The Future of Employment: Preparing for an AI-Influenced Workforce

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Abstract

The increasing prevalence of AI technology and its use in education and the workforce will significantly change the workforce in the future. How colleges and universities adapt and engage with AI to improve students' development of AI skills and knowledge will influence how prepared students are to enter the workforce and leverage AI. The types of jobs may change, though history has shown that while some types of positions may disappear, new jobs will be developed that do not currently exist. This article reviews recent literature on AI's impact on employment and the future of the workforce. Implications for higher education leaders are provided to embrace students' use of AI and incorporate it into the curriculum and consider how potential future developments in AI might impact higher education and future professionals. ChatGPT also provided input on what positions and job categories may be created that require AI knowledge and skills.

Keywords: *curriculum, skills, talent development, technical education, workforce*

Artificial Intelligence (AI) technology will cause significant changes in higher education curricula and the workforce. Similar to how the internet created many new jobs while rendering some obsolete, AI will do the same (Briggs & Kodhani, 2023; Gabriel et al., 2024; Perna, 2023). For context, in this article, AI refers to Generative Artificial Intelligence (GenAI), such as chatbots like ChatGPT (Watkins & Monroe, 2025). These chatbots are rapidly evolving with greater capabilities to handle increasingly complex tasks. Via these chatbots and tools that integrate their functionality, components of many jobs will become automated, allowing employees to focus on tasks that create higher value for the organization (Briggs & Kodhani, 2023; Felten et al., 2023). AI will not necessarily result in mass unemployment; the number of bank tellers increased after the introduction of ATMs (Pethokoukis, 2016).

Some jobs, however, will be lost (e.g., 67,000 elevator operators since 1930, 210,000 travel agents since 1990) (Klein, 2019). Yet, Wu and Peçanha (2023) reasoned, "This will not be the first time that new technology changes how we work, of course. From lamplighters to switchboard operators to video store clerks, professions have come and gone. We've adjusted" (How long until machines take over? section, para. 3). In education, digital calculators automated math problem-solving, which changed how arithmetic was taught. According to Luterbach (2024), "there was extreme division" among people who believed children should use calculators in school when learning math or not (p. 23). Now, calculator usage, whether physically or virtually, is not so controversial.

It is unclear to economists and researchers who is really impacted by AI in the job market. Several sources (Chui et al., 2023; Gabriel et al., 2024; U.S.-E.U. Trade and Technology Council, 2022) suggested that AI has the potential to automate more than just routine tasks, potentially leading to job polarization, which refers to "hollowing out the middle," in which routine, "middle-skill jobs" decline, while demand increases for high- (e.g., analytical) and low-level (e.g., janitorial) work (Seguiza & Pajo, 2025, p. 1). Even non-routine tasks, including service roles (e.g., hair stylist) and highly skilled roles (medical diagnosis by a doctor), could be enhanced by the use of AI (U.S.-EU Trade and Technology Council, 2022). However, after reviewing the history of technological disruption in the U.S. labor market, Deming et al. (2025) determined that instead of a U-shaped curve, highly skilled jobs have grown in the age of AI, whereas both low-level and middle-level jobs have declined.

Because there is no consensus on what the future of the labor market will be in the age of AI, higher education must prepare its students for uncertainty (Chui et al.,, 2023; Miller & Cox, 2023). Shaffer and Zalewski (2011) suggested, "Many, if not most, of today's college students will hold jobs in their lifetimes that do not exist today" (p. 75). While AI will automate some jobs which will displace white collar workers, these skilled workers will likely find new positions that develop from AI's impact on society and workforce needs (Briggs & Kodhani, 2023; Gabriel et al., 2024). Colleges and universities need to adapt curricula to the scope of the changing needs in the workforce as AI evolves.

Literature Review

AI has rapidly advanced in its development and application since generative AI tools like ChatGPT were deployed in 2022, though AI innovations existed long before. Today, AI is already integrated into daily life (Gabriel et al., 2024; Knoth et al., 2024). Because of this, Gabriel et al. (2024) suggested that they "could radically alter the nature of work, education and creative pursuits" (p. 1). This review of the literature explores the evolving nature of work, students' use of AI, and AI impacts on the future curricula in higher education to prepare students for the workforce.

Evolving Nature of Work

According to Scott (2023), the job skills of the future include critically assessing AI output, communication empathy and relationship building, problem solving, anticipating and addressing bias, magic words/context specific knowledge (prompt engineering), and team building and project leadership. She called for the development of skill-based learning outcomes so students can gain these skills in the college classroom. Liza Wisner is a speaker and entrepreneur with a background in computer science and educational technology who presents on skill development for the workforce amidst the constantly-changing technology (PowerUp Talks, n.d.). As a guest on the ATD DEI podcast, she emphasized that the world of work has changed, and it will never return to how it was before AI became part of it. She suggested using "talent development to enhance skills, give people access to all the knowledge, to be able to give people the capability to be able to actualize their potentials. To me this is the goal of leveraging AI: to actualize human potentials" (Thompson, 2023). AI assistants add value to "training and upskilling" people "to ease or shorten the learning curve" as they enter new jobs (Gabriel et al., 2024, p. 170). Organizations are still

determining what skills and knowledge will be needed in the future for employees to successfully work in an AI-influenced environment (Chui et al., 2023).

Commentary from investment leaders on how AI will impact the workforce and global economy were not entirely apocalyptic. Jobs will be gained and lost, just as they have throughout history as new innovations were introduced to humans (Edwards, 2023). Economist David Rosenberg argued that similar fears surfaced when the internet became a familiar technology, but jobs ended up being created from this (Edwards, 2023). Yet, investor Cam Harvey cautioned, "The technology will be doing the jobs of many different types of workers across many industries. There will be permanent displacement and it is not obvious what the displaced will do" (Edwards, 2023, para. 12).

Along those lines, many companies are increasingly incorporating AI into their products, which will require expertise to both develop, use, and train others on best practices (Spataro, 2023). Corporations will look to leverage AI to gain efficiencies similar to how they have leveraged earlier innovations. For example, AI is already being used by news organizations to write stories about stock market earnings (Mullin & Grant, 2023). Chen's (2023) interviews with small business owners and entrepreneurs showed that AI has made time-consuming tasks very efficient, allowing people to take on more clients or complete tedious tasks, like editing images, much faster. In addition, AI can make recruiting and screening applicants more efficient for hiring managers (Kelly, 2023) as well as boost job applicants' chance of success (Blumberg, 2023). However, AI tools should be used with caution, as they are likely to introduce bias in the candidate screening process (LinkedIn, 2023).

People with AI skills are in high demand, and recruiters are willing to pay high salaries for top talent (Cutter, 2023). A job posted in summer 2023 by Netflix for an AI product manager came with a total compensation of around $900,000 (Cutter, 2023). The National Security Commission on Artificial Intelligence (2021) reported the potential for AI skills needed in defense, national intelligence, cyber warfare, and weaponry, which is relevant to governments across the world. These types of roles also offer lucrative salaries and benefits. There is a "positive link between AI exposure and employment growth. A key driver of these positive results was high income employees with strong digital skills who likely had the capabilities and freedom to adapt their roles in response to AI" (Gabriel et al., 2024, p. 168). Vinay Menon, a partner leading the global AI practice for a consulting firm, suggested that many organizations have to train their employees on AI because there are limited numbers of mid-level or senior managers with the right knowledge and skills (Cutter, 2023). Accenture's newly anointed chief AI officer, Lan Guan, lamented about the difficulty in hiring someone who has "industry expertise with a solid understanding of engineering, programming, math and statistics needed for AI work" (Cutter, 2023, para. 18).

Students & AI

Students are already using AI in college: 30% used ChatGPT in 2022-2023 (Kyaw, 2023; Terry, 2023). By 2024, 86% of college students worldwide reported using AI tools regularly for educational purposes (Rowsell, 2024). Students are realizing that it is not a panacea that will solve all of their academic issues; only 12% of those who used it saw their GPAs improve (Kyaw, 2023). ChatGPT users noted that

> the tool's advantages included its ease of use, simplicity, ability to help in organizational skills, and its ability to collect specific information and save time in researching. However,

> they also listed disadvantages, such as overreliance, inaccuracy, and potential to be considered cheating. (Kyaw, 2023, para. 5)

These pros and cons of AI tools will apply not only to higher education use-cases but also to their usage in the workplace.

It is good that students have begun to explore the capabilities of AI tools; thus, they will be adaptable to the changing nature of the workforce (Terry, 2023). Institutions have an obligation to expose students to AI, as it may harm students who have not already engaged with it (Gurung et al., 2023). Hiring managers will look for college graduates who can leverage AI to improve their work or develop AI prompts (Cerullo, 2023). New positions such as a "prompt engineer" will interact with AI services to deliver more "accurate and useful responses to the natural-language queries" to users (Cerullo, 2023, para. 3). Yet, there are differences in teaching and learning between AI and a human educator: "Human instructors provide crucial qualities that AI lacks, including profound comprehension, emotional acuity, and the ability to decipher intricate student reactions' (Luan et al., 2024, p. 105).

Irfan et al. (2023) conducted pre- and post-tests for quantitative data and semi-structured interviews for qualitative data with 50 journalism students in Tajikistan to study ChatGPT-3's usage on their critical thinking and writing skills. They found through the differences in test scores that

> the integration of ChatGPT-3 and AI literacy training significantly improved the students' critical thinking and journalism writing skills. The qualitative data analysis identified several themes in the students' perceptions of using ChatGPT-3. Students reported that ChatGPT-3 helped them generate new ideas, save time in research, and enhance their writing skills. (Irfan et al, 2023, p. 359)

The students in the study felt they could be more efficient with producing a quality story as a journalist. The authors strongly advocated for college students to receive AI literacy training (Irfan et al., 2023).

According to Kong et al. (2024), AI literacy "refers to the elements that the workforce needs to harness AI and form a synergistic relationship with the technology" (p. 1). They described four dimensions of AI literacy through the introduction of their AI Literacy Framework: cognitive (understanding of AI concepts), metacognitive (use of AI concepts for problem-solving), affective (psychological readiness to use AI) and social (ethics of problem-solving with AI) (Kong et al., 2024). The authors noted that while institutions target computer science majors with AI infused into the curriculum, college students and even those in secondary education are able to grasp AI concepts without knowledge of programming (Kong et al., 2024).

Through a systematic literature on AI in the educational domains of learning, teaching, assessment, and administration, Chin (2024) identified four learning outcomes students achieved through AI use. These included motivation and engagement across disciplines, improved academic performance, "21st century skills" which include many on the list of desired future skills by employers, and non-cognitive benefits such as increased confidence and decreased anxiety (Chin, 2024, p. 3). ChatGPT also provides students with a learning experience that is personalized (Albayati, 2024). Institutions are responsible for communicating academic integrity policies pertaining to AI usage with students. Students should learn how they can use it for their benefit in learning and for future careers, while also understanding AI's limitations (Niloy et al., 2024).

Future AI Developments & their Impact on Education & the Workforce

Four-year institutions may see advances in AI education both in high schools and at technical colleges as a threat to enrollment. However, Perna (2023) cautioned, AI is likely creating "new career pathways for young people that don't require a four-year degree" (para. 4). Thus, high schools with specialty programs, technical colleges, and GED programs also have a significant opportunity to market the development of valuable AI skills to prospective students, serving as a potential top choice for people seeking lucrative careers without attending a four-year institution.

University graduates, who tend to be higher paid than those who have less education, are more exposed to AI (Iacurci, 2023). Analytical skills such as science, mathematics, and programming are more important to jobs which have high exposure to AI (Kochhar, 2023). However, Kochhar (2023) reported that

> workers in those exposed industries do not feel their jobs are at risk—they are more likely to say that AI will help more than hurt them personally. For instance, 32% of workers in information and technology say AI will help more than hurt them personally, compared with 11% who say it will hurt more than it helps. (para. 10)

These workers may get some confidence from the fact that over time, technology makes workers more productive, and that automation often creates more jobs than it destroys (Kochhar, 2023).

Future computer science professionals will hopefully have gained knowledge and skills specifically through coursework to apply to careers after college graduation. For example, agentic AI tools like Anthropic's (n.d.) Claude Code can enhance a software engineer's ability to develop sophisticated code in a short time.

A computer science graduate might learn many coding languages while enrolled in their program, but could utilize AI to write a complex program in a short time for a specific task. However, the engineer must already be familiar with the coding language to be able to verify that the generated code is not low-quality, incomplete, or otherwise insecure code (GitLab, 2023). Thus, they are using knowledge and skills they have and applying that to coexisting with AI to achieve certain outcomes.

ChatGPT's Perspective on Future Jobs

When prompted "what sort of new jobs will AI create for those who don't have a four-year degree?" ChatGPT 3.5 (OpenAI, 2023) responded,

> AI is expected to create a variety of new job opportunities for individuals without a four-year degree. As technology continues to advance, there will be a growing demand for roles that require skills in areas such as problem-solving, creativity, communication, and adaptability.

Jobs that could be created include AI Assistants and Trainers, who will focus on "training, supervising and fine-tuning AI systems," according to ChatGPT (OpenAI, 2023). These roles will ensure that AI systems provide ethical and correct replies and will provide feedback for adjusting algorithms as needed (OpenAI, 2023). AI Data Labelers and Annotators prepare datasets for machine learning by curating, categorizing and tagging different types of information. Human-AI

integration specialists can help train organizations on how to effectively use AI tools into their workflows. Automation Coordinator roles could emerge that will identify processes suitable for AI-driven automation (OpenAI, 2023).

By comparison, when queried in 2024, Chat-GPT 4o added a few additional categories of jobs that AI will create for those without a college degree. These roles include "AI System Maintenance Technicians" who would be "responsible for maintaining AI hardware and software systems," and "AI Customer Support Specialists" who would "provide assistance to users of AI products and services, troubleshooting issues and providing guidance" (OpenAI, 2024). "AI Operations Associate" would monitor AI system performance in real-time to ensure they are operating as intended and identify/resolve issues, while "AI Quality Assurance Testers" would test "AI systems to ensure they meet quality and performance standards" (OpenAI, 2024).

These jobs may strike some as simple extensions of existing roles to cover AI systems. New creative roles may emerge, too, including an "AI Content Curator" that would manage digital content including social media posts and videos, while an "AI-Assisted Content Creator" that would work with AI to generate graphics or produce videos (OpenAI, 2024). GPT-4o also recognized the need for businesses to employ an "AI Ethics Officer" that would ensure "AI systems are developed and used ethically, adhering to relevant guidelines and regulations." as well as "AI Compliance Coordinator" roles that would "monitors and ensure compliance with legal and regulatory requirements related to AI" (OpenAI, 2024).

Besides the new job categories that are being created by AI, there are many existing job categories for those without a four-year degree that will either be enhanced AI or otherwise unaffected by AI. For example, IT roles such as Salesforce Administrator or managing systems in Microsoft Azure will likely continue to expand (Perna, 2023). Other jobs such as those in the skilled trades, personal services (e.g., trainers, coaches, hair stylists, makeup artists), elder care, and childcare, may be assisted by AI in some capability, but will largely be unaffected (OpenAI, 2023).

When prompted "what sort of new jobs will AI create for those who have a four-year degree?" Chat-GPT 4o responded with a variety of suggestions. Some, such as "AI Ethics Specialist," "Human-AI Interaction Designer," "AI Trainers," and "Automation Specialist" are similar but more advanced versions of AI-created jobs that would be available for those without a four-year degree (ChatGPT 4o, 2024). Other new AI-enabled roles include "Data Analyst/Scientist" which can use AI to help "professionals analyze large datasets to extract insights, build predictive models, and help organizations make data-driven decisions" (ChatGPT 4o, 2024), and "Machine Learning Engineers" who will work to develop AI solutions to various applications (ChatGPT 4o, 2024). "AI Product Managers" will oversee "the development and implementation of AI-driven products and services. It requires a blend of technical understanding and business acumen" (ChatGPT 4o, 2024).

Additionally, AI will enhance existing roles, such as in healthcare, finance, and education. "AI Consultants" will advise businesses on the "best strategies, tools, and technologies" for AI application (ChatGPT 4o, 2024). ChatGPT 4o (2024) concluded that these roles will "require a combination of technical skills, such as programming, statistics, and machine learning, and soft skills like problem-solving, critical thinking, and communication." The roles ChatGPT 4o (2024) described likely require a four-year degree in disciplines like data science, engineering, or computer science or a domain-specific area like education, finance, human resources, or health.

In 2025 when given the same prompt, ChatGPT 4o pointed to new opportunities in "AI Content Curator" that will "oversee AI-generated content for quality, accuracy, tone, and brand

consistency" and "Synthetic Media Designer (Audio, Video, Virtual Worlds)" that will use "AI tools to generate compelling media" (OpenAI, 2025).

Implications for Higher Education Leaders

What does this mean for higher education? In the U.S., Southworth et al. (2023) cautioned that higher education has "evolved to prepare students to enter the workforce as a primary mission" (p. 3). In that vein, institutions need to provide faculty and staff training to incorporate AI into teaching and extracurricular activities. Teaching and learning centers are putting together resources to help faculty engage with AI tools in the classroom. AI needs to be included in the curriculum, especially as college enrollment is declining (Fields & Brint, 2023). In Irfan et al.'s (2023) study, journalism students gained critical thinking skills when using AI in the classroom and felt more confident in producing stories. With some training, faculty can engage students with AI tools to build their skills for careers postgraduation to support their AI literacy (Lin et al., 2024; Southworth et al., 2023). Just like computer literacy became a part of curricula in all levels of education, AI literacy courses may be commonplace in the near future (Luterbach, 2024).

Colleges and universities should ensure that they are preparing students with the right skill sets to compete in the AI age. According to Ma and Siau (2018), AI systems are strong in areas requiring speed, accuracy and consistency, but weak in soft skills such as "creativity, innovation, critical-thinking, problem-solving, socializing, leadership, empathy, collaboration and communication" (p. 2). To respond to the AI threat, higher education needs to provide opportunities and training for students to enhance their soft skills (Ma & Siau, 2018). In 2018, Ma and Siau noted that "some universities are already offering AI and Machine Learning courses to not only computer science students, but also business students as business managers and executives need to understand the capabilities, limitations, and implications of AI in the business world" (p. 2). It is also possible that certain majors such as accounting and finance could see a drop in enrollment as perception could be that they would be targeted by AI (Ma & Siau, 2018). Other surprising beneficiaries could include liberal arts and humanities majors as those fields may be less susceptible to the "AI-invasion" (Ma & Siau, 2018, p. 2). Essel et al. (2024) suggested that integrating generative AI into higher education curricula "[bolsters] students' critical, creative, and reflective thinking abilities," soft skills desired by employers (p. 10).

For students who pursue computer science or other Science, Technology, Engineering, and Mathematics (STEM) fields, it is paramount that they take into consideration the ethical issues around AI. There are concerns as to who is the creator of code, art, writing, and innovation. In the U.S., a person has to file for a patent; it cannot be AI (Sun, 2024). Many research journals will not accept AI as an author (Rubin, 2024). At Kansas State University (2018), computer science majors are required to take a course entitled "Ethics and Conduct for Computing Professionals" which encompasses the following:

> A study of the ethical issues raised by computing technologies and the impact on society. Exploration of how one might justify actions in regard to ethical dilemmas within the fields of technology, computer science, information security, and artificial intelligence. Other topics include an examination of terminology used, Professional Codes of Conduct for computer science professionals, ethics of software development, and ethical issues relating to privacy and intellectual property in cyberspace. (para. 9)

A course like this could easily incorporate ethical issues regarding AI usage, such as being aware of potential biases, noting limitations with the timing and source of information provided, and checking for accuracy of data and references (Gottlieb et al., 2023). There is a challenge for programmers who use AI for coding, as they are more disconnected from their output, and the quality of their work may decrease (Gabriel et al., 2024). Addressing this in class enables students to apply critical thinking skills when incorporating AI-generated code into their coding projects.

Online learning in higher education has existed for a long time, but the COVID-19 pandemic shifted many institutions into the direction of permanent offerings of online certificate and degree programs (Lin et al., 2024). Given that AI usage for learning and submitting work in the higher education setting is still a grey area for educators and students, institutions should strongly encourage all instructors to develop an AI policy (if there is not already one institution-wide) which is shared with students at the start of class. Transparency of expectations by instructors and usage by students ensures a better learning experience. Students, especially those at a distance, must understand the expectations of original works, what is permissible for AI usage (e.g., reviewing writing, generating ideas), and how to disclose AI usage with assignments. AI tools have helped students with writing and editing, especially non-native English speakers (Rubin, 2024). Online instructors have expressed concern with students' originality of their works and academic integrity because of AI usage (Sevnarayan & Potter, 2024).

More research is required for the "responsible development and deployment of AI assistants" which students could participate in with their faculty (Gabriel et al., 2024, p. 2). If institutions are using chatbots to provide advising support to current students or information to prospective students, they should have students help them in developing and refining the chatbot. For science courses, AI is able to simulate experiments without using living subjects, which may also enhance understanding in lab courses while reducing costs and using animals or humans in potentially dangerous research (Rubin, 2024). In addition, higher education institutions should consider requiring an experiential learning component to undergraduate programs (Southworth et al., 2023). This high impact practice would give students hands-on experience with AI tools in the workforce, whether through an internship or a class project with a company or organization as the "client" or "customer" of students' output. Connecting work-based learning experiences to the curriculum enables instructors to support students in leveraging AI from the classroom to a future career (Teo, 2024). Companies seeking college graduates with AI skills might wish to partner with colleges by offering externships so students can apply the skills they are learning in the workplace setting. These experiences enhance students' AI literacy and allow them to develop competencies to be desirable job applicants upon graduation (Knoth et al., 2024).

Higher education leaders and policymakers have the opportunity to capitalize on how generative AI can transform curricula. According to Chin (2024), "the introduction of GenAI in higher education would alter pedagogies by shifting the emphasis from transfer knowledge to processing knowledge, and from disciplinary learning to interdisciplinary learning" (p. 6). He recommended that institutions adopt "an interdisciplinary learning mentality" and develop their students' AI literacy through pedagogy (Chin, 2024, p. 7). There is also a need for organizations to be "human-centric" in their approach to training employees and adapting their roles as technology takes on existing responsibilities, and this includes faculty and staff at institutions of higher education (Chui et al., 2023, p. 50).

Conclusion

Artificial intelligence has developed over more than six decades. Recent developments have changed access to AI tools for anyone. Since AI assistants like ChatGPT, Claude, and Gemini launched, college students have embraced them to enhance their learning and engagement. Institutions of higher education are catching up by working on AI policies in courses and integrating AI into pedagogy. As AI continues to shape the workforce, there will be changes for careers due to automation and increased efficiency of tasks offered by AI. Though there is fear of such changes by many currently employed people and organizations who plan to hire college graduates, emerging positions utilizing AI and future jobs which do not exist yet will create exciting opportunities for career growth. Just as the calculator and the internet impacted education and work, AI will continue to do so with mostly positive outcomes.

Anyone with strong skills in using AI has the potential to get a high paying job, whether or not they have earned a college degree. However, colleges and universities can capitalize on the expertise of faculty while engaging students with AI in their classrooms in any discipline, not just the engineering, computer science, and statistics disciplines where it might seem most obvious. Higher education curricula can require students to engage in experiential learning to increase AI literacy. Because of the shortage in the workforce of AI talent, today's college students may soon be on the fast track to a lucrative career utilizing AI skills and tools that many companies are seeking right now.

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