Impact of Artificial Intelligence on Education, Employment, and Global Social Issues

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Abstract

The rapid advancement of artificial intelligence changes the paradigm shift across the global economy and society. This study analyzes, syndicates findings from experts in AI, educators, and policy makers to comprehensive assess the impacts of AI on the education, employment and important social issues. Qualitative thematic synthesis and data extraction were applied to compare and establish a consolidates view of consensus or contradictions. The findings indicate that application of AI has outpaced previous technological revolutions, expect over 80% of companies to use AI or develop related tools in 2027; AI threatens codified knowledge jobs but increase jobs requiring creativity and strategic thinking; accelerating enable AI in learning while protecting academic integrity; job displacement, data security and ethical issues are important problems in the AI era. Research recommends providing mandatory, interdisciplinary AI knowledge, re-designing curriculum toward foundational and human-centered skills, and establishing robust governance for responsible AI use.

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Keywords

Artificial intelligence; AI era; educating orientation in the AI era; social changes in the AI era; AI ethics.

1 Introduction

The rapid advancement of Artificial Intelligence (AI) is no longer a marginal concept but an industrial revolution driving change across industries, higher education and social behaviors. The AI tools such as Large Language Models (LLMs) integrated into operations every day and the core questions have changed from “Will AI replace us?” to “How will people use AI redefine talent?” [1]. The adopting AI has moved faster than the early of internet and personal computer age, more achieving and more pervasive usage in study, research, and administration. Evidence has suggested that over 80% of Fortune 500 companies have applied AI, although only 1% feel they have reached maturity in its implementation [2]. Furthermore, the global growth of AI is projected to reach $4,8 trillion by 2033 – increase 25-fold in only one decade [3].

The global context suggests that AI adoption has outpaced previous technological shifts. The forecasting that over 80% companies will either use Generative AI (GAI) or develop related tools by 2027 [4]. The AI acceleration creates a twin imperative for higher education and policy makers have to leverage AI for enhanced productivity while mitigating significant risks related to academic integrity, job displacement, and social inequality [5].

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This study provides a consolidated analysis of the multifaceted impacts of AI on three domains, including employment, education, and the global social issues. This synthesis aims to inform policy makers, educators, and researchers on necessary strategic adjustments in the AI era.

2 Methodology

Researching methodology of this paper applied qualitative thematic synthesis and comparative data extraction approach.

2.1 Data extraction

The data in this study are referring employment statistics, AI performance metrics and social impacts were extracted directly from the original reports without external modification. A systematic extraction process was performed:

Thematic coding: information was categorized into core themes: global AI application, Job Risk and New Roles, Essential Skills, Higher Education Curriculum Strategy, Social and Ethics Concerns (including social impacts).

Quantitative data extraction: all numerical facts, percentages, metrics (such as decline rates, important skills, percentages, figures, …) were extracted and recorded with their specific source citation (Author, Report, page reference). Job market data collected from World Economic Forum (WEF), and Stanford University, and Forbes 2025 reports cited within [6-8].

Model and method reproduction: details on AI models, evaluation pipelines, or empirical study descriptions were extracted verbatim or concisely summarized, citing the source precisely.

Comparative data generation: where multiple reports provided the relation or overlapping metrics (such as job risk categories, skill work requirements), a synthesis table was constructed for comparison, and each cell's data traceable to its original report.

2.2 Synthesis method

This synthesis identifies three primary pillars of study: the transformation of labor-market (cover Displacement vs Augmentation), current technical and ethical limitations of AI, and strategic responses for higher education.

3 Results

The results of the synthesis, the quantitative and qualitative analysis from reports reveals significant of AI's impacts on three domains

3.1 The Capabilities and Limitations of AI

Despite of the widespread adoption of AI, significant technical limitations remain. The reports highlight that LLMs (such as ChatGPT) often operate on approximate retrieval rather than true reasoning. The paper "GSM-Symbolic" [1] is cited as noting that LLMs struggle with basic mathematical reasoning when irrelevant information is introduced. While proficient in knowledge-intensive domains, the current AI systems have serious deficits in the foundational cognitive machinery, particularly in long term memory storage. Table 1 explores that the result of GAI scores (GPT-4 at 27%, GPT-5 at 58%) specifically quantify both the rapid process and the significant gap remaining before GAI [9].

Table 1 GAI score summary [9]

Model	**Knowledge** (%)	**Reading & writing** (%)	**Math** (%)	**Reasoning** (%)	**Working memory** (%)	**Total GAI score** (%)
GPT-4 (2023)	8	6	4	0	2	27
GPT-5 (2024)	9	10	10	7	5	58

Additionally, the reporting data indicates that 40% of interactions of user to tools like Microsoft Copilot involve the AI playing role as a coach or an advisor than executing tasks, including a shift toward augmentation [10].

3.2 Impact on Employment and Transformation of the Labor-Market

The threat to the workforce posed by AI is significant. The integration of AI is fundamentally redefining job requirements, particularly for white-collar workers (such as staffs, officers) and new graduates entering

administrative and analytical fields. A Stanford University Report indicates that AI is reshaping the labor market. This substitution risk is especially acute for young workers who rely more heavily on systematized knowledge. Employment among people aged 22-25 in AI exposed occupation has fallen by 13% relative to less exposed jobs between late 2022 and mid-2025. In contrast, older workers who possess tacit expertise and contextual understanding remain relatively protected [8]. This phenomenon suggests a Death Valley for career starts, where young workforce struggle to gain the experience required to become the experts who survive automation by the AI era. Table 2 show the job roles identified across the reports as being high risk of substitution versus those expected to survive or emerge to AI augmentation.

Table 2 Job roles at risk and emerging/surviving roles in the AI era

Category	Roles identified as at high risk	Roles identified as surviving or emerging
Middle management	Routine decision-makers, supervisors in logistics/retail	Strategic leaders, change management experts, cross-disciplinary innovators
Legal &finance	Paralegals, legal researchers, accountants (compliance focus), tax preparers, financial advisors (low-tier), credit analysts, auditors	Strategic financial planners, risk managers, complex deal making, legal technologist, ethics consultant, legal AI checker
Healthcare/admin	Medical coders, insurance claim processors, Appointment schedulers, billing staff	Not reported in the provided documents
Education/ research	Standardized test graders, basic tutors for factual subjects, administrative academic staff, consultants performing data/market research	Not reported in the provided documents
Technology	The best programmers are not those who write code the fastest; AI is disrupting its own creators.	Expertise in AI orchestration (connecting AI models, tools, data, and services)

Data from the World Economic Forum (WEF) Future of Jobs Report 2025 [6] indicated a net positive but structurally altered job market.. The routine administrative roles face the highest decline, while technology-centric and human-service professions grow. This aligns with the concept that AI automates codified tasks (e.g. customer service) while augmenting complex tasks. It explores that relative to office or systematized jobs are being replaced quickly, while creative or critical thinking jobs are experiencing the highest growth. Table 3 project net growth and decline for few occupations over the next five years (see more in [6]).

Table 3 Top fastest-growing and fastest-declining jobs, 2025-2030 [6]

Rank	Occupation	Net growth (%)	Occupation	Net decline (%)
1	Big Data Specialists	113	Postal Service Clerks	−34
2	FinTech Engineers	94	Bank Tellers and Related Clerks	−31
3	AI and Machine Learning Specialists	82	Data Entry Clerks	−26
4	Software and Applications Developers	57	Cashiers and Ticket Clerks	−20
5	Security Management Specialists	55	Administrative Assistants and Executive Secretaries	−20
6	Data Warehousing Specialists	49	Printing and Related Trades Workers	−19
7	Autonomous and Electric Vehicle Specialists	48	Accounting, Bookkeeping and Payroll Clerks	−18
8	UI and UX Designers	47	Material-Recording and Stock-Keeping Clerks	−16

9	Light Truck or Delivery Services Drivers	46	Transportation Attendants and Conductors	−15
10	Internet of Things Specialists	42	Door-To-Door Sales Workers, News and Street Vendors, and Related Workers	−14
11	Data Analysts and Scientists	41	Graphic Designers	−12
12	Environmental Engineers	40	Claims Adjusters, Examiners, and Investigators	−11

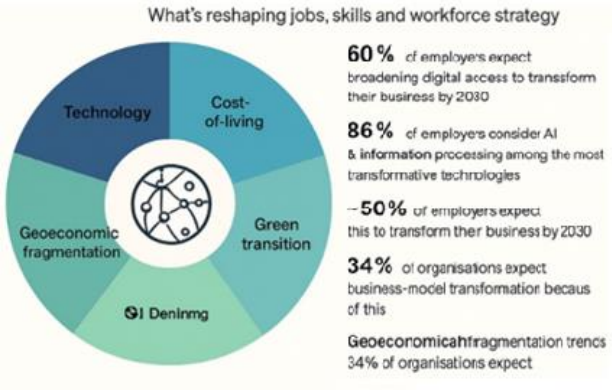

Figure 1 Major drivers of labor-market change (2025-2030) [3]

Technology trends partly contribute to the growth of security-related roles such as Security Management Specialists. Green and energy transition roles, including Autonomous and Electric Vehicle Specialists, Environmental Engineers and Renewable Energy Engineers appeared within the top 15 fastest growing roles. By contrast, the fastest declining roles such as Cashiers and Ticket Clerks, Secretaries, Printing Workers, Accountants and Auditors, etc (Figure 1). Technological skills are projected to grow in importance more rapidly than any other skills in the next five years. AI and big data are at the top of the list, followed by networks and cybersecurity and technological literacy. Figure 1 show prediction about leading the fastest growing and fastest declining jobs from 2025-2030.

Contrary to the fear of total replacement, the consensus across is that "AI will not replace human, but human using AI will shape the future" [5]. This human – AI collaboration is evidenced by a finding of 25% higher productivity [11]. Consequently, the focus shifts to careers where AI acts or influence as an assistant, such as data science, business analysis, user interface/user experience design, and healthcare technology. The adaptation requires a shift in core workforce competencies. An analysis of employer expectations for 2030 skill indicates essential top 5 skills of worker for difference in AI era, including real-world experience, global mindset, interaction skills, critical thinking, creativity, AI literacy, ethics, and communication [7].

3.3 Impact on education and university's responses

The speed of application of AI tools has outpaced the early personal computer and internet era. The AI is now widely used in learning-teaching activities, research, and administration. The results of the Digital Education Council's 2024 survey are presented in Table 4 [12].

Table 4 Impact to students of AI in Teaching and Learning [12]

Top interested contents of student	**Percent of student (%)**
Already use AI in their studies	86
Use AI at least on a weekly basis	54
Student perception of university's AI integration: AI integration does not fully meet their expectations	80
Expect their universities to increase the use of AI in teaching and learning	59
Agree that universities should provide training for faculty on the effective use of AI tools	73
Agree that universities should provide training for students on the effective use of AI tools	72

Agree that universities should offer more courses on AI literacy	72
Expect and percept of involvement in AI decision making	71
Feel that there is still room for improvement in their university AI guidelines	93

Currently, the higher education faces two major demands: integrating AI into educating activities, and addressing the needs of the labor-market in line with the AI era. Many assisted AI tools, such as adaptive learning system, intelligent tutoring system, can provide a flexible, personalized learning environment, while also support faculty automated grading and provide insights into learning data [5]. However, it also presents significant integrity challenges. Figure 2 presents the top 10 cases of AI tools use in university that are most student-driven.

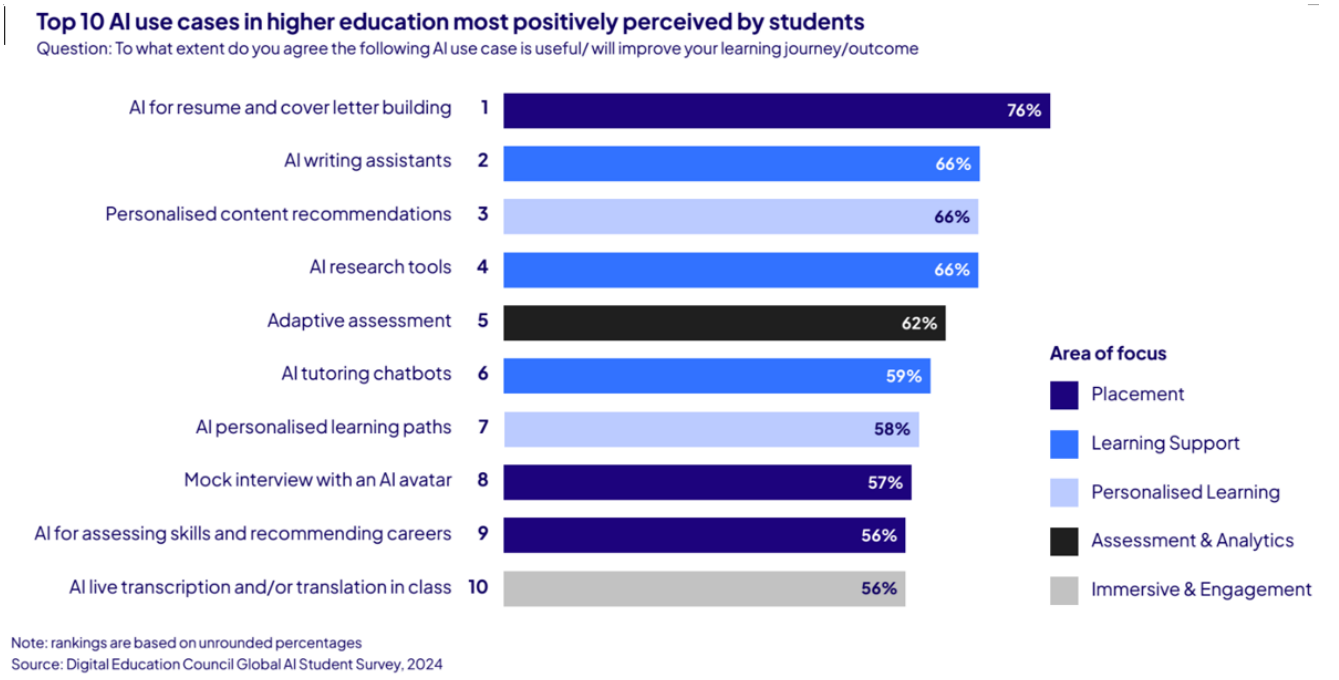

Figure 2 Top 10 cases of AI use in higher education most positively perceived students [14]

The required educational strategy involves two key pillars: teaching AI and teaching with AI. All disciplines should integrate core AI thinking and teaching students how to use, build, and criticize AI systems. Integrating AI in education brings many perspectives: provides foundational AI literacy for all students and to domain specific depth; curriculum oriented on foundational skills (e.g. learn to learn, Algebra, Mathematics, and Physics) [13]; string partnerships with socio-economic sectors; faculty continuous development.

However, the integrating AI requires to adapting curriculum and programs [10]:

- Mandatory AI Literacy: foundational AI literacy is required for all students to prevent inequity, alongside domain specific depth.
- Core Modules: new core modules should include prompt engineering, data fluency, AI ethics/safety, and legal/regulatory basics.
- Assessment Redesign: must shift to authentic tasks, process evidence, oral defenses, and tool transparency to maintain integrity.

For instance, niversities in Poland are responding with new programs (e.g. Computer Science AI at Wroclaw University of Sucience and Technology, AI and Data Analysis at AGH University) and introducing interdiscipliary programs, such as the Cognitive Science

and AI which integrates psychology, linguistics, and neuroscience [14].

Beyond academics, AI transforming university administration though applications such as student retention/success prediction, enrolment forecasting, chatbots, and academic integrity monitoring.

3.4 Impact on social issues and ethics

The reports indicates that three major societal concerns related to AI adoption: job loss and replacement; privacy and data security; ethical issues and bias.

Generative AI is capable of creating new content but carries risks, including hallucination and bias. Research examining the mathematical reasoning limits of LLMs (e.g. GMS-Symbolic) suggests that LLMs can be easily distracted by irrelevant information, raising questions about trust and reliability [1]. Human review and testing are thus crucial for AI – generated artifacts, such as code.

However, the developing of AI creates significant physical footprints. The energy consumption and carbon footprint of AI are a global social concern. Statistic from 2018 to 2025 showed that the training of 369 GAI models is estimated to have consumed (24.97-41.104) Terawatt-hours of electric, generated (10.67-18.61) million tons of carbon emissions. It is estimated that by 2035, global CO_2 emissions attributable to GAI could reach up to 246 million tons annually [15].

4 Discussion

The synthesis of these reports that AI is a "paradigm shift" rather than a temporary trend. The consolidated results underscore a consensus that AI represents a fundamental redefinition of the human role in the workforce, thus necessitating a rapid and profound educational overhaul.

The reports strongly align on the direction of impact. It focuses on the immediate threat to young, white – collar workers in codified, routine roles (e.g. low – tier finance, administration) and emphasize the shift from replacement to augmentation and subsequent productivity gains (25% higher with human – AI collaboration). This shared observation leads to a unified call for prioritizing non-automatable, human-centric skills, creative thinking, critical thinking, ethics, and emotional intelligence [14]. The reports also focused heavily on the institution's response, advocating a holistic "import AI into curriculum" approach rather than simply integrating AI only to computer science programs.

The crucial gap identified in the reports is a detailed framework (or regulation) for equity and accessibility of AI-related education, beyond the general call for leveraging AI's knowledge to prevent inequity. The high environmental cost of GAI training is a significant social issue not elaborated upon in the context of university strategy development or curriculum transformation by the other reports, representing a thematic gap.

Implication for Education: The curriculum must mandate foundational AI literacy for all students, not only in STEM majors. Teaching has to focus on how to use, build, and critique AI systems. Priority should be given to teaching "tacit knowledge", strategic thinking, creative skills, and interpersonal communication skills that AI cannot easily replicate. Educational institutions must adopt the transparent assessment tools to address integrity challenges in AI-driven learning.

Implication for Employment Transformation and Policy Makers: policies must contrast the stagnation of entry level job-market growth. Strategies should focus on lifelong learning and re-skilling for workers at risk middle management and administrative roles towards augmentation more focused and career-oriented. Establish governance frameworks that ensure transparency and human oversight. Address the "Responsible AI Gap" by mandating rigorous checks on AI systems for bias and safety.

Implication for Social Issues: focus on applying AI to solve specific problems of various fields (e.g., agriculture, healthcare) rather than relying on current purely theoretical models. The top risks in the AI era, such as career transformation, privacy, and ethics, are interconnected. Addressing AI ethics and bias issues require the greater transparency and ongoing audited mechanisms. The significant quantifiable environmental impacts of GAI demand a responsible

policy of sustainable energy development and consumption for developing AI technology. Currently, this topic has remained under research.

This study is limited to the reliance solely on provided reports, expert's opinions, empirical data from specific sources, cited specific figures, and university's references (including Australia, Poland, The United States of America, France, and Viet Nam). It may not fully cover all the impacts of AI on the global issues.

5 Conclusion and Recommendation

5.1 Conclusions

The AI has a profound impact on all aspects of society. It has not only transformed the landscapes of education and employment but also opened an era of human-AI collaboration and the imperative adaptation continuously. The AI is defined by risk of replacing routine tasks, systematized jobs and leading to employment growth at the entry-level for young workers. The future careers of workers require AI to join as an augmenter and an agent, and without a substitution.

In the context of a rapidly expanding global digital economy, Viet Nam faces a significant opportunity for a strategic breakthrough. Therefore, cultivating AI literacy must be prioritized equally essential as digital competency. With projections indicating that over 80% of enterprises will integrate GAI by 2027, it is imperative for Vietnamese enterprises to comprehensive digital and technological re-skilling strategy, specifically targeting knowledge-intensive sectors such as IT, business administration, and services.

Higher education must integrate AI literacy and ethics into all curricular. Re-designing the assessing method towards practicality and transparency by using educational tools is also crucial. Critical concerns such as employment transformation, data security, AI ethics, and environmental costs, are the massive quantitative factors related to GAI training.

As a multi-disciplinary and highly oriented application institution, Nguyen Tat Thanh University (NTTU) should implement a "Smart University" model that is not only teaches AI but also integrates into institutional operations such as predicting student dropout rates, personalizing learning pathways, and optimizing academic management. Lessons from the successful frameworks of Macquarie University and Bordeaux University have shown that establishing a robust industry partnership network is the key of ensuring NTTU's graduated students are not left behind in an AI-driven labor market.

5.2 Recommendations

For policy makers/ government regulatory agencies: It is imperative to establish comprehensive legal and regulatory frameworks that controls the ethical and socially responsible deployment of AI. AI should be integrated into the national training curriculum to synchronize whole the educational system. Digital technology and AI competency frameworks must be supplemented to reflect the evolving requirements for workforce across all professional sectors of society.

For institutions/ administrators: It is imperative to reconfigure the strategic roadmap for AI' development and establish policy framework that ensure responsible AI's usage and academic integrity within institution. Strategic investments should be focused to technological infrastructure, data, and interdisciplinary AI researches that prioritize adaptive learning platforms and AI-driven student support systems to elevate educational quality. The institutions should integrate AI across the curriculum from foundational literacy to advance into all training industries. Universities must strengthen collaborations with industries, job-markets, and real projects in order to prepare students for augmenting focused roles.

For faculty/lectures: educators must recalibrate pedagogical and assessment methods to adapt using of AI tools by students. Emphasis should be applied on the authentic assessment methodologies such as viva voce, oral defenses, process-based evaluation, while mandating student transparency regarding AI utilization. Lecturers should utilize AI tools for lecture content and provide guidance for students these technologies to broaden their knowledge and enhance critical learning.

For students: Beyond mastering AI tools and developing AI critical literacy, students must cultivate creative thinking, critical reasoning and lifelong learning abilities. These human-centric core skills are essential for safeguarding them against obsolescence in increasingly automated and AI-driven labor market.

5.3 Limitations and Future Researches

Despite efforts to cover pivotal aspects, certain limitations remains in terms of technological currency due to unprecedented pace of AI evolution and current scope of available data within specific statistical domains surveyed at the time of this study. Future researches should focus on a detailed reproducible evaluating pipeline or dataset from a large-scale empirical study, including (1) depth comparative studies on university-level AI curriculum reform, using metrics such as graduated employment rates and student's AI proficiency across disciplines and (2) developing and evaluating reproducible assessment models to evaluate effectiveness of learning activities and learning processes of student in the GAI era.

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Tác động của trí tuệ nhân tạo đối với giáo dục, việc làm và các vấn đề xã hội toàn cầu

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Tóm tắt Sự phát triển nhanh chóng của trí tuệ nhân tạo (AI) làm thay đổi sự thay đổi mô hình trong nền kinh tế và xã hội toàn cầu. Nghiên cứu này phân tích, tổng hợp các phát hiện của các chuyên gia về AI, các nhà giáo dục và các nhà hoạch định chính sách để đánh giá toàn diện tác động của AI đối với giáo dục, việc làm và các vấn đề xã hội quan trọng. Phương pháp nghiên cứu áp dụng tổng hợp chuyên đề định tính và trích xuất dữ liệu định lượng để so sánh và thiết lập quan điểm thống nhất về sự đồng thuận hoặc mâu thuẫn. Kết quả chỉ ra rằng ứng dụng AI đã vượt xa các cuộc cách mạng công nghệ trước đây, dự kiến hơn 80 % công ty sẽ sử dụng AI hoặc phát triển các công cụ liên quan vào năm 2027; AI đe dọa các công việc tri thức được hệ thống hóa nhưng làm tăng công việc đòi hỏi sự sáng tạo và tư duy chiến lược; tăng tốc cho phép AI trong học tập đồng thời bảo vệ tính liêm chính trong học tập; mất việc làm, bảo mật dữ liệu và các vấn đề đạo đức là những vấn đề quan trọng trong kỷ nguyên AI. Nghiên cứu khuyến nghị về kiến thức AI bắt buộc, liên ngành, thiết kế lại chương trình giảng dạy theo hướng các kỹ năng cơ bản và lấy con người làm trung tâm, đồng thời thiết lập quản trị mạnh mẽ để sử dụng AI có trách nhiệm.

Từ khóa Trí tuệ nhân tạo; kỷ nguyên AI; định hướng giáo dục trong thời đại AI; thay đổi xã hội trong kỷ nguyên AI; đạo đức AI.