



Navigating the AI Era: Artificial Intelligence Literacy, Career Anxiety, and Employability Confidence Among University Students

Ishtiaq Ahmad¹, Asma Amanat², Meer Hamza Jehangir³, Zafar Ali⁴

¹ PhD Scholar (Psychology), Hazara University, Mansehra, KPK. Lecturer, Department of Psychology, University of Layyah
Email: ishtiaqahmad@iub.edu.pk

² Lecturer at Govt I D Janjua Graduate College, Lalamusa
Email: asmaamanat797@gmail.com

³ University of Gujrat
Email: meerhamzalab@gmail.com

⁴ Global Banking School, Manchester, United Kingdom
Email: zali1@globalbanking.ac.uk

ARTICLE INFO

Submission:

June 06, 2026

Revised:

June 21, 2026

Accepted:

July 07, 2026

Available Online:

July 21, 2026

Keywords:

Artificial Intelligence Literacy, Career Anxiety, Employability Confidence, University Students, Higher Education, Career Development, Digital Skills, Pakistan.

Corresponding author:

ishtiaqahmad@iub.edu.pk

ABSTRACT

Artificial intelligence (AI) is transforming higher education and the global labor market, making AI literacy an essential competency for university students. This paper investigates the connection between the artificial intelligence (AI) literacy, career anxiety, and employability confidence of university students in Punjab and Sindh, Pakistan. Using a quantitative cross-sectional research design, data were collected with an online structured, published, and validated questionnaire. The sample included postgraduate and undergraduate students from various public and private universities, such as University of the Punjab, Bahauddin Zakariya University, Government College University Faisalabad, University of Karachi, NED University of Engineering and Technology, Mehran University of Engineering and Technology, and Sukkur IBA University. A convenience sampling technique was used to collect data from 397 respondents. The data were transferred to Microsoft Excel, where they were prepared for analysis in IBM SPSS Statistics. A variety of statistical analyses were conducted, including descriptive statistics, reliability analysis, Pearson correlation, and multiple linear regression as well as independent samples t-test and one-way ANOVA. The results demonstrated a positive correlation between AI literacy, employability confidence, and career anxiety. This study addresses a gap in the literature by empirically substantiating AI-skill-based curricular and career interventions from a career confidence perspective in response to digital disruption, thus offering university constituents and educational policymakers a means to enhance students' career confidence.

Introduction

AI is changing education and how we work, interact, and set goals for the future. There is a range of tools that can help automate educational tasks, such as learning and teaching, along with tutoring and assessments, and even help with academic work. Giants in the education sector are working to improve the tools that help integrate AI into the education system by designing tools that automate tasks. The goal is to improve the education system and prepare students for the future workforce that relies on automated digital tasks and other continuous advancements in technology (Avsheniuk, 2021; Ahn, K, 2024). AI alters what students need to learn in school. Students need formal education, but they also need to learn things

such as how to think about the technology they use and understand the moral implications of using technology for academic and professional purposes (Long & Magerko, 2020).

The use of AI in the workplace has changed the skills students develop during formal education. Schools and organizations are working to transform how their students and employees think and use the skills they gain to accomplish tasks. Employees now need to understand AI to the extent that they know how to use and interact with AI effectively to accomplish rational tasks in complex technology environments. Schools and businesses need to cooperate to make formal education a means of preparing students to work in a market that uses complex automated tasks (World Economic Forum, 2025). Formal education now needs to incorporate AI because understanding AI is essential in the workforce.

While AI creates new opportunities, it raises concerns regarding workers' future opportunities. Traditionally, students have been shielded from the employment-related conversations that attend job loss, restructured workforces, and the automation of work. For many, the relevance of current knowledge and skills was believed to be assured until graduation. These conversations and concerns, however, have generated heightened uncertainty regarding the future of work, particularly among students of open employment markets who will be affected most by new technologies. With AI projected for widespread adoption across sectors, it has become an accepted expectation of universities that they will teach not only technology but the skills and attitudes (i.e. confidence and resilience) that will allow students deal with the challenges that lie ahead (Brougham & Haar, 2018; Frey & Osborne, 2017).

Artificial Intelligence Literacy in Higher Education

AI Literacy is a form of critical and ethical thinking that allows students to interrogate and understand the broader social implications and contextual boundaries of various AI technologies. It is distinct from digital literacy in that it is a greater understanding of AI tools and the assessment of AI outputs and the biases that may stem from an AI tool, and therefore the judicious use of AI within the realms of academia (Li, R et al., 2025). This type of literacy encourages the active and critical use of AI for the purposes of learning, fostering creativity and the resolution of pertinent issues, and an informed approach to career progression, as opposed to AI use for the sake of use.

Colleges began considering AI literacy a core competency for graduates for careers in rapidly evolving digital workplaces. Students who adapt better to changes in the workplace and who have improved problem-solving ability and greater confidence about using technology display higher levels of AI literacy. AI literacy helps students use critical thinking for decision making, particularly for the evaluation of text or data created by AI, instead of making decisions based on a processed output. These skills are becoming even more essential as AI technology becomes ubiquitous in the workplace, regardless of the industry.

There remains a significant gap in AI literacy between students based on their school and country owing to input and support inequality for infrastructure for AI technologies. There is no shortage of students using AI technology; however, many do so without understanding the logic behind the technology, its ethics or even its limitations. Because of these gaps, students may have increased reliance on technology to complete tasks with little critical thought, which decreases their ability to use AI to maximize learning. Because of the evolving technologies, the goal of ZT is to fortify AI literacy for the workforce of the future (Zhang, J, et al., 2026).

Career Anxiety Among University Students in the Age of Artificial Intelligence

The rapid development of artificial intelligence has started a new age of work, creating new dilemmas for students and people entering the job market. On the one hand, AI has affected and improved productivity and efficiency across a wide spectrum of fields. On the other hand, new employment challenges have started. With the rise of AI, there is less work for students and other people in repetitive and routine job positions. More advanced and digital jobs, which are based on a higher degree of continuous education, have emerged. Because of this, students have begun to understand the job market very differently. Many students of higher learning have started to ask themselves if the education that they are currently receiving and the skills that they are trying to develop, will be useful enough for them in a market that is being controlled by AI. Because of this, career anxiety is one of the major psychological concerns for students who are about to finish their education and start their working careers (Duan, N, et al., 2026). The main challenge facing British universities in the near future is to ensure that all graduates have the necessary knowledge and skills to thrive in emerging new occupational environments.

Career anxiety involves negative feelings surrounding an individual's expected success in the job market, and fear surrounding the uncertainty of their career path. For university students, this anxiety presents itself as fears surrounding newly created employment openings, an increase in competitive job applicants, and changing expectations of employers, as well as an unpredictable labor market. The rapid development of AI has created an even greater sense of anxiety due to

students being continuously bombarded with information pertaining to the automation of jobs, the reorganization of jobs, and the disruption of tools in all sectors. While some new jobs will emerge because of AI, many students feel as though the new jobs will require them to learn skills that they will have a difficult time learning. Because of this, they worry more about their future job prospects and the safety of their careers. This kind of anxiety will also have an effect on how involved students are with their classes, their career related goals, and their willingness to learn new technologies.

Recent research shows that career anxiety worsens a student's sense of self, makes it harder to take action, reduces their motivation to learn, and it also makes them more anxious about their overall mental health. Students with a high level of career anxiety will often have a tough time setting a career goal, believe that they won't be successful in their career, and will be highly stressed during their first job search. In addition, students will avoid looking for new and innovative career paths if they feel uncertain about changes in technology. Many job openings need a highly skilled workforce with advanced digital skills. For this reason, schools need to add career services, AI, digital skills, and learning to improve employability to the university education. This will help students get a better sense of what new job skills will be in demand and help them feel more confident in their ability to adjust to advancements in technology (Lent & Brown, 2020).

Employability Confidence in the AI-Driven Labor Market

The employability confidence of individuals is a crucial aspect of understanding professional success in the rapidly changing labor markets as a result of technological advancement and digital disruption. Employability confidence is defined as the belief of an individual to attain, endure, and thrive in gainful employment through the effective utilization of their knowledge, skills, competencies, and attributes. The belief that students possess the confidence to be employable hinges on the students' perceived ability to remain relevant to the changing technological landscape by being flexible and gaining additional skills. It is, therefore, within the realm of higher education to instill confidence in students by equipping them with the relevant knowledge, skills, and competencies, as well as providing them with the practice and preparation necessary, to meet the demands of the workforce of the future (Yorke, 2006; Tomlinson, 2017).

The pervasive and widespread use of artificial intelligence in modern organizations has transformed the expectations that employers have of graduates. The ability to work in partnership with AI-enhanced technologies is the new currency, but employers still wish graduates to possess digital skills, the ability to think and reason, creativity, and ethical and pragmatic problem-solving skills. Graduates who possess AI skills and literacy are likely to have the confidence to fulfill the current employment expectations. Learning in environments that have AI integrated enhances the students' ability to utilize intelligent technologies to communicate, conduct research, create, and make informed decisions which further reinforces their perceptions of being career ready and increases their employability confidence (Asad, M, et al., 2025). This indicates that employability confidence is more closely associated with a student's level of comfort and readiness to use technology.

Employment confidence increases career planning and search behaviors and fosters career resilience. With confidence in their employability, students are likely to seek professional opportunities, engage in continuous learning, and partake in activities that develop their skills. These are the demands posed on workers by rapid technological changes. Students with low employment confidence may experience self-doubt and may be likely to restrict their professional opportunities. This has warranted the employability confidence of university students in a bid to improve the employability and work readiness of students.

Research Objectives

- To examine the effect of artificial intelligence literacy on employability confidence among university students.
- To investigate the effect of artificial intelligence literacy on career anxiety among university students.
- To examine the effect of career anxiety on employability confidence among university students.

Research Questions

- How does artificial intelligence literacy influence employability confidence among university students?
- How does artificial intelligence literacy influence career anxiety among university students?
- How does career anxiety influence employability confidence among university students?

Problem Statement

The way that artificial intelligence (AI) is becoming common in both the global market and higher education is changing the required skills and competencies for employing graduates. Although AI systems can be advantageous for education and career growth, they create new challenges for students in regard to the security of their future employment. Many students are not sufficiently AI literate to understand how to adapt to and work in AI-dominated environments and this is likely to increase career-related anxiety and decrease employment confidence. Although AI literacy, career-related anxiety, and employment confidence have been studied, there is little empirical research that examines these constructs in a single model, especially for university students of developing nations. This research is needed to understand the psychological implications of AI literacy for students and how it affects confidence in securing employment. This study seeks to explore the relationship between AI literacy and the constructs of career-related anxiety and employment confidence of university students. This research is designed to help university administrators and policymakers understand the need to develop AI skills in students and reduce career-related anxiety, thereby increasing the employment confidence of graduates in an AI-impacted labor market.

Significance of the Study

This study adds to the recent literature focusing on artificial intelligence in higher education and examines the intersection of artificial intelligence literacy, career anxiety, and employability confidence of university students. AI is changing the workplace and the skills employers require to hire. It is vital to understand how students' perceptions of AI relate to their career perceptions and employability self-efficacy. The results of this study will inform university educators, curriculum designers, and policymakers on how to develop educational interventions to improve AI literacy, decrease career-related anxiety, and enhance employability self-efficacy. The study also helps improve career services in higher education by identifying the technology-related and career-related gaps that students need support in. From the standpoint of theory, this study integrates technology-related skills and career and psychological-related skills within a single framework, thus broadening the existing knowledge. Finally, the study supports students' preparedness for employment in the AI-era, reinforces the importance of continuous learning throughout their careers, and promotes sustainable career development.

Literature Review

In the digital world, AI literacy is among the most important skills needed to engage with the marketplace. With the growing presence of AI across sectors, students at the university level need to know the functioning and the responsible use of AI. Schools of all levels have the obligation and the opportunity to prepare this new workforce with the appropriate AI skills. AI literacy is the combination of the capability to comprehend and critically assess the limitations and the ethical use of AI, and the ability to engage with the outputs created by AI. It is important to note that general digital literacy is mainly focused on the technical skills. In contrast, the literacy of AI encompasses the use of critical thinking, ethics, data analysis, algorithms, and the ability to make an informed choice. With the understanding that graduates of the future will have a career that involves the use of interaction with Intelligent Systems, universities will play a critical role in developing AI skills and knowledge. It is important to note that AI literacy is much more than the ability to use AI; it is the understanding of the ramifications of AI on society, on the economy, and the ethics of its use.

With the rise of artificial intelligence (AI) across university campuses, AI literacy is becoming increasingly essential for all students. According to Ng et al. (2021), many universities have begun incorporating AI into educational technologies to improve learning through the use of intelligent tutoring systems, adaptive learning, automated assessments, or generative AI. These systems provide students with the ability to learn at their own pace, receive feedback, and engage in collaborative learning. Chiu et al. (2023) contend that AI's educational potential can only be realized if students develop the ability to evaluate AI's output and respond accordingly. Students with higher-order AI literacy not only better recognize misinformation, but also understand the biases inherent to AI, and know how to use AI in an appropriate and ethical manner in their personal lives, as well as in the workplace. Thus, many universities have begun to adopt AI literacy as a graduate attribute, as it contributes to students' ability to use technology in a responsible manner in a rapidly changing digital environment.

Researchers have noted that artificial intelligence literacy aids personal, educational, and career development in all students. AI literacy incorporates the development of higher order thinking skills and confidence with technology. Wahrini, R et al. (2026) notes the importance of AI literacy in developing workplace skills including ethical thinking, computational thinking, analysis, reasoning, and problem solving. Sunnananda, O (2025) notes that students who have an understanding of AI technologies will likely be able to work with AI and other technologies in creative ways, as well as adapt to advanced and developing technologies in work systems. The World Economic Forum (2025) has even noted that AI literacy is a key competency for the future workforce, as there is a growing need to have people in organizations who will be able to work

with AI as a part of the decision-making, innovation, and process activities in the organization. In addition, students with high AI literacy have the courage to learn emerging technologies, as well as the desire to engage in lifelong professional development as a means of remaining relevant in a rapidly changing workforce.

Career Anxiety Among University Students

University students are finding that modern labor markets are causing previously unrecognized levels of psychological distress. Modern career anxiety refers to elements of concern, fear, and emotional distress associated with the evaluation of future career paths. Distress is common at all phases of the university to career transition. In particular, the labor market is frequently characterized by fierce competition, volatility, and rapid advancements in technology. Research carried out by Mara et al. (2025) shows that career anxiety leads to poor career-related decision-making and a loss of confidence in the planning of a desired career path, while increasing the level of uncertainty surrounding future career options. Career anxiety, related to the career-related concerns of students, is a severe psychological issue that affects the physical health, motivation, self-efficacy, and overall psychological wellness of students, which has a profound effect on the educational and professional development of students. There are very real consequences if post-secondary education providers cannot identify the causes of career anxiety, especially for students in their final year of studies and especially for students in their final year of studies who are about to graduate.

At university level, students are beginning their professional lives amid rapidly implementing digital technologies and artificial intelligence. They experience a new level of employment anxiety. Automation and technology have disrupted traditional job roles by removing tedious tasks, and creating job roles with new higher level skills. Many students are left asking if their professional and educational skills will fade in the increasingly AI focused workplaces. Sundara, M (2025) argues that fears of automation and changing employer demands have intensified students' feelings of job insecurity, especially for students who do not feel ready to work in technology dominated workplaces. Even though AI will alter the job market by creating new careers, students think that it adds to employment insecurities because of their poor understanding of the future of work. This results in inadequate technology skills and heightened employment anxiety and a loss of students' confidence to achieve their desired careers.

Career anxiety affects university students in various domains, including academia, psychology, and behavior. Grunberg, S (2025) states that anxious students may demonstrate reduced academic motivation/engagement, poor career decision-making confidence, and increased emotional exhaustion. Worried students may avoid challenging learning experiences, including internships, and avoid learning new skills in demand among employers. The persistent worry may also negatively impact students' psychological well-being by increasing stress, decreasing hopeful thinking, and diminishing positive adaptive response strategies to the employment transition. Stronger career adaptability, and greater confidence in one's professional competence, enable students to better manage and have a positive view of the risky situations in the labor market (Hirschi, 2018). Career anxiety of students may also have an impact on the students' academic performance, career planning, and personal development, beyond the employment concerns.

Employability Confidence

Employability confidence has been introduced in relation to higher education and career preparation because it has become more commonplace to expect graduates to have a higher level of preparedness and "competencies" when compared to the earlier generations. Graduates are now expected to have broader skills and have the ability to adjust to the evolving job market. Employability confidence is the confidence of a person that he or she will be able to secure, keep, and advance in a quality job. This can be achieved through the application of one's skills and through knowledge and self-advocacy. Employability is more than just getting a job. It is about building an identity and competencies that will enable a graduate to thrive and be successful in all career activities. It can also be argued that employability confidence means that graduates are confident that they can meet the expectations of employers, are able to deal with changes in the workplace, and will be able to succeed in all employment that is available, even in the face of challenges. Employability confidence is especially important as more and more organizations adopt new Digital and Artificial Intelligent systems.

The introduction of artificial intelligence has fundamentally reshaped what employers expect from their employees. The demand for technological proficiency, digital literacy, and critical thinking, coupled with creativity and a willingness to learn, has skyrocketed. The World Economic Forum (2025) claims that employers desire graduates with an understanding of technology, the ability to solve complex problems, and the flexibility to work with Smart Systems. Graduates with a higher level of artificial intelligence literacy are more likely to feel confident about their ability to fulfill the demands of the future workplace. According to Ruicen, S et al., (2025), AI-based workplaces demand more graduates with the ability to critically assess the quality of AI output, incorporate AI into their professional judgment, and constantly refresh their knowledge to gain a competitive advantage. Based on these new trends, it's clear that the employability of graduates is no longer based

solely on the outcomes of their formal education, but also on their ability to assess their level of preparedness to engage with technologically supported workplaces, especially those dominated by AI.

Studies have always shown that confidence in employability leads to students being more engaged in classes, developing skills, searching for jobs, and being more resistant to challenges in their profession. Cantas, Ç et al., (2024), state that students with higher employability confidence do more internships, networking, upskilling, and activities that are related to learning and teaching things that will help in developing one's career. Similarly, Warren, C et al., (2024) stated that employability confidence leads to positive career choices, and a greater desire for learning, and cultivates resistance to challenges in the job market. Students who are confident that they have what it takes to be employed have a positive view of their future career, and take part in activities and programs that will help them grow professionally. Students who have low levels of employability confidence do not participate in many activities that could help them secure a professional career and have long-term career challenges.

Relationship Between Artificial Intelligence Literacy and Career Anxiety

The nexus of artificial intelligence literacy and career anxiety has become an area of scholarly focus due to the capability of AI to reshape the entire labor market and the expectations of the graduate workforce. AI literacy provides graduate students with the knowledge and technical building blocks, as well as the critical thinking skills, to understand the workings of AI and its application in various contexts, both in the workplace and the classroom. In Krishnasamy, K et al. (2024) for example, the ability of individuals to perceive AI tools as an opportunity rather than a threat to their employability becomes possible in the knowledge that AI systems have both limitations and capabilities. During the same period, Rukadikar, A., and Khandelwal (2025) argued that AI literacy balances students' readiness to deal with new technologies while remaining digitally, ethically, and critically responsible. It follows that the higher the AI literacy of the students, the greater the chances of successfully operating in an AI-integrated workplace and, thus, the lower the career anxiety. From the foregoing, it can be said that AI literacy is, to a large extent, a career anxiety literacy.

Career anxiety can arise from a perceived gap between students' current skills and those required by the labor market. The rapid development of artificial intelligence in many workplaces has caused a great deal of anxiety related to automation and job loss. Because of this, students are nervous about their future employment. As Fatmasari, R et al., (2025) describe, the developing technology is forcing students to adapt as well. The same motivational strain is felt by employees of all sectors, particularly students and recent graduates regarding employment, and is particularly felt regarding the rapidly developing technologies, according to Mohanty, S et al., (2025). In contrast, students with AI knowledge are less stressed about their future employment opportunities because they are able to take a more favorable position with the developing technology. Therefore, having an understanding of artificial intelligence can help students feel more ready, in control, and confident about their future career options, which may lessen their career anxiety.

Numerous studies have analyzed the impact of students' technological skills on their career-related uncertainty and career planning confidence. Studies like those of (2024) have found that students stronger in AI skills have increased confidence in the use of AI for learning, AI for problem solving, and in the use of AI for professional growth. These students feel prepared to adapt to the changing demands of the workplace. (2024) argues that constant learning, flexibility, and creativity are important characteristics of a technology-based organization and that AI skills promote these characteristics. Students familiar with AI's practical use lean towards thinking about the opportunities rather than the threats that AI and technology bring to the workplace. Because of this, their career-related anxiety that comes from feeling they don't have the skills to succeed in the modern workplace is lessened. The studies show that students gaining AI skills and knowledge is important in developing a more positive and career-oriented mindset when thinking about the disruption technology brings to the workplace.

Research Gap

The studies that have examined the independent variables of artificial intelligence literacy, career anxiety, and employability confidence have largely been distant from one another. Very few have researched the variables in the same study. Most studies that deal with AI literacy have tended to examine the impact AI has on the learning and teaching process. Comparatively, few have examined the impact of AI literacy on the psychological challenges students may face, such as career anxiety, and the confidence that students have in securing a job. Additionally, the majority of the literature has been focused on developed economies. Even the studies that have focused on career anxiety and employability confidence have done so in the absence of AI literacy. This leaves the ability to research the variables of career anxiety and employability confidence through the lens of AI literacy. The goal of this research is to create strong literature in this field and to provide evidence to policymakers and stakeholders in higher education to design solutions that will increase confidence among graduates in employment in an AI-dominated marketplace, while reducing career anxiety.

Research Hypotheses

H1: There is a significant relationship between artificial intelligence literacy and employability confidence among university students.

H2: Artificial intelligence literacy significantly predicts employability confidence among university students.

H3: There is a significant difference in employability confidence between male and female university students.

H4: There is a significant difference in employability confidence among university students across different academic years.

Conceptual Framework

(Examining the Relationships among Artificial Intelligence Literacy, Career Anxiety and Employability Confidence)

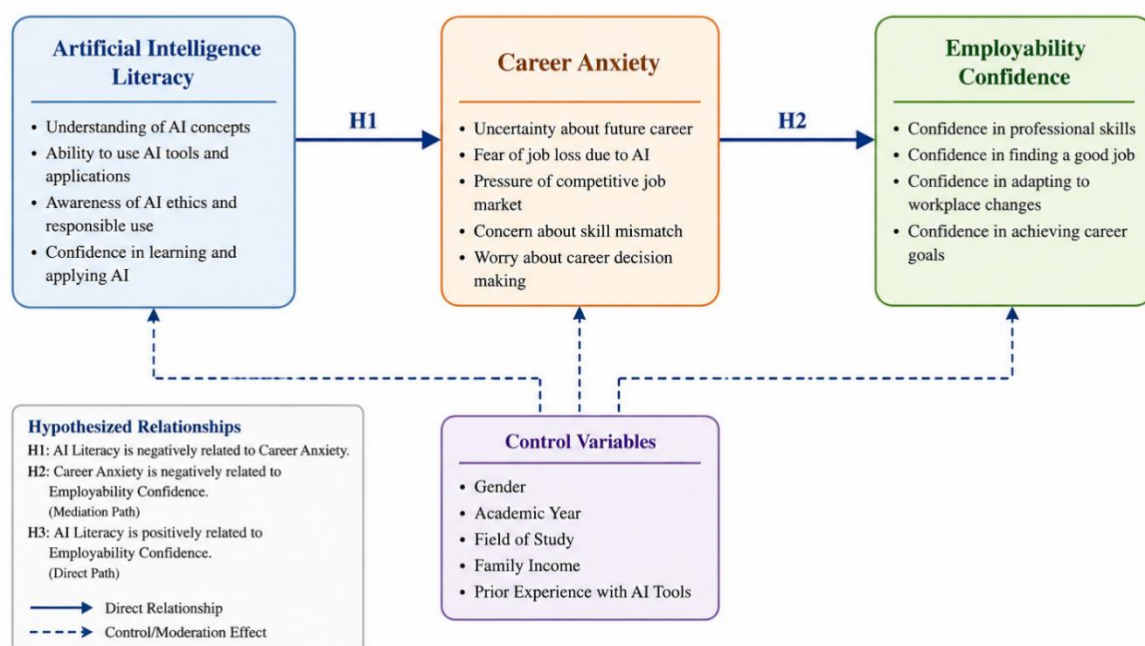


Figure 1. Conceptual Framework

Methodology

Research Design

This study used a cross-sectional design and quantitative approach, to identify the associations between university students' artificial intelligence literacy, career anxiety, and employability confidence. A survey was the main data collection tool, as it is the best way to collect time-efficient data from the larger sample. A cross-sectional design was the most appropriate way to collect data to meet the goals and objectives of this study. This design allowed for the development of measurement scales to collect perceptions of university students, on artificial intelligence, career anxiety, and employability confidence.

Population

The study population was university students in the postgraduate and undergraduate programs in the public and private universities of the Punjab and Sindh provinces of Pakistan. The study covered the major universities in Lahore, Multan, Faisalabad, Rawalpindi, Bahawalpur, Sargodha, Gujranwala, Hyderabad, Karachi, Sukkur, and Jamshoro. The selected study sites included the University of the Punjab, Bahauddin Zakariya University, Government College University Faisalabad, Islamia University of Bahawalpur, University of Engineering and Technology Lahore, University of Karachi, NED University of Engineering and Technology, Mehran University of Engineering and Technology, Shah Abdul Latif University and Sukkur IBA

University. These sites were selected, as they have diverse academic programs and have a recently heightened interest in the incorporation of artificial intelligence in higher education.

Target Audience

The target audience refers to undergraduate and postgraduate university students who were enrolled from the time the data was being collected. The audience incorporated business administration, computer science, engineering, education, social science, management science, information technology, and economics students, among others. The students were expected to have some level of understanding of Artificial Intelligence tools in education, so they could answer the questions on AI literacy, career anxiety, and employability confidence, with some level of knowledge.

Sampling Technique

This study used a non-probability convenience sampling method to select participants. This technique was used because the sampling method allowed the researcher to access university students from several universities, via the internet. Convenience sampling was likely the best sampling strategy for the study as it is common practice in education and behavior research and is particularly useful for addressing research questions in a timely and cost-effective manner while spanning a large geographic area.

Sample Size

The target population for the study was 397 participants. This sample size was considered appropriate for the analysis of correlation, multiple linear regressions, independent samples t-test, and one-way ANOVA in SPSS. The selected sample was adequate for assessing the statistical power for the analysis of research variables.

Data Collection

The primary data for this research was collected using an adapted questionnaire, which leveraged pre-validated constructs. Measurement of Artificial Intelligence Literacy was assessed using a revised scale of Long and Magerko (2020). For Career Anxiety, the adapted scale of Tsai et al. (2017) was employed. Rothwell et al.'s (2008) employability confidence scale, also adapted, was used to measure Employability Confidence. All measurement constructs were assessed using a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree.

The questionnaire was distributed using Google Forms, and a link to the questionnaire was shared via university mailing lists, WhatsApp groups, Facebook academic communities and online student networks, across the universities of Punjab and Sindh, Pakistan. Respondents were briefed on the study and its purpose prior to their participation in the study. Completing the questionnaire was voluntary and respondents were given the option of responding to the questionnaire at their ease and convenience. The questionnaire was compatible with smartphones, tablets, and computers. Once respondents completed the study, their responses were captured automatically on Google Forms. Surveys were exported in Microsoft Excel for further analysis and processing.

Ethical Considerations

The emphasis on ethics was highly prioritized in this research process. All those completing the questionnaire did so voluntarily and gave informed consent. Participants understood the survey's intentions and how their participation was completely confidential. Participants also had the option to withdraw from the study completely and at any moment. No information was documented that would identify any of the participants and their responses remained anonymous. The data that were collected were for research purposes only, and were kept behind a secure virtual lock and key.

Data Analysis

Responses were exported from Google Forms to Microsoft Excel for data screening, coding, and cleaning. The data were then verified and imported to IBM SPSS Statistics for further data analysis. Respondents' demographic data and study variables were summarized, and descriptive statistics were run. The Cronbach's Alpha reliability assessment was performed, and the internal consistency for each of the measurement scales was calculated. The relationships between artificial intelligence literacy, career anxiety, and employability confidence were assessed using Pearson's correlation. To assess the predictive value of artificial intelligence literacy on employability confidence, multiple linear regression was performed. Gender-based differences in employability confidence were assessed using an independent samples t-test. A one-way ANOVA was run to assess employability confidence among students of the different academic years. The conventional level of statistical significance was used to interpret the results of the analysis, and the findings were presented in discussion tables.

Table 1: Demographic Characteristics of the Respondents (N = 397)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	214	53.9
	Female	183	46.1
	Total	397	100.0
Age	18–20 Years	96	24.2
	21–23 Years	171	43.1
	24–26 Years	93	23.4
	Above 26 Years	37	9.3
	Total	397	100.0
Academic Level	Undergraduate	248	62.5
	Postgraduate	149	37.5
	Total	397	100.0
Academic Year	First Year	82	20.7
	Second Year	103	25.9
	Third Year	96	24.2
	Fourth Year	68	17.1
	Postgraduate	48	12.1
	Total	397	100.0
Field of Study	Business & Management	102	25.7
	Computer Science & IT	86	21.7
	Engineering	71	17.9
	Social Sciences	58	14.6
	Education	43	10.8
	Other Disciplines	37	9.3
	Total	397	100.0
Province	Punjab	258	65.0
	Sindh	139	35.0
	Total	397	100.0
University Type	Public University	241	60.7
	Private University	156	39.3
	Total	397	100.0
Experience Using AI Tools	Less than 1 Year	89	22.4
	1–2 Years	143	36.0
	3–4 Years	102	25.7
	More than 4 Years	63	15.9
	Total	397	100.0

The demographic profile of the 397 respondents from this study is as follows. The gender distribution among the respondents was balanced as 214 (53.9%) of the respondents were male and 183 (46.1%) were female. The age distribution among the respondents was as follows, 21 to 23 years (43.1%), 18 to 20 years (24.2%), 24 to 26 years (23.4%), 26 years and above

(9.3%). The education level distribution was as follows: undergraduate (62.5%), postgraduate (37.5%). The majority of the respondents were second year students (25.9%), followed by third year (24.2%), first year (20.7%), fourth year (17.1%), and postgraduate (12.1%). The respondents' areas of study were as follows: Business and Management (25.7%), Computer Science and Information Technology (21.7%), Engineering (17.9%), Social Sciences (14.6%), Education (10.8%), others (9.3%). 65.0% of the respondents studied in universities in Punjab while the other 35.0% were from Sindh. 60.7% of the respondents were in public universities and the 39.3% were in private universities. 36.0% of the respondents had 1 to 2 years of experience with AI tools, while 25.7% had 3 to 4 years of experience, 22.4% had less than 1 year of experience, and 15.9% had more than 4 years of experience. The demographic distribution of the respondents shows that the respondents had different levels of education, different areas of study, and different levels of experience with AI. This shows that the study was representative of university students in Punjab and Sindh from Pakistan.

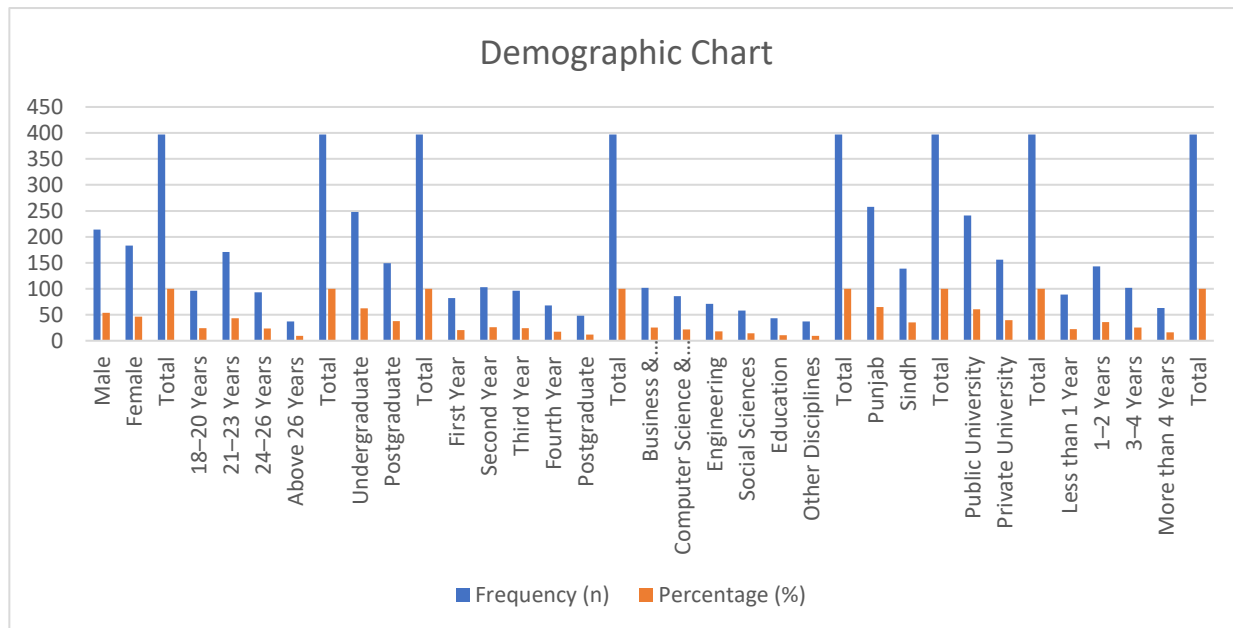


Figure 2: Demographic Chart

Table 2: Pearson Correlation Analysis of Artificial Intelligence Literacy, Career Anxiety, and Employability Confidence Among University Students (N = 397)

Variables	Mean	SD	1	2	3
1. Artificial Intelligence Literacy	3.91	0.61	1		
2. Career Anxiety	3.12	0.72	-0.548**	1	
3. Employability Confidence	3.84	0.65	0.683**	-0.491**	1

Presents the findings from a Pearson correlation analysis for artificial intelligence literacy, career anxiety, and employability confidence for 397 participants. Positive correlation was found between artificial intelligence literacy and employability confidence ($r = .683$, $p < .01$), where students with a higher degree of AI literacy expressed more confidence in their future employability. AI literacy also had a negative correlation with career anxiety ($r = -.548$, $p < .01$), where students with a more advanced AI skill set expressed a greater degree of career-related anxiety. Career anxiety also correlated negatively with employability confidence ($r = -.491$, $p < .01$), where students with a greater degree of career-related anxiety expressed less confidence in their ability to gain and succeed in future employment. The analysis shows that AI literacy positively correlates with employability confidence and negatively correlates with career-related anxiety, indicating that AI literacy is a potent and favorable factor that associates with reduced career anxiety and elevated employability confidence in university students.

Table 3: Multiple Linear Regression Analysis of the Effect of Artificial Intelligence Literacy on Employability Confidence Among University Students (N = 397)

Model Summary	Value
R	0.721
R Square	0.520
Adjusted R Square	0.518
Std. Error of the Estimate	0.451

ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	86.742	1	86.742	425.987	.000
Residual	80.448	395	0.204		
Total	167.190	396			

Coefficients

Predictor	B	Std. Error	Beta (β)	t	Sig.
(Constant)	1.254	0.143	—	8.769	.000
Artificial Intelligence Literacy	0.661	0.032	0.721	20.639	.000

Presents the findings of the multiple linear regression analysis that studied the role of artificial intelligence literacy on the employability confidence of 397 university students. The model was assessed as having a strong fit, with a statistically significant result, ($R = .721$, $R^2 = .520$, Adjusted $R^2 = .518$), where artificial intelligence literacy accounted for 52.0% of the variance in employability confidence. The results of ANOVA confirmed the significance of the regression model. With ($F = 425.987$, $p < .001$), the model was adequate to interpret the relationship of the variables. The results from the coefficient analysis of the regression model, further, demonstrated that the effect of artificial intelligence literacy on employability confidence was positive and statistically significant. ($\beta = .721$, $B = .661$, $t = 20.639$, $p < .001$) and therefore, the higher the artificial intelligence literacy, the higher the employability confidence of the university students. The explained variance of artificial intelligence literacy on employability confidence, therefore, reflects the importance of artificial intelligence literacy in enhancing the university students' confidence on their potential for securing jobs in the future.

Table 4: Independent Samples t-Test Analysis of Employability Confidence by Gender Among University Students (N = 397)

Gender	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Male	214	3.92	0.58	2.847	395	.005
Female	183	3.75	0.61			

Reports results of independent sample t-test examining difference in male and female university students' employability confidence. Male students ($n = 214$) reported slightly greater employability confidence ($M = 3.92$, $SD = 0.58$) than female students ($n = 183$) whose score was ($M = 3.75$, $SD = 0.61$). From the independent sample t-test, the result was ($t = 2.847$, $df = 395$, $p = .005$), meaning statistically male and female employability confidence was significantly different. From the result, male students were more confident of their future employability than female students in the sample.

Table 5: One-Way ANOVA Analysis of Employability Confidence Across Academic Years Among University Students (N = 397)

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.942	4	2.236	7.846	.000
Within Groups	111.783	392	0.285		
Total	120.725	396			

Group Statistics

Academic Year	N	Mean	Std. Deviation
First Year	82	3.63	0.57
Second Year	103	3.74	0.55
Third Year	96	3.87	0.51
Fourth Year	68	4.02	0.49
Postgraduate	48	4.15	0.46
Total	397	3.84	0.55

Reports the results of a one-way ANOVA employed to assess differences in employability confidence among students of different academic years. From the results, employability confidence was significantly different among the five groups of students in different academic years ($F(4, 392) = 7.846, p < .001$). Employability confidence was highest for postgraduate students ($M = 4.15, SD = 0.46$), fourth year ($M = 4.02, SD = 0.49$), third year ($M = 3.87, SD = 0.51$), second year ($M = 3.74, SD = 0.55$), first year ($M = 3.63, SD = 0.57$). From the results, generally employability confidence was greater for students in higher academic years and that more confidence of future employability was a result of more academic exposure and more preparation.

Discussion

This study investigated AI literacy, career anxiety, and employability confidence concerning university students in Punjab and Sindh, Pakistan. The findings illustrate the growing importance of AI literacy as a competency concerning students' future employment psychological preparedness and confidence in the future workforce. As technology becomes more embedded in business and operations, students' AI-driven Intelligent Systems will require organizations to graduate students with the ability to combine disciplinary knowledge and thrive. The findings reflect that the students' confidence in AI literacy translates to adaptability in dealing with future career constraints. Hence, the students operate with considerably less career anxiety. In combination, these present the potential of AI literacy as a competency that extends beyond the ability to deal with technology. This speaks to the importance of AI education within the academic curricula for the evolving constraints on the workforce. Institutions of higher learning are bound to address the evolving demands of the workforce Li, K et al., (2025).

Data analysis indicated that the literacy of artificial intelligence is positively linked to the confidence of getting a job and negatively linked to anxiety toward a career. In addition to this, anxiety toward a career negatively correlates to confidence in getting a job. This shows that students with a high level of anxiety toward their career generally have low confidence that they can get and keep a job. AI literacy appears to enable students to more confidently understand the rapid changes in technology and less about the impacts of automation and changes in the labor market. Students who have a more comprehensive understanding of AI are more likely to see the positive changes that can be caused by technological disruptions and less likely to be concerned about the negative impacts on employment. AI literacy provides confidence in professional growth and decreases concerns of rapid technological Martin, J et al., (2025).

The regression analysis also showed that the literacy of artificial intelligence significantly impacted the confidence of getting a job. This indicates that AI literacy is an important factor for the confidence of students to get a job in the future. This suggests that students who understand AI better are more adaptive to the future job market. There is a growing demand among employers for graduates with digital skills, critical thinking, creativity, and the flexibility to apply technology. AI literacy equips students with the tools to believe that they have the skills for the future job market. It also suggests that universities that have education focused on AI and provide students the opportunity to practice using different technologies may greatly improve the employability of graduates, and the graduates will be more ready to work in a post digital world of work Helali, M et al., (2026).

The independent samples t-test revealed gender differences in employability confidence. Male students reported higher employability confidence than female students. Although students from both genders were optimistic regarding their employability, the results suggested that female students were less confident than their male counterparts in their ability to navigate the labor market, which is partly driven by recent technological advancements. Empirical literature has documented gender differences in confidence regarding technology and career perceptions. Most of those studies attributed the differences to imbalanced exposure to technology, social pressures, and different digital literacy instruction. Findings from this analysis underscore the need to design educational interventions that are both gender-sensitive and targeted at bolstering AI skills, technical confidence, and career readiness Zene, M. et al., (2026).

Results of the one-way ANOVA indicated that there was a significant variation in confidence to secure employment by year of study in the university. Students in higher years of study and postgraduate students reported higher confidence to secure employment than students in earlier years of study. The results implied that extended years of higher education, coupled with exposure to more learning experiences, practice, and participation in a variety of career-related activities, bolstered students' confidence to secure employment. Senior students seem to have a better understanding of the labor market, as well as more opportunities to develop the skills and competencies required to get employment. The findings imply that confidence to secure employment is progressive throughout the academic years and that more educational support and employment-related learning activities can strengthen that confidence, Oliveira, D (2025).

The results of this study reinforce previous findings that note the critical role of AI literacy in the higher education system. Ekuma, K (2026) states that AI literacy provides the skills the individual requires to understand and assess AI technology and employ it in a socially responsible manner, as well as increases their ability to deal with change. This is in line with Tran, H et al. (2026), who argued that AI education should become a vital part of higher education due to the fact that coming graduates will work alongside AI systems in all professions. The positive correlation between AI literacy and employability confidence identified in this study provides further evidence that dealing with technology provides graduates with confidence to deal with the demands of employers and work successfully in the evolving digital world.

The negative relationship between artificial intelligence literacy and career anxiety is also evidenced in the literature. Zhang, H et al. (2023) state that the rapid pace of technology has created fractured employment and a sense of anxious anticipation of what jobs will become available. However, students who have a stronger command of technology tend to be more optimistic about these changes, as they understand how AI will create jobs in the face of technological disruption. Additionally, Wang, Y (2024) states that the perception of technology uncertainty translates into employment anxiety and that this especially applies for those who perceive themselves as unprepared for the digital transformation. The present study suggests that having AI skills reduces anxiety about employment and improves students' ability to adjust to innovations in technology and new demands in the workplace.

Conclusion

The current research focused on the connections between artificial intelligence literacy, career anxiety, and employability confidence among students in Punjab and Sindh, Pakistan. The results show that the degree to which students are literate in AI shapes their perceptions of the technology-oriented labor market. Students with a greater degree of AI literacy had more confidence in their employability and had a lower level of career anxiety, establishing that the knowledge and the digital skills of students aid their perceptions of their future careers. The results of the statistical analysis also indicate that AI literacy predicted employability confidence, and a difference in employability confidence was evident by gender and academic year. Based on these findings, AI Literacy is an essential graduate attribute that integrates the academic needs of the students and provides the flexibility to respond to the changing needs of the labor market.

Finally, the results of the study showcase the relevance of artificial intelligence education, digital skills, and career readiness in the field of higher education. Universities must offer students the opportunities to acquire the knowledge and skills to use AI and technology, as well as the thinking skills necessary to feel secure in an AI-driven workplace. The development of career counseling and employability services would help reduce career anxiety and better prepare students to meet the challenges of unemployment in the future. By combining AI literacy with professional and psychological development, higher education institutions would help produce confident, flexible, and competitive graduates to meet the demands of the current labor market. The results of the study develop the research on artificial intelligence and employability, and provide guidance to the educators and university authorities as well as the AI policymakers on how to better prepare students for employability in the future.

Recommendations

1. Universities should integrate artificial intelligence literacy into undergraduate and postgraduate curricula to enhance students' technological competencies.
2. Higher education institutions should organize regular AI training workshops, seminars, and certification programs to improve students' practical AI skills.
3. Career counseling centers should provide guidance on emerging AI-driven career opportunities to reduce students' career anxiety.

4. Universities should strengthen industry-academia collaboration by offering internships and practical projects involving artificial intelligence applications.
5. Educational institutions should promote continuous digital skill development to increase students' employability confidence and workplace readiness.
6. Special initiatives should be introduced to ensure equal access to AI education and technological resources for students from diverse academic backgrounds and genders.
7. Policymakers and university administrators should develop comprehensive AI education policies that support responsible AI use, ethical awareness, and lifelong learning to prepare graduates for the future labor market.

Future Implications

The artificial intelligence technology currently in use has made changes to both higher education and the global workplace in ways that make the topics of this study relevant for the foreseeable future. Future research must include the effects of digital resilience and the readiness of individuals to embrace new technologies on career-building and the role of self-confidence and the willingness to learn throughout one's life. Research with more breadth and diversity in study samples (in terms of participants' age, gender, educational systems, etc.) and more complexity in study design (in terms of the inclusion of both qualitative and quantitative components and/or different methodologies within the same study) would strengthen the findings. Additionally, forthcoming studies must assess how well AI-supported educational solutions, career advancement offerings, and AI literacy programs at various institutions impact students' chances of being hired. This will help create grounded educational systems that offer students the tech skills, flexibility, and assurance to thrive within a workforce that continues being altered and dominated by AI and digital technology.

References

1. Ahn, K. H. (2024). Main contents and implications of the 2023 revision of the OECD Guidelines for Multinational Enterprises. *Journal of International Logistics and Trade*, 22(2), 80-92.
2. Asad, M. M., & Anwar, K. (2025). Influence of artificial intelligence on students' career competencies and career resources: a global perspective. *The International Journal of Information and Learning Technology*, 1-26.
3. Avsheniuk, N. (2021). UNESCO's Contribution to teacher education quality assurance. *UNESCO Chair Journal Lifelong Professional Education in the XXI Century*, (3), 7-12.
4. Brougham, D., & Haar, J. (2018). Smart technology, artificial intelligence, robotics, and algorithms (STARA): Employees' perceptions of our future workplace. *Journal of Management & Organization*, 24(2), 239-257.
5. Cantas, Ç., Soyer, C., & Batur, Ö. (2024). Examination of Undergraduate Students' Artificial Intelligence Anxiety, Multidimensional 21st Century Skills, and Lifelong Learning Levels in Terms of Various Variables. *Turkish Online Journal of Educational Technology-TOJET*, 23(3), 29-53.
6. Capinding, A. T., & Dumayas, F. T. (2024). Transformative Pedagogy in the Digital Age: Unraveling the Impact of Artificial Intelligence on Higher Education Students. *Problems of Education in the 21st Century*, 82(5), 630-657.
7. Chen, C., Hu, W., & Wei, X. (2025). From anxiety to action: exploring the impact of artificial intelligence anxiety and artificial intelligence self-efficacy on motivated learning of undergraduate students. *Interactive Learning Environments*, 33(4), 3162-3177.
8. Chiu, T. K., Xia, Q., Zhou, X., Chai, C. S., & Cheng, M. (2023). Systematic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education. *Computers and Education: Artificial Intelligence*, 4, 100118.
9. Duan, N., Li, L., Lin, G., & Chen, H. (2026). The impact of AI anxiety on career decisions of college students. *Scientific Reports*, 16(1), 8409.
10. Ekuma, K. (2026, July). Artificial intelligence, automation, and the future of development studies: rethinking teaching, learning, and graduate employability. In *Frontiers in Education* (Vol. 11, p. 1868968). Frontiers Media SA.

11. Fatmasari, R., Baharun, H., Windiyani, T., & Putri, D. F. (2025, July). Artificial intelligence as a tool to improve the quality of job-ready graduate skills in higher education. In 2025 IEEE International Conference on Industry 4.0, Artificial Intelligence, and Communications Technology (IAICT) (pp. 129-136). IEEE.
12. Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation?. *Technological forecasting and social change*, 114, 254-280.
13. Grunberg, S. (2025). Effects & Buffering of AI-Induced Career Insecurity Among University Students.
14. Helali, M. M., Mostafa, M. M., Aldawsari, H. K., Ibrahim, A. R., Bukhamseen, A. M., & Nemt-Allah, M. A. (2026). Development and psychometric validation of the ethical AI Dilemma Anxiety Scale among university students. *Frontiers in Psychology*, 17, 1810679.
15. Hirschi, A. (2018). The fourth industrial revolution: Issues and implications for career research and practice. *The career development quarterly*, 66(3), 192-204.
16. Krishnasamy, K. (2024). Exploring students' perspectives on AI-based recruitment processes: Challenges and job readiness.
17. Lent, R. W., & Brown, S. D. (2020). Career decision making, fast and slow: Toward an integrative model of intervention for sustainable career choice. *Journal of Vocational Behavior*, 120, 103448.
18. Li, K., Houghton, J. D., Chen, S., Li, X., Li, D., & Zou, W. (2025). The impact of proactive personality on career decision-making self-efficacy: the role of AI acceptance and innovation skills. *Behavioral Sciences*, 15(4), 538.
19. Li, R., Ouyang, S., & Lin, J. (2025). Mediating effect of AI attitudes and AI literacy on the relationship between career self-efficacy and job-seeking anxiety. *BMC psychology*, 13(1), 454.
20. Liang, Y., & Zhai, Y. (2025). The impact of artificial intelligence impact awareness on college students' employment risk perception: A moderated mediation model. *Acta Psychologica*, 261, 105808.
21. Long, D., & Magerko, B. (2020, April). What is AI literacy? Competencies and design considerations. In *Proceedings of the 2020 CHI conference on human factors in computing systems* (pp. 1-16).
22. Luckin, R., & Cukurova, M. (2019). Designing educational technologies in the age of AI: A learning sciences-driven approach. *British Journal of Educational Technology*, 50(6), 2824-2838.
23. Mara, A. A. P. T., Surjono, H. D., & Yuniarti, N. (2025). Reducing Career Path Anxiety among Vocational Students with an AI-Driven Career Guidance System Integrating Skills Mapping, Adaptive Mentoring, and Real-Time Labor Market Intelligence.
24. Martin, J. P., Brown, J. S., Dunmoye, I. D., Smith, L. T., Suresh, D. E., & Jensen, P. A. (2025). AI and engineering careers: recent graduates' outlook on opportunities and challenges. *International Journal of STEM Education*, 12(1), 64.
25. Mohanty, S., Satpathy, I., Patnaik, B. C. M., & Chakravarty, D. (2025). Enhancing University-Workforce Collaboration Through Digital Literacy, Technology Integration, and Mental Well-Being Support. In *Institutes of Higher Education (IHE) and Workforce Collaboration for Digital Literacy* (pp. 125-152). IGI Global Scientific Publishing.
26. Ng, D. T. K., Leung, J. K. L., Chu, S. K. W., & Qiao, M. S. (2021). Conceptualizing AI literacy: An exploratory review. *Computers and Education: Artificial Intelligence*, 2, 100041.
27. Oliveira, D. C. L. (2025). The Impact of Artificial Intelligence on Employment: Individuals' Perceptions.
28. Routray, R., & Khandelwal, K. (2024). Artificial intelligence (AI) adoption: do Generation Z students feel technostress in deploying AI for completing courses of study at universities?. *Asian Education and Development Studies*, 13(5), 534-545.
29. Ruicen, S. D., Zexuan, S., & Kee, D. M. H. (2025). Next-Gen Workforce Meets AI: Navigating Career Paths in a Tech-Driven World. *Journal of the Community Development in Asia (JCDA)*, 8(3), 430-444.

30. Rukadikar, A., & Khandelwal, K. (2025). Exploring perceptions of Indian graduates on the effectiveness of artificial intelligence in higher education campus hiring. *Discover Artificial Intelligence*, 5(1), 265.
31. Santilli, S., Marcionetti, J., Rochat, S., Rossier, J., & Nota, L. (2017). Career adaptability, hope, optimism, and life satisfaction in Italian and Swiss adolescents. *Journal of career development*, 44(1), 62-76.
32. Sundara, M. M. (2025). Healthy Navigation in the Digital World the Influence of Digital Well-Being on AI Anxiety in Psychology Students. *Journal of Positive Psychology and Digital Well Being*, 1(1), 8-21.
33. Sunnananda, O. (2025). The influence of AI literacy on work readiness among university students (Doctoral dissertation, Mae Fah Luang University. Learning Resources and Educational Media Centre).
34. Tomlinson, C. A. (2017). How to differentiate instruction in academically diverse classrooms. *Ascd*.
35. Tran, H. P., Nguyen, T. L., Ha, T. T. L., Tang, T. M., Dinh, H. L., & Pham, T. D. (2026). Responsible Job-Seeking Behavior in the Era of AI and Digital Transformation: A Cross-Generational Study. *Employee Responsibilities and Rights Journal*, 1-24.
36. Wahrini, R., Hasbi, H., Nuruzzaman, M., Nur, N. A., Budiastuti, P., Gaspersz, M., & Mara, A. T. (2026). AI-Driven Career Guidance to Reduce Vocational Students' Career Path Anxiety through Skills Mapping, Adaptive Mentoring, and Labor Market Intelligence. *F1000Research*, 15, 298.
37. Wang, Y. (2024). Navigating employment: how Chinese humanities Master's graduates from selective universities transition into the job market (Doctoral dissertation, University of Oxford).
38. Warren, C. L. (2025). *AI-Proof Your Career: How to Stay Ahead and Secure Your Future*. eBookIt. com.
39. Wei, L. W. (2025). "I Am Creative, Therefore I Am Employable": Self-Creativity Identity as a Mediator of the AI-Unemployment Anxiety Link. *Beijing International Review of Education*, 7(3), 224-238.
40. Winarni, I., Erwanto, E., & Hidayati, I. (2026). The Relationship between Career Anxiety and Digital Competence with Students' Self-Efficacy in the Era of Automation and Artificial Intelligence. *Journal of Mathematics Instruction, Social Research and Opinion*, 5(1), 595-610.
41. Xiao, Y., & Zheng, L. (2025). Can ChatGPT boost students' employment confidence? A pioneering booster for career readiness. *Behavioral Sciences*, 15(3), 362.
42. Yaşar, H., & Karagucuk, V. (2025). The effect of artificial intelligence anxiety on career decidedness among students in English-related departments at universities. *Discover Artificial Intelligence*, 5(1), 48.
43. Yorke, M. (2006, July). Student engagement: Deep, surface or strategic. In Keynote address to the 9th Pacific Rim Conference on the First Year in Higher Education, Griffith University, Australia (pp. 12-14).
44. Zene, M., Sartori, R., & Ceschi, A. (2026). The generative AI challenge: Investigating impacts on perceived employability and the rise of maladaptive use in knowledge workers.
45. Zhang, H., Lee, I., Ali, S., DiPaola, D., Cheng, Y., & Breazeal, C. (2023). Integrating ethics and career futures with technical learning to promote AI literacy for middle school students: An exploratory study. *International journal of artificial intelligence in education*, 33(2), 290-324.
46. Zhang, J., Yang, S., & Yazid, Z. (2026). AI awareness and career education in Chinese higher education: serial mediation effects on self-efficacy, employability confidence, and employability. *British Journal of Guidance & Counselling*, 1-15.

