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Preparing students for an AI-driven workforce and the future of work

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Introduction

The meteoric rise of artificial intelligence (AI) systems that augment the volume and speed in which we process data to make predictions and decisions, and its subgenre, Generative AI (GenAI), focused on creating new content, has and will continue to fundamentally change how we work. In accounting, tools are emerging to automate the entire accounts payable process; in supply chain management, AI is guiding and continuously improving the accuracy of autonomous vehicles and drones for delivery, which reduce delays and fuel consumption; in legal professions, AI-driven models are analyzing data from potential jurors to predict their biases and likelihood of favoring certain arguments or positions – the list goes on. **It is more critical than ever to equip students entering the workforce with in-demand AI skills** including the ability to employ **technical** applications and the **ethical** use of AI, as well as the enduring **human capabilities** alongside AI to thrive in the workforce.[1]

While GenAI alters tasks across the labor market and can threaten certain functions, it is resulting in employers giving young professionals greater flexibility in how they conduct their work due to AI's ability to automate routine tasks. Leaders are prioritizing candidates with AI expertise over more seasoned candidates who lack these skills, speeding up changes in job roles and required skills.[2]

According to Microsoft research, skills globally are projected to change by 50% by 2030 compared to 2016, with GenAI expected to accelerate this change to 68%.[3] In the near-term, the skills employers seek are changing faster in occupations and sectors that are more likely to involve AI (e.g., professional services, information and communication, financial services). In light of the need for students and professionals to continuously upskill to stay relevant in the job market and proactively shape new ways of working, higher education institutions (HEIs) should capitalize on their established role of preparing the next generation of students for the workforce by embedding opportunities for students to hone these skills throughout the student experience, both inside and outside the classroom.[1] Doing so will require a departure from the traditional train-place-retain approach that has defined the labor market, towards one that **embeds AI and GenAI into coursework and other school activities** to incorporate relevant AI applications in field-specific contexts, **offers stackable credentials** for students and professionals to provide flexible opportunities to continuously gain new skills and competencies, and **leverages career services** and strategic private and public sector partnerships to connect students to internship opportunities and provide insights into in-demand skills aligned to their career aspirations.

[1] 2019 August 03, *Skills change, but capabilities endure*, Deloitte Insights
[2] 2024 November 12, *Embracing the AI-Driven Workforce*, Visier
[3] 2024 May 8, *Work Trend Index Annual Report*, Microsoft, LinkedIn

The critical skills in an AI-driven future

The rise of GenAI has exposed the potential for a significant skills gap, highlighting the difference between the skills that employers need to meet their operational and strategic goals and the skills that recent graduates currently possess. Addressing this gap requires emphasis on developing foundational competencies directly and indirectly related to the use of AI in the workplace. Such competencies apply to a wide range of industries and job roles across three (3) key categories: **technical skills** for effective AI interaction and management, **ethical skills**[4] for responsible AI deployment, and **human skills**[1] focusing on creativity, critical thinking, and emotional intelligence to augment AI outputs. The blend of ethical, technical, and human skills prepares students to confidently embrace the future of work by knowing how to responsibly, effectively, and curiously explore innovative technologies to bring value to any context.

Half of US jobs could be automated within the next two decades. Mastering critical technical skills **enable workers to efficiently integrate AI into their workflows to bring value and impact,** from automating tasks to improving decision-making processes.

The increasing integration of AI across sectors significantly impacts society. HEIs help **shape a workforce that can identify and promote safe, ethical uses of AI,** teaching students to navigate the potential moral and societal implications of using AI responsibly.

These traits, often referred to as "soft skills," are indispensable to **cultivate empathetic leaders, critical thinkers, and curious innovators** that can actively influence the way technological advancements impact society.

[4] 2023 October 12, *State of Ethics and Trust in Technology*, Deloitte

PROMPT WRITING

This involves the process of crafting inputs or queries that guide the behavior and responses of an AI system. Techniques like Chain-of-Thought (CoT) reasoning enhance the accuracy of responses by guiding AI through a logical process and breaking down complex problems into manageable steps - this method is particularly useful in tasks requiring deep reasoning.

VALIDATING AI WEAKNESSES

This involves recognizing and evaluating the limitations and potential errors in AI systems to ensure that AI applications perform accurately, reliably, and ethically. AI models are only as good as the data they are trained on, and validating weaknesses is key to ensuring the accuracy of AI outputs.

DEFINING PARAMETERS

This involves specifying the data inputs, algorithms used, and expected outcomes, which guide AI towards achieving the desired results. Understanding and tuning parameters before, during, and after training a model is essential for optimizing AI models for specific tasks and datasets model parameters.

Technical skills

Currently, the specific AI competencies required for various roles are still under exploration by industries and educational institutions. Meanwhile, essential skills such as prompt writing[5], validating AI's weaknesses and limitations, and defining clear problem-solving parameters[6] are crucial for harnessing today's AI capabilities. These skills represent a snapshot in time and will inevitably continue to evolve as technology advances. However, these foundational skills enable workers to efficiently leverage AI tools in the workplace and integrate AI into their workflows, from automating tasks to improving decision-making processes across various sectors.[7]

TECHNICAL SKILLS IN SUPPLY CHAIN

Trends in the supply chain industry predict 25% of key performance indicator (KPI) reporting will be powered by GenAI models. AI-powered inventory management applications help organizations forecast inventory levels while accounting for unpredictable demand. Employers will increasingly need professionals who can harness AI capabilities, effectively define parameters, and prompt AI tools to create comprehensive reports that could be used to make cost-effective purchasing decisions will quickly add value to the business.

[5] 2023 March 27, *Chain-of-Thought-Reasoning*, Medium
[6] 2023 November 28, *What is the Role of Parameters in AI?*, Techopedia
[7] 2023, *Supply Chain AI: Smarter Decisions, Automation and Success*, Gartner

ETHICAL REASONING

The process of applying moral principles and values to the development, deployment, and management of AI technologies. This involves considering the impact of AI systems on human welfare, rights, fairness, and justice, and making decisions that promote ethical outcomes.

IMPACT ASSESSMENT

The process of documenting an undertaking, evaluating the impacts it might cause, and assigning responsibility for those impacts. As organizations use AI risk and impact assessments are designed to help deploy trustworthy AI systems, this process to calculate for potential risks is a valuable tool to promote AI governance and accountability.

PRIVACY & SECURITY

The measures and practices individuals can take to protect AI systems from unauthorized access and attacks, and to ensure that the data used and generated by AI respects individual privacy rights. Best practices will continue to evolve as the technology advances, and AI users must stay up-to-date with protocols to use AI safely.

Ethical skills

Immense potential for positive impact exists as AI advances. However, as applications of this technology evolve, risks of unintended outcomes simultaneously exist. There is a growing urgency among organizations to establish AI ethics guidelines so that the tools they use operate ethically and are trusted to protect the privacy, safety, and equitable treatment of their users and customers. Ethical trust frameworks help organizations responsibly employ AI technologies while harnessing its benefits to create positive impact. The Global Deloitte AI Institute's recent State of Ethics and Trust in Technology study, which looks at ethics in technology across enterprises to reveal trends in industry, reveals an uptick in hiring for specialized, ethics-oriented roles, such as AI ethics researcher (53%), compliance specialist (53%), and technology policy analyst (51%).[6] As skills around ethics and AI rise in popularity, HEIs can begin developing talent that applies **ethical reasoning, impact assessment**[8], and **privacy and security** experience to demonstrate responsible use of AI capabilities.

ETHICAL SKILLS IN FINANCE

Financial institutions can develop AI capabilities on a NVIDIA AI platform to support the entire fraud detection and identity verification pipeline, leveraging deep learning techniques to reduce false positives and enhance accuracy. As data needs grow and AI models expand in size, complexity, and diversity, financial professionals using AI must consider the potential risks of processing large amounts of sensitive data and be prepared to implement mitigation strategies to ensure compliance with data protection regulations.[9]

[6] 2023, State of Ethics and Trust in Technology: Annual report: Second edition, Deloitte (link: https://www2.deloitte.com/content/dam/Deloitte/us/Documents/us-tte-annual-report-2023-12-8.pdf)
[8] 2021 June, *Assembling Accountability: Algorithmic Impact Assessment for the Public Interest*, Data & Society
[9] 2024, *AI for Fraud Detection*, NVIDIA

CURIOSITY & AGILITY

Vital for experimenting with AI, these traits lead to quicker adaptation and groundbreaking innovations. This involves venturing into the unknown, taking calculated risks, and being open to failure, while having the confidence to bounce back and learn from mistakes quickly to continue exploring uncharted territory.

RESILIENCE & CONNECTED TEAMING

These skills are essential for overcoming challenges in an AI-enhanced workplace. Inviting perspectives from team members with diverse backgrounds and expertise can lead to richer, more innovative ideas to solve complex problems.

DIVERGENT THINKING & EMOTIONAL INTELLIGENCE

Critical for innovative problem-solving and maintaining harmonious interpersonal relationships. Humans will need to seek unconventional approaches to question the status quo, while being open to feedback, continuously learning from others, and adapting accordingly.

Human skills

Technological advancements may redefine the way we work, but the intrinsic qualities that embody our humanity – such as empathy, creativity, and social intelligence – will remain crucial to progress. HEIs create environments that foster leadership, spark innovation, and enhance critical thinking, thereby cultivating students who can enter the workforce driving business value and adapting confidently to evolving workforce demands.[10] Students' **curiosity and agility** will allow them to naturally stay informed of developments in technology and the associated impacts on fields and industries in which they are interested in pursuing careers. Practice in showing **resilience and connected teaming** to solve increasingly complex problems will promote swift, diverse adaptation to new AI use cases. As GenAI streamlines routine tasks by generating text and synthesizing vast amounts of information, the significance of **divergent thinking and emotional intelligence** increases, catalyzing humans to evaluate AI outputs and make informed decisions about the ethical and practical applications of AI tools in the workplace to solve problems.

HUMAN SKILLS IN MARKETING

Marketing professionals can couple their domain knowledge with GenAI to hone storytelling skills, summarize text, and create personalized content to meet demands to evolve services[11]. A key ingredient to success implies a foundational level of curiosity to create innovative content, resilience to adapt to customer feedback, and divergent thinking and emotional intelligence to develop new solutions that resonate with diverse perspectives. Innovative GenAI models are built and augmented by human creativity and expertise.

[10] 2020 June 26, *Human inside: How capabilities can unleash business performance*, Deloitte Insights
[11] 2024, *Effortlessly Generate Content with Generative AI*, Dell Technologies

Adapting to rapidly evolving AI skills needs

To keep pace with rapid advancements, university administration, faculty, and staff have an opportunity to adopt a dynamic and flexible approach to embracing new skills and enabling AI experiences on campus. Early in their AI adoption journey, HEIs can explore professional development platforms (e.g., annual symposiums, centers of excellence) to empower faculty to integrate AI skills and competencies across the student experience. Industry partnerships are crucial in providing impactful tools and knowledge to integrate AI into the student experience by embedding AI and GenAI into coursework, offering stackable credentials, and leveraging career services to support students in gaining relevant skills to meet modern workforce needs and bridge the gap between academic preparation and career readiness.

Embedding AI and GenAI into coursework and other school activities

Partnerships with industry leaders can provide insights into in-demand AI skills, so that curriculum reflects how trends, tools, and resources are changing in the market to prepare students with in-demand workforce skills. These partnerships can also support universities in pursuits to enable AI technologies on campus so that educators, faculty, and students can practice harnessing AI capabilities to enhance their day-to-day tasks. For example, the University of California (UC), San Diego implemented a phased approach to integrate TritonGPT across campus. TritonGPT is an AI-driven support system developed by UC San Diego, running NVIDIA H100 clusters in their supercomputer center (SDSC), leveraging Llama 3.1 and other open-source models to provide personalized assistance for all 37,000 employees, and enhancing critical business processes across its research, administrative, and education activities.

UC San Diego's implementation of TritonGPT exemplifies a strategic and inclusive change management approach. The university engaged stakeholders early, ensuring input from faculty, staff, and students. Clear communication through town halls, newsletters, and a dedicated web portal kept everyone informed.

To facilitate adoption, UC San Diego offered comprehensive training and support, including workshops and one-on-one coaching. A phased rollout began with pilot programs, allowing for real-time feedback and iterative improvements. Robust feedback mechanisms and strong leadership ensured continuous refinement and alignment with strategic goals. By balancing innovation with cultural sensitivity and ongoing evaluation, UC San Diego seamlessly integrated TritonGPT, enhancing the educational experience and operational efficiency.[12]

Questions around ethical, responsible use of AI in the classroom, and how it translates to practical workforce applications are growing across the higher education ecosystem. Industry partners that have since established ethical trust frameworks, developed safe and secure platforms, and prepared their employees to use the technology can guide HEIs to solutions that ensure the ongoing oversight and advancement of AI technologies on campus.

Offered below are a few key aspects to consider when exploring how to integrate AI trends and applications into course subjects:

- **Promoting continuous learning for everyone on campus:** Create resources and knowledge-sharing platforms for professors to stay updated on the latest AI skills, challenges, and advancements so they can effectively bring AI applications to their classrooms. Professors who are well-versed in the current AI trends can provide more relevant and engaging content to students, making the learning experience more dynamic and applicable to real-world scenarios.

[12] 2024 November 11, *TritonGPT: AI powered support*, UC San Diego

- **Using an interdisciplinary approach:** Design courses that blend AI with fields like ethics, business, healthcare, and engineering so that students can gain a competitive advantage entering the workforce by understanding how AI tools are applied effectively in various industries and scenarios. An interdisciplinary approach to academics also helps students understand broader implications and applications of AI across different sectors, engaging their critical thinking skills to solve complex problems no matter the domain.
- **Encouraging professors to more widely adopt project-based learning activities that include AI applications:** Offer projects for students to solve real-world problems using AI applications and techniques, helping them get comfortable with AI tools before entering the workforce full time. Projects also help students develop essential skills such as collaboration and project management, basic keys to success across industries.

With each application of AI in the learning environment, it is imperative that materials, methodologies, and mechanisms to develop AI skills are created with *all* students in mind. Given the estimated 20% of undergraduate and 11% of graduate students have a learning, physical, or emotional disability, HEIs should embed accessibility and inclusivity into the integration of AI into coursework and other school activities to prevent any students from falling behind: further widening the AI skill gap.[13] In fact, according to Deloitte's most recent examination on how higher education can realize the potential of GenAI effectively, HEIs can implement AI not only to prepare students for an AI driven workforce, but also make education more accessible for diverse learning styles, thereby creating a more inclusive learning environment and closing the skills gap for students who can otherwise get left behind.[14]

Offering stackable credentials

As 76% of professionals say they need AI skills to remain competitive in the job market, we can expect to see increasing demand for stackable credentials that both provide flexible, on-demand opportunities for students and professionals to gain specialized technical knowledge in GenAI and promote understanding of human-AI interaction and ethical AI usage.[3] HEIs can offer flexible learning options for students and professionals to improve their AI skills outside traditional classrooms. By collaborating with industry leaders, institutions can design credentials addressing specific skill shortages and enhance the practical utility of their educational offerings. Below are considerations for leveraging strategic partnerships:

- **Developing targeted programs to address skill gaps:** Offer skills-based programs that allow current professionals and students to quickly acquire essential skills without the commitment to a full degree program.[15] This encourages a culture of continuous education where learners can continually update their skills to stay relevant in the job market.
- **Evolving in-demand credentials:** Continually update and offer new credentials in GenAI to help organizations keep their workforce technologically advanced.[16] Collaborating with industry leaders to understand workforce demands helps institutions design programs that address real-world skill-shortages, making graduates more attractive to employers.
- **Offering rapid credentialing for project needs:** Create stackable credentials to enable agile upskilling for specific project requirements within higher education administration.[17] Allowing workers to credential in real time based on a project's need allows companies to keep positions and jobs in-house without needing to seek contract workers or offshoring responsibilities.

Industry leaders are altering the way we work as the world is advancing in technology. Deloitte's Future of Work Institute helps students become more career ready and career resilient while fostering the enduring human skills that are key to thriving in the workforce: empathy, emotional intelligence, written and verbal communication, curiosity, adaptability and resilience, critical thinking and problem solving, and logical reasoning. Employers across the workforce expect these skills and prepare employees to stay nimble when facing change.[3]

[13] 2023, *Students with disabilities*, National Center for Education Statistics
[14] 2024 September 25, *How higher education can realize the potential of Generative AI*, Deloitte Center for Government Insights
[15] 2024, *Benefits of Microcredentials for Career Advancement*, Pathways to Advancement
[16] 2024, *Micro-Credentials – What They Are and Why They're Valuable*, Edalex

Leveraging career services

The misalignment between in-demand skills throughout the job market and the skills students are graduating with requires strategic focus on the types of resources and opportunities students experience throughout their academic careers. College-level employment rates are higher for students who complete an internship, and – controlling for factors such as gender, race/ethnicity, and institutional characteristics – the odds of underemployment for graduates who had at least one internship are 48.5% lower than those who had no internships, with the benefits associated with internship completion relatively strong across degree fields.[14] Career services can help students navigate new avenues to prepare for the workforce with AI, preparing them for a rapidly evolving job market by connecting them to work-based experiences. Considerations for career services include:

- **Bolstering career counseling and workshops:** Offer specialized, field-specific career counseling sessions and workshops focused on careers that will use AI and GenAI. Career counselors trained in AI trends can provide insights into how students can position themselves for success in this field.[18] Workshops can provide practical skills and knowledge such as emerging technology applications, interview techniques and tools, and networking strategies that are specifically tailored to AI careers.
- **Establishing industry partner programs:** Strengthen partnerships with leading AI companies and companies who implement AI into their work by facilitating internships, co-op placements, and mentorship programs. These partnerships not only can provide students firsthand experience, but also expose them to real-world applications of AI, helping them to develop both their technical skills and their understanding of the human and ethical dimensions of AI work.[19] This approach facilitates confidence in the job search process, an essential ingredient for professional success.
- **Sharing knowledge through symposiums and guest lecturers:** Invite industry professionals to share their knowledge in applying AI in various business contexts, emphasizing ethical considerations and AI's societal impact. Additionally, as students gain a deeper understanding of how AI is used across different industries and the current leaders solving ethical challenges that arise, they are building their professional network and meeting the people changing the field today and tomorrow.

[17] 2022 June 15, *What are microcredentials?*, Times Higher Education
[18] 2023 June 08, *AI Revolutionizing Career Counseling: Assessments, Recommendations, Coaching & Ethical Challenges*, Teachflow
[19] 2023 August 22, *Empowering Career Development for Students: A Comprehensive Guide*, InterObservers

Addressing skills in practice

Universities do not need to undertake these changes alone. The Southeastern Conference (SEC) AI Consortium is a key asset in preparing students for the next generation workforce. Through the consortium, SEC universities share educational resources, promote workshops and academic conferences for everyone on campus, and seek joint partnerships with industry to ensure students graduate with the AI and data science skills that benefit society.[20] This consortium serves as a model for universities to share knowledge, resources, and ideas for innovative partnerships and initiatives to ensure students are ready to meet and exceed the demands of today's workforce and are equipped with the skills and resilience to drive future progress in an AI-powered world.

While adjusting to AI and AI skills will require significant changes to traditional higher education frameworks, the risks of not adapting to changes far outweighs the challenges of pursuing innovative solutions. Principally, the lack of exposure to AI can **impair students' preparedness and employability**. As AI continues to transform industries and ways of working, students lacking AI-related skills may face higher unemployment rates and reduced earning potential, exacerbating larger societal issues such as income inequality. This can **hinder national economic growth**, as a workforce ill-equipped to leverage AI innovations may lead to decreased productivity, employability, and competitiveness on a global scale.[21]

Additionally, as prospective students and the broader economy start to **doubt the validity of a higher education degree**, HEIs may face potential risks of continued lower enrollment, less funding from state governments, and lack of grant availability. Coupled with the perilous rise of tuition costs and the emergence of short-term, skills-based credentialing and accessible, non-degree learning pathways, universities need to stay ahead to compete with the new educational alternatives by continually adding value and flexibility to their degree programs and embedding AI skills throughout the student experience.

The evolving AI landscape offers both opportunities and challenges for HEIs. To prepare students effectively, HEIs should embrace a dynamic, open-minded approach, fostering an environment for continuous learning and adaptation to harness the capabilities of emerging technologies like AI. Given this reality, the future of education lies in our ability to evolve with AI advancements by reimagining existing systems, fostering innovation and flexibility, and cultivating the next-generation workforce.

By taking proactive steps today, universities can ensure they remain relevant and continue to provide valuable education that meets the demands of an AI-driven future.

[20] 2024, *SEC Artificial Intelligence Consortium*, SEC
[21] 2023, *Risks and Rewards as Higher Ed Invests in an AI Future*, Inside Higher Ed

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