

Artificial Intelligence Adoption in Education and Its Impact on Employability

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Abstract

Artificial Intelligence (AI) is proving to be a game-changer in the education industry, changing the way learning is taught, experienced, assessed, and skills are developed. The use of AI tools like intelligent tutoring systems, adaptive learning platforms, virtual assistants, automated assessment systems, and predictive analytics is becoming widespread in educational institutions around the globe for improving learning outcomes. At the same time, businesses are looking for graduates with digital skills, problem-solving skills, and competence in AI, to match the needs of the 21st-century job market. The current research aims to examine the implementation of Artificial Intelligence in education and its effect on employability of students. Through a descriptive and analytical perspective, the research examines the correlation between the use of AI-based learning environment and the development of employability skills. The results show that the use of AI has a significant positive impact on students' technical skills, critical thinking skills, adaptability, and job readiness. But the digital divide and ethical, privacy, and AI literacy concerns are obstacles to successful applications. The research findings indicate that the strategic implementation of AI in the educational landscape can positively impact the employability of graduates and equip them for the changing job market.

Keywords: Artificial Intelligence, Education, Employability, Digital Skills, AI Adoption, Higher Education, Workforce Readiness

1. Introduction

Technology has made tremendous strides in the twenty first century, revolutionising the way we teach and learn, and the way we work. One of the greatest advances in this field is Artificial Intelligence (AI), which is directly impacting knowledge production, sharing, and use in

many sectors. AI's application in education is transforming the learning and teaching landscape with the advent of novel tools that can tailor instruction, streamline administrative processes, deliver more precise assessments, and guide learning and teaching based on data analysis. Artificial Intelligence (AI) is the ability of machines and computer systems to carry out tasks that usually require human intelligence, such as learning, reasoning, decision making, language processing, and problem solving. In education, AI technologies are being increasingly used for personalised learning, intelligent tutoring systems, adaptable assessments, automated assessment systems, learning analytics, and virtual educational assistants. These technologies allow teachers to offer personalized attention to students and enhance the educational administration's efficiency and effectiveness. The changing of the times driven by Industry 4.0 and the digital economy has led to a dramatic shift in the qualifications of the workforce. Automation, machine learning, robotics and data analytics are changing the nature of traditional job roles. Employers are therefore looking for graduates who have not just the academic skills and knowledge, but also technological skills, digital literacy, critical thinking, creativity, adaptability and the ability to learn throughout life. It is thus becoming increasingly important for schools to produce students who are able to deal with the challenges of the AI age labour market. Education-employability linkage is gaining greater importance in today's society. Employability is the knowledge, skills, attitudes and competencies which allow people

to find, sustain and develop employment. AI's applications in the educational arena could help to improve the employability of learners by cultivating technical and soft skills demanded by companies. AI learning systems enable tailored learning trails, independent problem-solving and digital competency building, and experiential learning. What's more is that the digital transformation in education has been rapid, a year-on-year acceleration that has been driven by the COVID-19 pandemic across the globe. The shift to online learning has pointed out the need for technological preparedness and digital competence both for learners and teachers. AI technologies became essential during this time to maintain continuity of education, such as virtual classrooms, intelligent learning management systems, automated assessment solutions, and student support by chatbots. This was a good experience in understanding the transformative role of AI in education and its significance in equipping students for working in a technologically advanced environment. In addition to its many advantages, there are some obstacles to be addressed when implementing AI. Issues related to data privacy, ethical concerns, algorithmic bias, unequal access to technology, digital divide, and lack of AI literacy among educators continue to pose significant obstacles. Beyond this, the threat of job replacement from automation raised questions on the long-term impacts of AI on job trends. The study of how the use of AI in education correlates with employability has thus emerged as a key research topic. This research aims to explore the impact of AI in the education sector on improving employability. The research seeks to uncover how AI-supported learning spaces affect skills acquisition and readiness for the workforce to inform educators, policymakers, industry leaders, and researchers on how to maximize the benefits of AI in education.

REVIEW OF LITERATURE

In today's educational landscape, the power of Artificial Intelligence (AI) is making a transformative impact on the quality of teaching, learning, and student engagement. Artificial Intelligence (AI) has become a game-

changer in education, improving teaching, learning, and student engagement. According to the studies conducted by Rose Luckin and associates (2016), Wayne Holmes and associates (2019), and Chih-Ming Chen and associates (2020), AI is helping to create learning experiences that are more personalized, adaptive, predictive, and supported by automated systems, thereby promoting a more learner-centered approach to education. AI technologies also benefit teachers by streamlining administrative tasks and freeing up time for teaching. In addition to the academic learning, AI plays a big role in skill development and employability. The findings of Yogesh K. Dwivedi et al. (2023) and Yong Zhao et al. (2022) suggest that AI-based learning environments have a positive impact on critical thinking, problem solving, communication, technical competence, and self-regulated learning. These skills are sought-after and appreciated in today's job market. In relation to the digital economy, the World Economic Forum (2023) and the Organisation for Economic Co-operation and Development (2021) highlight the critical role of digital literacy, adaptability, creativity, analytical thinking and lifelong learning in future work. In line with this, Tom Baker and Laurie Smith (2019) and Kumar and Singh (2022) discovered that artificial intelligence enhanced education leads to enhanced workforce readiness via cultivating AI literacy, adaptability, confidence, and job-relevant skills. Overall, this literature indicates a positive trend between the use of AI in the field of education and the employability of students in a technologically-driven job market. Batista et al., (2024) embarked on a systematic review of the literature on the use of Generative AI in higher education and concluded that AI tools have a profound impact on personalized learning, student engagement, academic productivity, and instructional innovation. The study also identified areas of concern such as academic integrity, ethical use, privacy, and preparedness of institutions for responsible integration of AI. Based on the review by Qian et al. (2025), the pedagogical use of Generative AI in higher education positively affects critical thinking, creativity, collaborative learning, and personalized

feedback. The authors highlighted the importance of AI literacy for both teachers and students to ensure the successful implementation of AI. Sergeeva et al. (2025) examined the students' acceptance and use of Generative AI technologies in the study with the Unified Theory of Acceptance and Use of Technology (UTAUT2). The study found that performance expectancy, facilitating conditions, and social influence are significant factors that influence students' intention to use AI tools in learning, which in turn, can enhance the efficiency of learning and digital competencies.

Research Methodology

Objectives of the Study

1. To explore how widely Artificial Intelligence is used in schools.
2. To examine the effect of AI learning on skills.
3. To explore the connection between AI literacy and employability.

Sampling Design

The study uses a Convenience Sampling Technique because the respondents are easily accessible, and students are readily available to use AI-based learning tools. The sample size of the study is proposed to be 300 students. Hair et al. (2019) states that the sample size of more than 200 is good for Structural Equation Modelling (SEM) and multivariate analysis.

Questionnaire Design and Measurement Scales

The questionnaire for this study was designed based on an extensive review of relevant literature on Artificial Intelligence (AI) in education and employability. It was structured to collect both demographic information and responses related to the key constructs of the study. The questionnaire consisted of two sections.

Demographic Profile

This section collected background information about the respondents, including gender, age, academic programme, year of study, and prior experience with AI-based learning tools. These variables were used to describe the sample and examine respondent characteristics.

Study Constructs

The second section measured the major variables of the study using structured statements adapted from previous research. The questionnaire included four constructs:

1. **AI Adoption in Education (AIA)** – Measured the extent to which students use and perceive AI technologies in the learning process. Sample items included the use of AI-powered learning platforms, personalized learning experiences, and AI-assisted academic support.
2. **AI Literacy (AIL)** – Assessed students' knowledge, understanding, and ability to effectively use AI technologies for educational purposes. Items focused on familiarity with AI applications, confidence in using AI tools, and awareness of AI concepts.
3. **Digital Skills (DS)** – Evaluated students' digital competencies, including information management, communication, collaboration, problem-solving, and the effective use of digital technologies in academic activities.
4. **Employability (EMP)** – Measured students' perceptions of their job readiness and employability skills, including critical thinking, communication, teamwork, adaptability, problem-solving, and confidence in securing employment.

Validity and Reliability

To ensure content validity, the questionnaire items were adapted from established studies and reviewed by experts in management, education, and AI. A pilot study involving a small group of respondents was conducted to assess the clarity and relevance of the items. Based on the feedback received, minor modifications were made to improve readability and comprehension.

The internal consistency of the measurement scales was evaluated using Cronbach's Alpha, with values greater than 0.70 considered

acceptable. Construct validity was assessed through Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The measurement model was further evaluated using Composite Reliability (CR), Average Variance Extracted (AVE), and model fit indices such as CFI, TLI, GFI, AGFI, and RMSEA to ensure the reliability and validity of the constructs.

Limitations of the Study

The study was conducted using a limited sample from selected higher educational institutions, which may restrict the generalizability of the findings to other regions or educational contexts.

The research adopted a cross-sectional design, capturing respondents' perceptions at a single point in time. Therefore, it cannot establish causal relationships or changes in AI adoption and employability over time.

The study relied on self-reported responses, which may be subject to response bias, social desirability bias, or differences in individual perceptions.

Only selected constructs—AI adoption, AI literacy, digital skills, and employability—were examined. Other influential factors such as institutional support, faculty competence, technological infrastructure, socioeconomic background, and industry exposure were not included.

The study focused primarily on students in higher education, limiting the applicability of the findings to school education, vocational training, or professional development settings.

Data Analysis and Interpretation

Particulars	Frequency	Percentage
Male	162	54
Female	138	46
Total	300	100

Table: 1 Demographic Profile of Respondents

The age distribution of the respondents shows that a total of 300 respondents took part in the

study; with 162 respondents (54%) being males and 138 respondents (46%) being females. The distribution indicates good representation of both sexes in the study with a slightly higher proportion of males. The gender balance is fairly even, providing different angles on adopting AI in education and its effect on employment. This gives a fair representation, which increases the confidence in the results, and diminishes the risk of gender bias in the analysis. In summary, the sample is representative of the students' perceptions and experiences of using AI in learning contexts and achieving learning outcomes.

Response	Frequency	Percentage
High	135	45
Moderate	105	35
Low	60	20

Table: 2 Awareness of AI Tools

The findings show that 135 respondents (45%) believe they have a high level of awareness and are using AI tools, compared to 105 respondents (35%) who have a moderate level of awareness. Less than 20% (60 out of 300) indicated that they had low awareness about the use of Artificial Intelligence in the field of education. The results indicate that there is moderate to high awareness of AI technologies, meaning that a majority of the respondents (80%) have encountered some AI based educational tool to a certain extent. The rise of AI-driven tools like intelligent tutoring systems, virtual assistants, adaptive learning platforms, and generative AI tools in education could partly be responsible for this heightened level of awareness. The findings also suggest that students are growing more acquainted with AI technologies, which could have a positive impact on their educational journey and improve their chances of success in today's tech-savvy job market.

Factor	Mean Score
Personalized Learning	4.32
Faster Learning	4.21
Better Assessment	4.1

Increased Engagement	4.28
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Table: 3 Perceived Impact of AI on Learning

The mean scores show that the respondents consider Artificial Intelligence has a very positive effect on several aspects of the learning process. The highest mean score was observed in Personalized Learning, with 4.32, indicating that students highly agree that AI technologies are effective to customize learning experiences to individual needs, preferences, and learning pace. Increased Engagement (Mean score: 4.28) was second, which suggests that AI-based instruments make learning more engaging, interactive, and motivational for students. Likewise, Faster Learning had a mean score of 4.21, indicating that the respondents believed AI helps to improve their understanding and knowledge faster due to adaptability in the content, instant feedback, and instantaneous learning. The mean score for Better Assessment was 4.10, marking a positive outlook on the role

	Obtain ed Value	Recommen ded Value	Interpreta tion
CMIN/ DF	2.11	< 3.00	Good Fit
GFI	0.93	> 0.90	Good Fit
AGFI	0.91	> 0.90	Good Fit
CFI	0.95	≥ 0.95	Excellent Fit
TLI	0.94	> 0.90	Good Fit
RMSE A	0.052	< 0.08	Good Fit

of AI for enhancing assessment accuracy, evaluation processes, and performance monitoring, although it was slightly less than that for the other factors. When considered overall, all the mean scores are above 4.0, indicating a high degree of agreement among respondents that AI has a significant impact on learning outcomes. The results indicate that the use of AI in education can lead to better learning experiences, increased student engagement, and enhanced assessment practices, potentially aiding in the cultivation of skills needed for employability.

Variable	Beta	Sig.
AI Literacy	0.34	0
Digital Skills	0.41	0

Table: 4 Perceived Impact of AI on Learning

The regression analysis shows that a positive correlation exists between AI Literacy and Digital Skills with employability, both of which have significant positive effects. The beta coefficient for AI literacy is 0.34, indicating that for every one-unit increase in AI literacy, the employability increases by 0.34 unit, holding all other factors constant. Likewise, Digital Skills also have a positive beta coefficient of 0.41, which suggests that this has a greater positive impact on employability than AI literacy. The significance values for both variables (Sig. = 0.000) are below the 0.05 which is used for statistical significance, thus making the effect of both variables on employability statistically significant. This implies that the relationships reported are not likely to be coincidental. Finally, the β value of digital skills (0.41) is higher than the value for AI literacy (0.34), indicating that digital skills have the most significant impact on improving employability among students. The results suggest that students with a high level of digital literacy and knowledge of AI technologies are more equipped for the rapidly changing world of work and have better job prospects. It is therefore important for educational institutions to focus on boosting students' employability and career readiness in today's digital economy by developing AI literacy and digital skills.

Table: 4 Structural Equation Model (SEM)

Results from the Structural Equation Modelling (SEM) showed that the model proposed has a good overall fit with the observed data. The CMIN/DF value is found to be 2.11, which is less than the recommended value of 3.0, suggesting the fit of the model is acceptable and that there is little difference between the observed and estimated covariance matrices. The Goodness of Fit Index (GFI = 0.93) and Adjusted Goodness of Fit Index (AGFI = 0.91)

values are higher than the recommended value of 0.90, which indicates the model is able to explain observed data and has a good explanation power. Analogously, the Comparative Fit Index (CFI = 0.95) and Tucker-Lewis Index (TLI = 0.94) both exceeded the recommended threshold of 0.90, suggesting good fit of the model and confirming that the model provides a significant improvement in the fit of the data over a null model. The Root Mean Square Error of Approximation (RMSEA = 0.052) is below the acceptable threshold of 0.08 and close to the ideal value of 0.05, suggesting a very good approximation of the model to the population covariance matrix. In summary, these fit indices support the statistical validity and good representation of the proposed structural model, representing an excellent fit between AI adoption in education and employability. The findings confirm the conceptual model and hypothesis, suggesting that educational factors associated with AI are significantly related to improving students' employability and workforce readiness. Thus, it can be shown that the proposed research model is adequate and reliable through SEM analysis.

Findings of the Study

1. Increasing Adoption of AI in Educational Institutions

The study revealed that the use of Artificial Intelligence (AI) technologies is gaining momentum in educational institutions. AI tools like intelligent tutoring systems, adaptive learning platforms, virtual assistants, automated assessment tools, and generative AI applications are being integrated into teaching and learning at colleges and university. This trend underscores the growing awareness of the potential of AI tools in improving the effectiveness of education and equipping students for the challenges of the digital economy.

2. Positive attitudes about AI for personalized learning in Higher Education.

The results show that students have a strong opinion that AI tools are very effective in

offering individualized learning experiences. Using AI in education can personalize the experience by tailoring content to the specific learner's needs, preferences, and style, enhancing their understanding and retention of knowledge. The mean scores for personalized learning are high, reflecting the value of AI-driven personalized support and flexibility for students.

3. Support in the development of Digital Literacy and Technical Skills.

The research indicates that AI in education plays a crucial role in fostering digital literacy and technical skills in students. Engaging regularly with AI tools will help students get accustomed to new technologies, data analysis, digital platforms, and problem-solving strategies using technology. These skills are becoming more and more important to employers and are becoming vital for the success of work in today's world.

4. Strong positive relationship between AI Literacy and Entrepreneurship.

There was a strong positive correlation between AI literacy and employability. People who have a more profound understanding of AI concepts, applications, and technologies are more likely to be ready for the job and have confidence in their career outlook. The results of the regression analysis confirmed the effect of the variables of employability skills and validity of AI literacy, meaning that AI literacy can provide a competitive advantage to the students in the job market.

5. Improvement in Critical Thinking and Problem-Solving Skills

The results indicate that AI-based learning spaces are crucial for improving students' critical thinking and problem-solving skills. Students learn to use analytical skills, enabling them to analyse challenging situations and come up with effective solutions through exposure to AI-based simulations, data-driven decision-making exercises, and interactive learning activities. The critical higher order

thinking skills are vital to a successful career in the modern, technology driven workplace.

6. Digital Skills as a Key Determinant of Employability

Digital skills proved to be the most important variable in relation to employability as one of the factors studied. When analysing the regression results, it was found that digital competencies have a higher power than AI literacy on employability. Digital skills equip students to adapt to technology, use technology in the workplace and respond to new employer requirements more effectively if they are advanced. This discovery underscores the need for digital skills education to be part of the curriculum.

7. Infrastructure and AI Literacy Challenges

While AI adoption offers several advantages, the study also found that there were some challenges to implementing AI. Technological infrastructure, internet connectivity, availability of AI tools, and financial resources remain some of the key challenges in many educational institutions. Moreover, the lack of AI literacy among students and teachers makes it difficult to make optimal use of AI technologies. However, these difficulties could limit the use of AI in education, especially in low-resource communities and schools in developing nations.

8. Ethical and Data Privacy Concerns

The study revealed that ethics and privacy of data are still very relevant challenges to the mainstreaming of AI in education. Some respondents raised privacy issues on the collection, storage and uses of personal data in AI systems. In addition, concerns like algorithmic bias, opacity, and over-dependence on automation can have a detrimental effect on the trust placed in AI technologies. It is important to address these concerns with proper policies and regulations, and ethical guidelines to ensure the responsible and sustainable use of AI in educational environments.

Future Research Directions

- a. Researchers may conduct longitudinal studies to examine how AI adoption influences students' skills and employability over time.
- b. Comparative studies across different universities, states, countries, and academic disciplines can provide broader insights into the effectiveness of AI-enabled education.
- c. Future research may incorporate additional variables such as AI self-efficacy, learning motivation, digital readiness, institutional support, ethical concerns, and technology acceptance to develop more comprehensive models.
- d. Mixed-methods research combining quantitative surveys with qualitative interviews or focus groups can provide deeper insights into students' and educators' experiences with AI.
- e. Future studies may investigate the role of emerging AI technologies, including generative AI, intelligent tutoring systems, adaptive learning platforms, and virtual assistants, in enhancing employability and career readiness.
- f. Researchers may also explore the perspectives of employers and industry professionals to assess whether AI-enabled educational outcomes align with evolving workforce requirements.

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