by local educational conditions, they also reflect broader challenges confronting institutions worldwide as they seek to align educational practices with the demands of the Fourth Industrial Revolution and the emerging AI-driven economy (Cowin, 2021). Consequently, examining students' experiences within a specific technical higher education context can generate insights that resonate beyond national boundaries and inform international discussions on workforce preparation and educational innovation.

Existing scholarship suggests that AI literacy is increasingly associated with individuals' ability to participate effectively in technology-mediated societies and workplaces (Zherebnenko, 2025). Researchers have argued that AI literacy encompasses more than technical knowledge; it includes critical understanding of AI systems, awareness of ethical implications, informed decision-making, and the capacity to apply AI tools responsibly across academic and professional contexts (Kaplan & Meylani, 2025). At the same time, employability readiness has evolved from a narrow focus on job acquisition toward a multidimensional construct that includes technical competence, problem-solving, communication, adaptability, collaboration, and digital capability (Pang, 2024). Recent studies have highlighted the growing importance of AI-related

competencies as employers seek graduates who can leverage emerging technologies while maintaining human-centred skills (Onnen, 2024). Moreover, learning experiences within higher education have been shown to play a significant role in shaping both technological competencies and career preparedness by influencing students' engagement, confidence, self-efficacy, and perceptions of workplace readiness (Chukwuedo et al., 2023).

As artificial intelligence becomes increasingly embedded in higher education, AI literacy is increasingly recognized as a transferable meta-skill that supports innovation, ethical decision-making, and organizational effectiveness, reinforcing its critical role in preparing students for future employment and lifelong learning (Che, 2026). Emerging evidence suggests that AI literacy in higher education is a multidimensional construct encompassing functional, evaluative, and ethical competencies across teaching, research, and institutional practice, underscoring the need for comprehensive AI capability development to support innovation and graduate employability in an AI-driven society (Song et al., 2026). Emerging evidence suggests that AI literacy develops through progressive stages of engagement, enabling students to move beyond uncritical AI use toward informed evaluation and responsible application, thereby strengthening their capacity to use AI effectively in higher education and professional contexts (Liu & Levy, 2026). Recent evidence suggests that AI literacy alone is insufficient to prepare students for AI-mediated labor markets. Instead, AI readiness functions as a critical mechanism through which AI literacy enhances career adaptability, while AI self-efficacy strengthens students' capacity to translate AI-related knowledge into employability-relevant competencies (Testa et al., 2026). In work-based learning settings, AI tools have been shown to support students' confidence, task performance, and workplace readiness, highlighting the importance of integrating AI literacy and responsible AI use into higher education curricula to prepare graduates for evolving professional environments (Miranda et al., 2025).

Despite these advances, several important gaps remain in the literature. First, many studies examine AI literacy, employability readiness, or student learning experiences as separate phenomena rather than as interconnected dimensions of workforce preparation (Al Yakin et al., 2025). Consequently, there remains limited evidence regarding the current levels of AI literacy and employability readiness among students enrolled in technical higher education programs and how these constructs are related. Second, while prior research has identified the growing importance of AI competencies in educational and professional settings, relatively little is known about the extent to which AI literacy contributes to students' employability readiness (Lei & Denggui, 2025). Third, much of the existing research has focused on general higher education populations, technology professionals, or specific disciplinary contexts, leaving technical higher education students comparatively underrepresented in the literature (Sánchez-Muñoz, 2024). Finally, the predominance of quantitative approaches has generated valuable evidence regarding patterns and relationships among variables but has provided limited insight into how students themselves experience the development of AI literacy, perceive its relevance to future employment, and interpret the educational processes through which these competencies are acquired (Kaplan & Meylani, 2025) . As a result, there remains an incomplete understanding of how AI literacy contributes to employability readiness and how students' learning experiences help explain this relationship within technical higher education settings.

Addressing these gaps requires an approach that not only examines measurable relationships among variables but also explores the lived experiences that shape those relationships. Guided by this need, the present study adopts a sequential explanatory mixed-methods design to investigate the interconnected roles of AI literacy, employability readiness, and student learning experiences within technical higher education. The quantitative phase seeks to establish the levels of AI literacy and employability readiness among technical higher education students and to determine whether AI literacy is significantly associated with and predictive of employability readiness. Specifically, the study examines the following questions: (RQ1) What are the levels of AI literacy and employability readiness among technical higher education students? (RQ2) What is the relationship between AI literacy and employability readiness? and (RQ3) To what extent does AI literacy predict employability readiness?

While quantitative findings can reveal patterns and relationships, they cannot fully explain how students develop AI-related competencies or how these competencies are perceived as relevant to future employment. Therefore, the qualitative phase explores students' experiences of learning and using AI within technical higher education environments and examines how these experiences shape their understanding of career preparedness. In particular, the study investigates: (RQ4) How do students experience and develop AI literacy within technical higher education learning environments? (RQ5) How do students perceive the role of AI literacy in preparing them for future employment? and (RQ6) In what ways do students' learning experiences explain the quantitative relationship between AI literacy and employability readiness?

By integrating quantitative and qualitative evidence, the study advances a more comprehensive understanding of workforce preparation in an era of rapid technological change. The central premise of this research is that AI literacy represents an increasingly important component of employability readiness and that students' educational experiences provide critical insight into how AI-related competencies are developed, interpreted, and translated into perceived workforce preparedness. Through this mixed-methods approach, the study contributes to emerging scholarship at the intersection of artificial intelligence, higher education, and workforce development. The findings offer evidence relevant not only to educators and policymakers within technical higher education but also to a broader international audience seeking effective strategies for preparing graduates for AI-driven futures. Ultimately, the study provides empirical and practical insights that can inform curriculum innovation, instructional practices, and institutional strategies aimed at equipping students with the competencies required to thrive in an increasingly technology-mediated global workforce.

LITERATURE REVIEW

The rapid integration of artificial intelligence (AI) across educational and professional settings has intensified scholarly interest in AI literacy as an important competency for higher education graduates. Rather than viewing AI literacy solely as technical proficiency, recent studies consistently describe it as a multidimensional capability encompassing AI knowledge, practical application, critical evaluation, and ethical decision-making (Al Yakin et al., 2025; Che, 2026; Choi et al., 2025). Collectively, these studies suggest that AI literacy enables students to engage more effectively with AI-supported learning and increasingly technology-rich workplaces. However, although there is broad agreement regarding the educational value of AI literacy, the extent to which it is associated with employability readiness remains less conclusive. Emerging evidence indicates that employability is influenced by a wider constellation of competencies—including communication, collaboration, problem-solving, adaptability, and authentic workplace experience—suggesting that AI literacy represents one component of a broader framework of graduate preparedness rather than an independent determinant of employability (Lei & Denggui, 2025; Testa et al., 2026).

The relationship between learning experiences and employability readiness has likewise received growing attention within higher education research. Studies consistently emphasize that learning experiences extend beyond classroom instruction to include project-based learning, internships, industry engagement, collaborative activities, institutional support, and opportunities to apply knowledge in authentic contexts (Pang, 2024; Westover, 2024). Within mixed-methods research, these experiences are particularly valuable because they help explain why students with similar competency profiles may report different levels of career readiness. Consequently, learning experiences should not merely be viewed as educational contexts but as mechanisms through which technical competencies, professional skills, and career confidence are developed. This perspective is consistent with Social Cognitive Career Theory, which emphasizes that competencies emerge through accumulated learning experiences rather than through isolated knowledge acquisition (Lent et al., 1994).

Although international research generally acknowledges the growing importance of AI literacy within higher education, important limitations remain. Much of the existing literature has concentrated on describing levels of AI literacy, validating measurement frameworks, or examining students' perceptions of AI technologies (Che, 2026; Song et al., 2026). Other studies have focused primarily on employability competencies without considering the potential role of AI-supported learning experiences (Razalli et al., 2025). Moreover, many investigations rely on quantitative cross-sectional designs, limiting understanding of how students' educational experiences help explain quantitative patterns. Evidence from technical and vocational higher education, particularly in developing-country contexts such as the Philippines, also remains limited. Consequently, relatively little is known about how AI literacy, learning experiences, and employability readiness intersect within technical higher education or whether students' experiences help explain the absence or presence of relationships among these constructs. Addressing these gaps, the present study employed a sequential explanatory mixed-methods design to examine AI literacy and employability readiness while using qualitative evidence to contextualize and explain the quantitative findings among technical higher education students in the Philippines.

THEORETICAL FRAMEWORK

This study is anchored in Human Capital Theory (HCT) (Becker, 1964) and Social Cognitive Career Theory (SCCT) (Lent et al., 1994). Together, these theories provide complementary perspectives for understanding how artificial intelligence (AI) literacy, learning experiences, and employability readiness are interconnected within technical higher education. Human Capital Theory explains the educational value of competencies developed through learning, whereas Social Cognitive Career Theory explains how learning experiences shape students' competence, self-efficacy, and career development. Rather than assuming that AI literacy directly determines employability readiness, the present study conceptualizes AI literacy as one educational competency situated within a broader developmental process through which students prepare for future employment.

Human Capital Theory and AI Literacy

Human Capital Theory proposes that investments in education, training, and skill development increase individuals' productive capabilities and potential labour-market value (Becker, 1964). Educational institutions therefore contribute to workforce preparation by developing knowledge, technical skills, and professional competencies that enable graduates to adapt to changing economic and technological environments.

Within this study, AI literacy is conceptualized as an emerging form of human capital because it equips students with the knowledge, practical skills, and ethical awareness required to engage responsibly with AI-supported technologies. As workplaces increasingly integrate artificial intelligence into professional practice, graduates are expected to understand not only how to use AI tools but also how to evaluate AI-generated information critically and apply these technologies responsibly.

However, Human Capital Theory does not suggest that every educational competency contributes equally to employability outcomes. The present study therefore recognizes AI literacy as one component of students' educational capital rather than the sole determinant of workforce preparedness. Communication, problem-solving, collaboration, professionalism, adaptability, disciplinary expertise, and authentic workplace experience likewise represent important forms of human capital developed through higher education. Accordingly, this study examines whether AI literacy independently explains employability readiness while acknowledging that workforce preparation is likely to reflect the combined influence of multiple competencies.

Social Cognitive Career Theory and Learning Experiences

Whereas Human Capital Theory emphasizes the competencies acquired through education, Social Cognitive Career Theory explains how learning experiences influence students' confidence, career development, and perceptions of future work (Lent et al., 1994). Grounded in Bandura's Social Cognitive Theory, SCCT proposes that learning experiences shape self-efficacy beliefs and outcome expectations, which subsequently influence career-related behaviour and readiness.

Within technical higher education, these learning experiences include classroom instruction, project-based learning, laboratory activities, internships, collaborative work, industry exposure, and engagement with AI-supported learning environments. Such experiences provide opportunities for students to apply knowledge, solve authentic problems, receive feedback, and develop confidence in their professional capabilities.

Accordingly, SCCT suggests that employability readiness develops through accumulated educational experiences rather than through the acquisition of any single competency. AI literacy may support students' participation in technology-enhanced learning, but students' confidence in their preparedness for employment is more likely to emerge from the integration of technical training, workplace exposure, communication, collaboration, and authentic learning experiences.

Theoretical Integration

The integration of Human Capital Theory and Social Cognitive Career Theory provides a comprehensive framework for understanding workforce preparation in AI-integrated higher education. Human Capital Theory explains AI literacy as an important educational competency that contributes to students' overall capability to participate in technology-rich environments, whereas Social Cognitive Career Theory explains how diverse learning experiences foster competence, self-efficacy, and perceptions of career readiness.

Importantly, the present study does not assume that AI literacy independently determines employability readiness. Instead, the framework proposes that AI literacy represents one dimension of educational capital whose value is realized alongside broader learning experiences and complementary competencies. This proposition is particularly relevant given that employability readiness encompasses communication, teamwork, professionalism, critical thinking, adaptability, and workplace experience, all of which are developed through sustained educational engagement.

The findings of this study therefore have theoretical significance. Although students demonstrated high AI literacy, the absence of a significant relationship between AI literacy and employability readiness suggests that Human Capital Theory should be interpreted more broadly within AI-integrated education. AI literacy constitutes one form of educational capital, but employability readiness reflects the cumulative influence of multiple forms of human capital rather than AI literacy alone. Likewise, the qualitative findings reinforce Social Cognitive Career Theory by demonstrating that students attributed their confidence for future employment primarily to internships, collaborative projects, technical training, and authentic workplace experiences. These findings indicate that learning experiences function as the mechanism through which diverse competencies—including AI literacy—are translated into perceptions of career readiness.

Consequently, the present study extends both Human Capital Theory and Social Cognitive Career Theory by positioning AI literacy as a complementary educational competency embedded within a broader developmental ecosystem of workforce preparation rather than as an independent predictor of employability readiness.

RESEARCH METHOD

Research Design

This study employed a sequential explanatory mixed-methods design, consisting of two distinct but interconnected phases. The first phase involved the collection and analysis of quantitative data to examine the levels of artificial intelligence (AI) literacy and employability readiness among technical higher education students and to determine the relationship between these variables. Quantitative findings provided a broad understanding of the phenomenon and identified patterns that required further exploration.

The second phase involved the collection and analysis of qualitative data to explain, elaborate, and contextualize the quantitative results. Semi-structured interviews were conducted with selected students, teachers, and administrators to gain deeper insights into how AI literacy was developed and how it contributed to students' employability readiness. A connecting integration strategy was employed, wherein the quantitative findings informed both participant selection and the development of the interview protocol. Participants representing varying levels of AI literacy and employability readiness were purposively selected to provide explanatory perspectives on the statistical patterns observed during the quantitative phase.

Interview questions focused on participants' experiences with AI-related learning, perceptions of the role of AI literacy in workforce preparation, and educational practices that supported the development of employability competencies. The qualitative findings were subsequently integrated with the quantitative results during interpretation to provide a more comprehensive understanding of the relationship between AI literacy and employability readiness. This integration enabled the study to not only identify statistical associations but also explain the underlying experiences and contextual factors that shaped those relationships.

Participants and Setting

The study was conducted at Hadji Butu School of Arts and Trades, a public technical higher education institution in the Philippines. The quantitative phase utilized a census of all eligible undergraduate students enrolled during the study period (N = 336).

For the qualitative phase, purposive maximum-variation sampling was employed to obtain participants capable of providing rich explanations of the quantitative findings. The qualitative sample consisted of 27 participants, including 15 students, 6 faculty members, and 6 academic administrators. Student participants represented varying levels of AI literacy and employability readiness, while faculty members and administrators provided instructional and institutional perspectives on AI integration and workforce preparation.

Research Instruments

Quantitative data were collected using a structured questionnaire composed of four sections: demographic profile, AI literacy, learning experiences, and employability readiness. Instrument items were adapted from validated international scales and contextualized for technical higher education settings. Content validity was established through expert review involving specialists in educational technology, technical-vocational education, and research methodology. Pilot testing was conducted prior to implementation, and the instrument demonstrated excellent internal consistency reliability (Cronbach's α = .972 across 35 items).

Qualitative data were gathered through a semi-structured interview guide developed from the quantitative findings. The interview questions focused on participants' experiences with AI-supported

learning, perceptions of employability readiness, and explanations for the observed quantitative patterns. The interview protocol was reviewed by qualitative research experts to ensure relevance and clarity.

Data Collection and Analysis

Following institutional approval and the completion of informed consent procedures, quantitative data were collected through a survey administered to all eligible students. Upon completion of the quantitative phase, participants for the qualitative phase were purposively selected based on the quantitative findings to provide explanatory insights into the statistical results. Semi-structured interviews were subsequently conducted, audio-recorded with participants' permission, and transcribed verbatim for analysis.

Quantitative data were analyzed using IBM SPSS Statistics Version 28. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were computed to describe participants' demographic characteristics and determine the levels of AI literacy and employability readiness. Prior to inferential analysis, the distribution of the data was examined using the Kolmogorov–Smirnov and Shapiro–Wilk tests of normality. The results indicated that the data did not satisfy the assumption of normality ($p < .05$); therefore, Spearman's rank-order correlation was employed to examine the relationship between AI literacy and employability readiness because it is appropriate for non-normally distributed data and ordinal or ranked measurements.

To further examine whether the dimensions of AI literacy were associated with variations in employability readiness, a multiple linear regression analysis was performed. This analysis was conducted to determine the collective and individual contributions of AI Knowledge and Understanding, AI Application Skills, and Ethical and Responsible AI Use to employability readiness while estimating the proportion of variance explained by the overall model. Regression diagnostics, including multicollinearity assessment using Variance Inflation Factor (VIF) and tolerance statistics, were examined to verify that the predictor variables satisfied the assumptions for regression analysis. Statistical significance for all inferential analyses was evaluated at the .05 level.

Qualitative data were analyzed using Braun and Clarke's (2006) six-phase thematic analysis. The analytical process involved familiarization with the data, generation of initial codes, development of categories, identification and review of themes, definition and refinement of themes, and preparation of the final narrative. To enhance the trustworthiness of the qualitative findings, triangulation was conducted across students, faculty members, and administrators. Credibility was further strengthened through member checking, peer debriefing, and the maintenance of an audit trail documenting the analytic decisions throughout the research process.

Ethical Considerations

Ethical approval was secured from the appropriate institutional authorities prior to data collection. Participation was voluntary, and informed consent was obtained from all participants. Confidentiality, anonymity, and data privacy were maintained throughout the study. Participants were informed of their right to withdraw at any stage without penalty, and all data were used solely for research purposes.

RESULTS

Table 1

Descriptive Statistics of AI Literacy and Employability Readiness (N = 336)

Variable	*M*	*SD*	Interpretation
AI Literacy			
AI Knowledge and Understanding	3.95	0.83	High
AI Application Skills	3.83	0.81	High
Ethical and Responsible AI Use	4.08	0.76	High
Overall AI Literacy	3.95	0.80	High
Employability Readiness			
Communication Skills	3.69	0.84	High
Problem-Solving and Critical Thinking	3.96	0.82	High
Digital and Technological Competence	4.10	0.81	High
Career Readiness and Professionalism	4.05	0.81	High
Overall Employability Readiness	3.95	0.82	High

Note. *M* = mean; *SD* = standard deviation. Interpretation was based on the following scale: 4.21–5.00 = Very High; 3.41–4.20 = High; 2.61–3.40 = Moderate; 1.81–2.60 = Low; 1.00–1.80 = Very Low.

Table 1 presents the level of artificial intelligence literacy among technical higher education students and the level of employability readiness among technical higher education students. The findings revealed that the respondents exhibited an overall high level of AI literacy (M = 3.95, SD = 0.80). Among the dimensions, Ethical and Responsible AI Use obtained the highest mean score (M = 4.08, SD = 0.76), followed by AI Knowledge and Understanding (M = 3.95, SD = 0.83) and AI Application Skills (M = 3.83, SD = 0.81). All dimensions were interpreted as High AI Literacy, indicating that students possess substantial knowledge of artificial intelligence concepts, practical competencies in applying AI tools, and awareness of ethical considerations associated with AI use. These findings suggest that technical higher education students are generally well-prepared to engage with AI technologies in academic and future professional settings.

Table 2

Spearman's Rank-Order Correlation Between AI Literacy and Employability Readiness (N = 336)

Variables	Spearman's ρ	*p*	Interpretation
AI Literacy and Employability Readiness	.069	.210	Negligible positive, not significant

Note. ρ = Spearman's rank-order correlation coefficient. Statistical significance was evaluated at $\alpha = .05$ (two-tailed).

Table 2 presents a negligible positive correlation between artificial intelligence literacy and employability readiness among technical higher education students ($\rho = .069$, $p = .210$), indicating that the relationship was not statistically significant. This finding suggests that, within the present sample, AI literacy was not independently associated with students' perceived employability readiness. Although both AI literacy and employability readiness were reported at high levels, the absence of a significant correlation indicates that these constructs may develop independently or be shaped by different educational and contextual factors.

Table 3

Multiple Regression Predicting Employability Readiness from AI Literacy Dimensions

Predictor	*B*	*SE B*	*β*	*t*	*P*
Constant	3.699	0.198	—	18.652	< .001
AI Knowledge and Understanding	0.018	0.029	.033	0.609	.543
AI Application Skills	0.030	0.028	.058	1.058	.291
Ethical and Responsible AI Use	0.016	0.029	.031	0.557	.578

Note. Model statistics: $R = .073$, $R^2 = .005$, Adjusted $R^2 = -.004$, $F(3, 332) = 0.596$, $p = .618$.

Table 3 presents the results of the multiple regression analysis examining the association between the dimensions of artificial intelligence literacy and employability readiness among technical higher education students. The overall regression model was not statistically significant, $F(3, 332) = 0.596$, $p = .618$, with an R^2 of .005, indicating that the three AI literacy dimensions collectively accounted for only 0.5% of the variance in employability readiness. Moreover, none of the individual dimensions—AI Knowledge and Understanding, AI Application Skills, or Ethical and Responsible AI Use—were significantly associated with employability readiness within the model.

Qualitative Findings

The qualitative findings provide insight into how students, teachers, and administrators perceive the role of artificial intelligence (AI) literacy in technical higher education and its contribution to employability readiness. A notable characteristic of the dataset was the remarkable consistency of responses across stakeholder groups. Participants uniformly recognized AI as a valuable educational tool that enhances learning and productivity. However, they simultaneously emphasized that employability readiness is shaped by a broader range of academic, technical, interpersonal, and experiential factors. Collectively, the findings suggest that AI literacy serves as an important contemporary competency within higher education, yet it is viewed as one component of a wider employability ecosystem rather than a direct determinant of workforce preparedness.

Theme 1: Cultivating AI Literacy Through Agentic and Supported Learning Experiences

The first theme captures how participants conceptualized AI literacy as a practical learning competence developed through ongoing engagement with AI technologies. Across students, teachers, and administrators, AI was consistently described as a resource that supports learning processes and improves academic productivity. Rather than being perceived as a specialized technical skill, AI literacy was framed as a functional capability that enables students to perform educational tasks more efficiently and effectively.

Students repeatedly emphasized the positive contribution of AI to their learning experiences. One student explained, *"I use AI almost daily to help organize my study notes and outline complex topics, which saves me hours of foundational work"* (S3). This reflects a common perception that AI facilitates academic work and enhances productivity. Another student echoed this, noting, *"AI has been incredible for my productivity, especially when I need a quick breakdown of a difficult concept before a practical exam" (S8).*

Teachers similarly recognized the educational benefits of AI while emphasizing its role within broader learning processes. As one teacher noted*, "I see my students using AI very effectively as a research assistant to quickly synthesize literature, which allows them to spend more time on application"* (T2).

Administrators reinforced this position by highlighting institutional support for responsible AI engagement. According to one administrator, *"We actively encourage students to utilize AI to boost their academic output, provided they adhere to our guidelines regarding academic integrity"* (A1). Taken together, these findings indicate that AI literacy develops through the interaction between student engagement and institutional support, resulting in a practical competence that enhances learning.

Theme 2: Transforming Learning Experiences into Employability Readiness Through Multiple Competencies

The second theme reflects participants' understanding that employability readiness develops through a combination of academic, technical, interpersonal, and experiential learning opportunities. Although participants acknowledged the value of AI literacy, they consistently emphasized that workforce preparation requires competencies extending beyond technological proficiency.

Students repeatedly distinguished between the educational benefits of AI and the broader experiences that contribute to career readiness. Highlighting this distinction, one student shared, *"While AI helps me draft reports faster, my actual confidence for the workplace came directly from our collaborative group projects and my internship"* (S1). Practical experiences were repeatedly identified as important opportunities for applying knowledge. Another student specified*, "The technical training in the workshop and learning how to communicate with my team are the things that actually prepared me for my future job"* (S14).

Teachers reinforced this interpretation by emphasizing the importance of competencies that cannot be replaced by AI literacy alone. One teacher explained, *"They are fast with AI, but when they step into the lab, they still need to physically demonstrate the technical skill and show empathy when problem-solving with peers"* (T5). This perspective underscores the continued importance of communication skills, teamwork, and technical expertise.

Administrators likewise highlighted the multifaceted nature of employability development. One administrator noted, *"Our curriculum balances technological integration with mandatory practicum hours because industry partners demand graduates who are well-rounded, not just digitally literate"* (A4). Consequently, participants consistently portrayed employability as a holistic outcome shaped by numerous educational influences.

Theme 3: Negotiating Opportunities and Constraints in AI-Enabled Career Development

A cross-cutting theme emerging from the dataset concerns participants' recognition of both the opportunities and limitations associated with AI in relation to career development. Across stakeholder groups, there was a clear acknowledgment that AI contributes positively to learning, but also a recognition of its boundaries.

Teachers articulated this balance most explicitly, recognizing the educational benefits of AI while cautioning against viewing it as a complete solution*. "If students use AI to bypass the critical thinking phase of their assignments, they are going to struggle severely during their first month on a real job site,"* warned one faculty member (T1). This reflects an understanding that technological competence and employability competence are related but distinct constructs.

While the consensus on AI's utility was highly positive, nuanced and contrasting perspectives emerged among students regarding over-reliance. While most praised AI's efficiency, one student expressed caution*: "I actually worry that relying too heavily on AI for problem-solving in class might make me freeze up during a live interview when I don't have a screen in front of me"* (S12).

Finally, administrators highlighted the complexity of preparing students for employment within increasingly technology-rich environments. *"The institution is working hard to promote responsible AI use as an enabling tool, while constantly reminding students that their character, work ethic, and hands-on experience are what ultimately secure employment,"* summarized an administrator (A6).

Table 4

Joint Display of Quantitative Results, Qualitative Themes, and Meta-Inferences

Quantitative Findings	Qualitative Themes and Supporting Evidence	Meta-Inference
Students demonstrated a high level of AI literacy (M = 3.95, SD = 0.80), with Ethical and Responsible AI Use obtaining the highest mean score (M = 4.08, SD = 0.76).	Cultivating AI Literacy Through Agentic and Supported Learning Experiences. Students described AI as a tool that supports learning and productivity. Teachers observed that students use AI effectively for learning, while administrators emphasized institutional promotion of responsible AI use.	The convergence of findings suggests that students' high AI literacy is fostered by continuous engagement with AI-supported learning environments and reinforced by institutional encouragement of responsible AI use. AI literacy has become an embedded educational competency that supports both academic performance and ethical technology engagement.
Students demonstrated a high level of employability readiness (M = 3.95, SD = 0.82), with Digital and Technological Competence obtaining the highest mean score (M = 4.10, SD = 0.81).	Transforming Learning Experiences into Employability Readiness Through Multiple Competencies. Participants consistently emphasized that employability readiness develops through projects, internships, teamwork, communication activities, and technical training rather than through AI literacy alone.	The integrated findings indicate that employability readiness is a multidimensional developmental outcome shaped by the combined influence of academic preparation, experiential learning, interpersonal competencies, and technical skill development. AI literacy contributes to this process but is only one component of a broader employability ecosystem.
AI literacy demonstrated a negligible and non-significant relationship with employability readiness (ρ = .069, p = .210). Furthermore, AI literacy dimensions did not significantly predict employability readiness (R^2 = .005, F(3,332) = 0.596, p = .618).	Negotiating Opportunities and Constraints in AI-Enabled Career Development. Students, teachers, and administrators consistently acknowledged that AI enhances learning and productivity but emphasized that workforce readiness depends on broader competencies, including communication, teamwork, problem-solving, technical expertise, and practical workplace experiences.	The qualitative findings explain why AI literacy was neither significantly associated with nor predictive of employability readiness. Although AI literacy functions as a valuable educational competency, it is perceived as a complementary rather than determinative factor in career preparation. Employability readiness emerges from multiple interacting experiences and competencies, thereby reducing the influence of AI literacy alone on workforce preparedness.

The integration of the quantitative and qualitative findings provides a more comprehensive understanding of the relationship between AI literacy and employability readiness among technical higher education students. The quantitative results demonstrated that students reported high levels of both AI literacy and employability readiness; however, AI literacy was neither significantly associated with nor predictive of employability readiness. The qualitative findings help explain this result by showing that students, teachers, and administrators consistently perceived AI as a valuable educational resource for supporting learning, information processing, and responsible technology use, while simultaneously emphasizing that preparedness for employment is shaped by a broader combination of communication skills, teamwork, technical competence, problem-solving, professionalism, and authentic workplace experiences.

This integrated interpretation is consistent with recent scholarship describing AI literacy as an important educational competency that enables students to engage critically and responsibly with AI-supported technologies (Jat, 2026; Prado et al., 2026). At the same time, contemporary employability research consistently characterizes workforce readiness as a multidimensional outcome that develops through the interaction of technical competencies, transferable skills, experiential learning, and professional development rather than through any single competency (Azahari et al., 2025; Hackl et al., 2026). Emerging

evidence likewise indicates that AI literacy should be understood as a complementary educational competency rather than an independent indicator of employability readiness (Yılmaz & Çetin, 2026).

The meta-inference of the present study therefore extends existing scholarship by demonstrating that AI literacy represents one component of broader educational preparation within technical higher education. Rather than functioning as a direct determinant of workforce preparedness, AI literacy operates alongside authentic learning experiences and complementary competencies that collectively shape students' perceptions of career readiness. The convergence of the quantitative and qualitative findings underscores that employability readiness emerges through the integration of academic, interpersonal, technical, and experiential learning, highlighting the distinct yet complementary roles of AI literacy and broader educational experiences in preparing students for increasingly technology-rich workplaces.

DISCUSSION AND CONCLUSIONS

This study examined the levels of artificial intelligence (AI) literacy and employability readiness among technical higher education students and explored how students' learning experiences contextualize the relationship between these constructs. Guided by Human Capital Theory (Becker, 1964) and Social Cognitive Career Theory (Lent et al., 1994), the study adopted a sequential explanatory mixed-methods design to integrate quantitative findings with qualitative evidence. Three principal findings emerged. First, students demonstrated high levels of AI literacy, with Ethical and Responsible AI Use receiving the highest rating. Second, students likewise reported high employability readiness, particularly in Digital and Technological Competence. Third, despite these high levels, AI literacy was neither significantly associated with nor predictive of employability readiness. The qualitative findings help explain these quantitative results by showing that although AI literacy is regarded as an important educational competency, students, teachers, and administrators consistently viewed employability readiness as the product of broader educational, interpersonal, and experiential learning processes.

AI Literacy as an Emerging Educational Competency

The present study found that technical higher education students demonstrated a high level of AI literacy across all dimensions, with Ethical and Responsible AI Use obtaining the highest mean score. This finding suggests that students possess not only the knowledge and practical skills required to use AI technologies but also an awareness of the ethical considerations associated with responsible AI use. Collectively, these results indicate that AI literacy has become an important educational competency within technology-enhanced learning environments.

This finding is consistent with previous research describing AI literacy as a multidimensional construct that extends beyond technical proficiency to include critical thinking, ethical reasoning, and responsible technology use (Tofiq & Latif, 2025; Choi et al., 2025). Likewise, Fekete (2025) argued that students with well-developed AI literacy are better prepared to engage responsibly with intelligent technologies in educational settings. While previous studies have primarily emphasized the importance of AI literacy for navigating AI-supported environments, the present study extends this literature by demonstrating that ethical and responsible AI use represents the strongest dimension of AI literacy among technical higher education students. This finding suggests that students increasingly recognize AI not merely as a technological tool but as a resource requiring informed and ethical use.

One explanation for these findings is the increasing integration of AI into higher education teaching and learning. Students routinely encounter AI in activities such as information retrieval, academic writing, project development, and collaborative learning, allowing them to develop familiarity with AI-supported technologies through repeated educational experiences. Simultaneously, institutional emphasis on responsible AI use and academic integrity may have contributed to students' heightened awareness of

ethical considerations when using AI. Consequently, AI literacy appears to develop through the interaction of technological engagement, institutional guidance, and continuous learning experiences.

Viewed through the lens of Human Capital Theory (Becker, 1964), AI literacy represents an emerging form of educational capital that enables students to participate effectively in technology-rich learning environments. However, the present findings also suggest that this educational capital should not be interpreted as an independent indicator of workforce preparedness. Instead, AI literacy represents one component of students' broader competency development, functioning alongside other forms of knowledge, skills, and experiences cultivated throughout higher education.

These findings suggest that higher education institutions should continue integrating AI literacy across curricula while strengthening instruction related to ethical decision-making, critical evaluation of AI-generated content, and responsible technology use. Such efforts may better prepare students to participate effectively in AI-supported academic and professional environments while maintaining the ethical standards expected in higher education.

Employability Readiness as a Multifaceted Developmental Outcome

The findings further revealed that students demonstrated a high level of employability readiness, with Digital and Technological Competence receiving the highest rating among the employability dimensions. Communication Skills, Problem-Solving and Critical Thinking, and Career Readiness and Professionalism likewise received high ratings, indicating that students generally perceived themselves as possessing the competencies required to participate in an increasingly technology-driven workforce.

This finding aligns with previous research characterizing employability readiness as a multidimensional construct encompassing communication, critical thinking, professionalism, adaptability, and digital competence rather than technical expertise alone (Pang, 2024). Similarly, Zhyvko et al. (2024) emphasized that digital competence has become increasingly important in contemporary workplaces, while Kumar (2024) highlighted the central role of problem-solving and critical thinking in preparing graduates for complex professional environments. Linvill et al. (2024) likewise identified communication and professional behaviour as essential competencies supporting workplace performance, whereas Isaeva and Grigorash (2023) argued that graduate employability reflects the integration of multiple competencies developed throughout higher education. The present findings reinforce these perspectives by demonstrating that students perceive employability readiness as encompassing a broad range of academic, technical, and professional competencies.

The qualitative findings provide further insight into this result. Students consistently identified internships, collaborative projects, technical training, communication activities, and authentic workplace experiences as the educational experiences that most strengthened their confidence for future employment. Teachers similarly emphasized that technical competence alone is insufficient without interpersonal skills, while administrators highlighted the importance of integrating technological innovation with practical workplace exposure. These perspectives suggest that employability readiness develops through sustained participation in diverse learning experiences rather than through isolated competency development.

This interpretation is consistent with Social Cognitive Career Theory (Lent et al., 1994), which proposes that learning experiences shape individuals' competencies, self-efficacy, and career-related confidence. The findings suggest that employability readiness emerges through continuous engagement in authentic educational activities that enable students to acquire technical knowledge while simultaneously developing communication, collaboration, adaptability, and professional judgement. Accordingly, workforce preparation reflects an ongoing developmental process rather than the acquisition of any single competency.

The findings underscore the importance of designing curricula that combine disciplinary knowledge with experiential learning opportunities. Project-based learning, internships, industry collaborations, communication-focused instruction, and authentic workplace experiences should remain

integral components of higher education programs because they collectively cultivate the diverse competencies associated with employability readiness.

AI Literacy as a Complementary Educational Competency

A central finding of this study is that AI literacy was neither significantly associated with nor predictive of employability readiness. Although students reported high levels of both AI literacy and employability readiness, the statistical analyses demonstrated that variation in AI literacy did not correspond to variation in students' perceived readiness for employment. These findings indicate that AI literacy and employability readiness represent related but distinct educational outcomes.

This finding both supports and extends previous scholarship. Existing studies consistently recognize AI literacy as an important educational competency that enables students to understand, evaluate, and responsibly apply AI technologies within academic and professional contexts (Che, 2026; Choi et al., 2025). Likewise, employability research consistently conceptualizes workforce readiness as a multidimensional construct shaped by communication, professionalism, collaboration, digital competence, adaptability, and practical experience (Pang, 2024; Westover, 2024). Rather than contradicting these perspectives, the present findings suggest that although AI literacy is valuable within higher education, it does not independently explain employability readiness. Instead, the results extend existing literature by demonstrating that AI literacy should be understood as one component within a broader framework of graduate competency development.

The qualitative findings provide a compelling explanation for the absence of a significant statistical relationship. Across students, teachers, and administrators, AI was consistently described as a valuable educational resource that supports learning, productivity, and access to information. However, participants also emphasized that career readiness depends primarily on communication skills, teamwork, critical thinking, technical competence, professional attitudes, and authentic workplace experience. These findings suggest that while AI literacy supports technology-enhanced learning, students perceive workforce preparedness as developing through the integration of multiple educational experiences rather than through AI literacy alone.

Human Capital Theory provides an important perspective for interpreting these findings. Although AI literacy represents a valuable form of educational capital, the findings suggest that not all forms of human capital contribute equally to students' perceptions of employability readiness. Rather, workforce preparedness appears to reflect the combined influence of disciplinary knowledge, transferable skills, interpersonal competencies, and practical experience accumulated throughout higher education. Similarly, Social Cognitive Career Theory helps explain why learning experiences emerged as central to participants' perceptions of employability. The theory proposes that career confidence develops through mastery experiences, social learning, and opportunities to apply competencies in authentic contexts. The qualitative findings strongly support this perspective, as participants consistently identified internships, collaborative projects, and workplace experiences—not AI use alone—as the educational experiences that strengthened their confidence for future employment.

These findings have important implications for higher education. AI literacy should continue to be integrated into teaching and learning because it equips students to engage responsibly with emerging technologies. However, AI literacy should complement rather than replace broader employability initiatives. Curriculum design should therefore integrate AI-supported learning with experiential education, communication development, collaborative learning, and industry engagement to cultivate graduates who are technologically capable, professionally competent, and prepared for the increasingly complex demands of contemporary workplaces.

Implications for Interdisciplinary Education

The findings have several implications for interdisciplinary higher education. First, AI literacy should remain an important component of higher education curricula, particularly through instructional approaches that promote ethical AI use, critical evaluation, and responsible decision-making. Second, curriculum developers should avoid positioning AI literacy as a standalone strategy for improving employability. Instead, AI-related competencies should be integrated with internships, project-based learning, collaborative activities, industry partnerships, and other authentic learning experiences that develop communication, teamwork, adaptability, and professional competence. Third, educational institutions should adopt balanced approaches to AI integration that recognize both the opportunities and the limitations of AI within higher education. While AI can effectively support learning and academic productivity, students' perceptions of workforce readiness continue to depend on broader educational experiences that extend beyond technological competence alone.

Finally, this study contributes to both Human Capital Theory and Social Cognitive Career Theory by demonstrating that AI literacy represents an emerging educational competency situated within a wider ecosystem of graduate development. Rather than functioning as an independent determinant of employability readiness, AI literacy operates alongside disciplinary knowledge, interpersonal competencies, and authentic learning experiences that collectively prepare students for successful participation in increasingly technology-rich workplaces.

LIMITATION

Several limitations should be acknowledged when interpreting the findings of this study. First, the research was conducted within a single public technical higher education institution in the Philippines. Although this setting provided an appropriate context for examining AI literacy and employability readiness, the institutional characteristics, educational practices, and student experiences may differ from those of other higher education institutions, disciplines, and national contexts. Consequently, the transferability of the findings should be considered with caution.

Second, the study relied on self-reported measures of AI literacy and employability readiness. While self-report instruments are commonly used to assess perceived competencies and readiness, responses may be influenced by social desirability, self-perception biases, or inaccurate self-assessment. Participants may have overestimated or underestimated their actual competencies. Future research may strengthen the validity of findings through the inclusion of performance-based assessments, employer evaluations, internship supervisor ratings, or other objective measures of competency development and workforce preparedness.

Third, although learning experiences were included within the survey instrument and constituted an important component of the study’s conceptual framework, the quantitative phase focused primarily on examining the direct relationship between AI literacy and employability readiness. Consequently, learning experiences were explored qualitatively as explanatory factors rather than incorporated into the quantitative predictive model. Future studies may employ mediation analysis, structural equation modeling, or other advanced analytical approaches to examine whether learning experiences function as intervening mechanisms linking AI literacy and employability readiness.

Fourth, while the qualitative findings provided valuable explanatory insights, the dataset reflected a relatively high degree of consensus across students, teachers, and administrators regarding the role of AI in education and workforce preparation. Although this consistency strengthened confidence in the central interpretations, it limited opportunities to explore more divergent or conflicting perspectives. Some participants expressed concerns regarding excessive dependence on AI technologies and the potential impact on independent problem-solving and self-confidence, suggesting that students actively negotiate

both the benefits and limitations of AI-assisted learning. Future qualitative investigations may purposefully seek greater variation in participant experiences to capture a broader range of viewpoints.

Finally, although Social Cognitive Career Theory (SCCT) informed the interpretation of the findings, several core SCCT constructs, including self-efficacy, outcome expectations, and career-related confidence, were not directly measured. As a result, the study was able to draw upon SCCT primarily as an interpretive framework rather than as a fully tested theoretical model. Future research may incorporate these constructs to provide a more comprehensive empirical examination of SCCT within AI-enhanced educational and workforce preparation contexts.

FUTURE RESEARCH

Future studies should examine AI literacy and employability readiness across multiple technical and higher education institutions to enhance generalizability and identify contextual differences. Comparative studies involving public and private institutions, as well as different academic disciplines, may provide a more nuanced understanding of how AI-related competencies contribute to workforce preparation. Additionally, future research should investigate potential mediating and moderating variables, such as self-efficacy, internship quality, industry exposure, and career adaptability, to better explain the complex relationship between AI literacy and employability readiness. Longitudinal studies may also help determine how AI literacy influences actual employment outcomes following graduation.

CONCLUSION

This study examined the relationships among artificial intelligence (AI) literacy, employability readiness, and learning experiences among technical higher education students using a sequential explanatory mixed-methods design. The findings revealed that students demonstrated high levels of both AI literacy and employability readiness, indicating that they possess substantial AI-related competencies and perceive themselves as generally prepared for future employment. However, the quantitative analyses showed that AI literacy was neither significantly associated with nor predictive of employability readiness. The qualitative findings provided important explanatory context by demonstrating that students, teachers, and administrators consistently viewed AI literacy as a valuable educational competency that supports responsible AI use and technology-enhanced learning. At the same time, participants emphasized that readiness for employment is shaped by a broader combination of communication, teamwork, technical competence, professionalism, problem-solving, and authentic workplace experiences.

Taken together, the findings indicate that AI literacy and employability readiness are related yet distinct educational outcomes within technical higher education. AI literacy represents one dimension of students' educational preparation; however, employability readiness reflects the integration of multiple competencies and learning experiences rather than AI literacy alone. These findings refine the application of Human Capital Theory by suggesting that AI literacy constitutes one form of educational capital that operates alongside communication, collaboration, disciplinary expertise, and practical experience. Likewise, the findings reinforce Social Cognitive Career Theory by demonstrating that students' confidence in their preparedness for employment develops primarily through authentic learning experiences that enable them to apply and integrate diverse competencies in meaningful educational and workplace contexts.

The study contributes to the growing body of research on AI-integrated higher education by demonstrating that AI literacy should be understood as a complementary educational competency rather than an independent determinant of employability readiness. Accordingly, higher education institutions should adopt balanced curricular approaches that integrate AI literacy with experiential learning, industry engagement, communication development, and other employability-oriented educational experiences. Such an approach is more likely to prepare graduates for successful participation in increasingly technology-rich workplaces by fostering the diverse competencies required for long-term professional success.

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REFERENCES

Aguilar, S., & George, B. (2021). Labor market trends, EdTech, and the need for digitally reengineering higher education. In *The digital transformation of higher education* (pp. 18–27). IGI Global. https://doi.org/10.4018/978-1-7998-8327-2.ch002

Al Yakin, A. M., Muthmainnah, M., Obaid, A. J., Al Matari, A. S., Cardoso, L., & Azar, A. S. (2025). Fostering AI literacy in TVET and professional development frameworks for educators in the 21st century. In *Artificial intelligence in technical and vocational education and training* (pp. 151–176). IGI Global. https://doi.org/10.4018/979-8-3373-1142-5.ch007

Babashahi, L., Barbosa, C. E., Lima, Y., Lyra, A., Salazar, H., Argôlo, M., Almeida, M. A. D., & Souza, J. M. D. (2024). AI in the workplace: A systematic review of skill transformation in the industry. *Administrative Sciences, 14*(6), 127. https://doi.org/10.3390/admsci14060127

Che, C. (2026). AI literacy as a meta-skill: A four-domain model for academic management innovation in higher education. *Frontiers in Education, 11*, 1755238. https://doi.org/10.3389/feduc.2026.1755238

Choi, W. C., Chang, C. I., Choi, I. C., Lam, L. C., Leong, K. I., & Ng, S. I. (2025). Artificial intelligence (AI) literacy in education: Definition, competencies, opportunities and challenges. *Preprints.org*. https://doi.org/10.20944/preprints202508.0497.v1

Chukwuedo, S. O., Nnajiofor, F. N., Auta, M. A., & Odogwu, I. C. (2023). Training prospective technical education graduates for school-to-work transition: Insights from university–industry links. *Higher*

Education, Skills and Work-Based Learning, 13(2), 249–263. https://doi.org/10.1108/HESWBL-06-2022-0125

Cowin, J. (2021). The Fourth Industrial Revolution: Technology and education. *Journal of Systemics, Cybernetics and Informatics, 19*(8), 53–63. https://doi.org/10.54808/JSCI.19.08.53

Dewalska-Opitek, A., Strzelczyk-Lucka, J., Szejniuk, A., & Kalita, D. (2025). Competencies of the future: How artificial intelligence has been shaping skills and labour market transformation. *European Research Studies Journal, 28*(4), 151–170. https://doi.org/10.35808/ersj/4105

Fekete, I. (2025). *Artificial intelligence literacy in higher education*. Channel View Publications. https://doi.org/10.2307/jj.30412883

Isaeva, T., & Grigorash, O. (2023). Reaching career readiness of engineering students through identification of employability skills and universal competences. In *Advances in engineering education* (pp. 354–365). Springer. https://doi.org/10.1007/978-3-031-21432-5_36

Kaplan, R., & Meylani, R. (2025). Dimensions of artificial intelligence literacy: A qualitative synthesis of contemporary research literature. *Journal of Computer and Education Research, 13*(26), 790–825. https://doi.org/10.18009/jcer.1648380

Kumar, D. (2024). PBL in higher education: Empowering students for the industry dynamics. *European Economic Letters*. https://doi.org/10.52783/eel.v14i3.1873

Lei, W., & Denggui, H. (2025). A quantitative comparison of the effects of artificial intelligence literacy multi-dimensions on employability. *Journal of International Education and Development, 9*(9), 33–37. https://doi.org/10.47297/wspiedwsp2516-250007.20250909

Linvill, J., Adams, I., Haluschak, E., Quezada, B., & Moore, T. (2024, February 7). Board 46: "Good communication skills are super, super important": Developing students' professional communication skills for career-ready engineers. https://doi.org/10.18260/1-2--42819

Liu, J. P., & Levy, R. (2026). *Beyond tool adoption: A practical five-stage developmental continuum for AI literacy in higher education.* arXiv. https://doi.org/10.48550/arXiv.2606.00038

Lyapin, I. A. (2023). The impact of artificial intelligence on the workplace: Current state and future perspectives. *Journal of Digital Economy Research, 1*(1), 137–176. https://doi.org/10.24833/14511791-2023-1-137-176

Miranda, J. P. P., Manalese, R. P., Geronimo, S. M., Maniago, V. G. M., Padilla, C. K., De Leon, A. P., Merle, S. L., & Castro, M. A. A. (2025). AI in work-based learning: Understanding the purposes and effects of intelligent tools among student interns. In *Proceedings of the 2025 International Workshop on Artificial Intelligence and Education (WAIE)* (pp. 411–415). IEEE. https://doi.org/10.1109/WAIE67422.2025.11381174

Mirman, C. (2024, February 8). Integrating industry into engineering technology education to produce exceptional graduates. https://doi.org/10.18260/1-2-370-31368

Ng, B. (2022). Future directions: Importance of higher education on work readiness and job employability. In *Future directions in higher education* (pp. 289–295). Springer. https://doi.org/10.1007/978-3-031-05716-8_14

Onnen, A. (2024). AI-specific competencies: Requirements for the future workplace. *E-Journal VFU, 22*, 675–687. https://doi.org/10.53606/evfu.22.675-687

Pang, M. (2024). Employability skills, employability readiness and skills building: Basis for student workforce employability framework. *International Journal of Research Studies in Education, 13*(3). https://doi.org/10.5861/ijrse.2024.24613

Razalli, A. R., Idris, N., Jamil, M. R. M., Ismail, R., Janudin, S. E., & Azmi, S. H. (2025). A quantitative study on graduate employability: Insights from Sultan Idris Education University, Malaysia. *International Journal of Research and Innovation in Social Science, 8*(12), 2127–2142. https://doi.org/10.47772/ijriss.2024.8120179

Sánchez-Muñoz, M. (2024). Use and perception of technologies among higher education students: An exploratory analysis. In *Technology in higher education* (pp. 61–73). Ecorfan. https://doi.org/10.35429/h.2024.1.61.73

Song, Y., Moon, H., Yang, H., & Kilgore, C. (2026). *Development and validation of a Faculty Artificial Intelligence Literacy and Competency (FALCON-AI) Scale for higher education*. arXiv. https://doi.org/10.48550/arXiv.2603.20220

Sy, I. (2025). The future of work: How artificial intelligence is shaping job markets and employment trends. *Preprints.org*. https://doi.org/10.20944/preprints202505.1339.v1

Testa, M., Apuzzo, A., & Pittaway, L. (2026). AI literacy alone is not enough: Student AI readiness and career adaptability in business and management education. *The International Journal of Management Education, 24*(2), 101394. https://doi.org/10.1016/j.ijme.2026.101394

Tofiq, S., & Latif, D. (2025). Educating for the algorithmic age: Mapping AI literacy. *World Journal of Advanced Research and Reviews, 27*(2), 2170–2180. https://doi.org/10.30574/wjarr.2025.27.2.3045

Westover, J. (2024). Strategies for career readiness in the age of general artificial intelligence. *Human Capital Leadership Review, 13*(3). https://doi.org/10.70175/hclreview.2020.13.3.10

Zhang, Z. (2024). The impact of graduate education scale on the innovation capability of the tertiary industry. *International Journal of Education and Humanities, 13*(2), 7–10. https://doi.org/10.54097/g5yb5d05

Zherebnenko, A. V. (2025). AI literacy as a necessary media competence for a media and communications specialist. *Sign Problematic Field in Media Education, 57*(3), 41–49. https://doi.org/10.47475/2070-0695-2025-57-3-41-49

Zhyvko, Z., Zhyvko, M., Shehynska, A., & Zhyvko, O. (2024). Competency frameworks for digital economies: A focus on IT skills. In *Digital skills for digital societies* (pp. 31–57). Scientific Center of Innovative Research. https://doi.org/10.36690/dsds-31-57

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