

Thriving in an AI-Dominated World: Why Higher Education Must Produce Graduates who are uniquely human and technically competent

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Abstract

The views in this article are the author's and not the views of the United States Military Academy, the United States Army, or the Department of Defense.

In an era where artificial intelligence (AI) increasingly influences various sectors, higher education institutions (HEIs) face the critical challenge of equipping graduates with both AI competencies and essential human skills. This article delves into the evolving job market landscape, highlighting the dual demand for technological prowess and uniquely human capabilities among employers. It advocates for educational strategies that integrate AI familiarity with the development of critical human skills, positioning such an approach as vital for preparing a future workforce capable of thriving in an AI-dominated environment. The discourse underscores the necessity for graduates to be both "uniquely human" and technically proficient, emphasizing that while employers prize soft skills like creativity, critical thinking, and collaboration—which AI cannot replicate—they also require graduates to be technologically adept to enhance job performance through AI tools. This dual competency is identified as crucial for career success in a dynamic, automated work context. Moreover, the article discusses educational methodologies that effectively incorporate AI tools without compromising the development of vital human skills, suggesting a balanced curriculum that fosters both sets of skills. Such a curriculum ensures that students are prepared to excel in a workforce where AI complements human capabilities. Recommendations for curriculum enhancements are provided to equip students with the necessary skills to navigate and excel in a future where AI and human collaboration are commonplace. This scholarly contribution outlines a roadmap for HEIs to recalibrate their program offerings, ensuring that graduates are well-prepared to enter a workforce where being technically adept and possessing robust human skills are both equally imperative, thus fostering a workforce that is not only proficient but also adaptable and innovative in an AI-driven world.

Keywords: *Artificial intelligence, Human skills, Higher education, Workforce preparation, Curriculum enhancement*

1. Introduction

Even though we live in a world increasingly reliant on technology, there are many indications that employers value human skills. This is often cited by advocates of liberal arts education to demonstrate the employment-related relevance of studying the liberal arts, along with the other benefits of studying the liberal arts, and to defend the liberal arts at a time when liberal arts disciplines are being cut by many higher education institutions (HEI). On the other hand, we hear from technology advocates that artificial intelligence (AI) will soon be taking over many work-related tasks and transforming the characteristics of many jobs. Therefore, they argue, a key component of employability is a basic level of AI literacy. This creates a dilemma for HEIs: should they invest in developing their students' uniquely human skills or should they focus on preparing them to develop and work with AI. This debate, like others related to higher education, is based on a false dilemma. For the foreseeable future, AI will not be able to replicate uniquely human skills. This means that human skills are important, and HEIs should prioritize their development. It is also true that AI use will be widespread in the workplace. To prepare students for this environment, HEIs should ensure that students graduate having had some experience using AI tools. This article shares insights from employers and others on current needs in terms of employee skill sets as well as projections on what skills employees will need to thrive in the future of work. These insights demonstrate why HEIs will need to take a balanced approach when designing student experiences to ensure that they promote the development of human skills and skills associated with the use of AI tools.

2. Scope of the article

Higher education has many forms and fulfills many purposes. Higher education offerings can be online, in-person, or a combination of both, as well as synchronous or asynchronous. Educational programs include professional

degrees, graduate degrees, bachelor's degrees, associate degrees, and certificate programs. All of these forms of higher education are valuable, and they are undertaken by people at different stages of life for different reasons.

Higher education also has many purposes. Robert Vischer, president of the University of St. Thomas, highlights one of the purposes of higher education that is often neglected. He writes: "higher education must also reclaim responsibility for the whole person, guiding and supporting our students as they prepare for meaningful, morally responsible lives" (Vischer, 2023). As Vischer points out, higher education should foster the holistic development of students as humans and as citizens. Another purpose of higher education is to prepare students for employment, and Vischer also recognizes this need when he writes that a role of colleges and universities is "to prepare our students for the workforce as efficiently as possible" (Vischer). Preparing students for employment aligns with survey results that identify student motivation for pursuing higher education. The 2023 National Alumni Career Mobility Annual Report lists "career success" as the top motivation for students pursuing degrees (59%) followed closely by "intellectual development" (55%) with "required for my career aspirations" (41%), and "financial gain" (39%) as other top motivations (Lightcast, 2023).

This article will focus on bachelor's degree programs and why they must incorporate the development of human skills and familiarity with AI to prepare students to succeed in the workforce. One reason for focusing on the bachelor's degree is that despite the increasing popularity of skills-based hiring, a report from Georgetown's Center on Education and the Workforce, *After Everything: Projections of Jobs, Education, and Training Requirements through 2031*, projects that in 2031, 42% of jobs will require a bachelor's degree or higher (Carnevale et al, 2023). The ideas in this article, however, will be relevant to other forms of higher education and other purposes. For example, it is possible to infuse the development of human skills or AI familiarization in all levels of education. Also, many of the attributes relevant to employability are also essential for navigating the world as a member of a community and to live, as Vischer proposes, "meaningful, morally responsible lives" (Vischer, 2023). Human skills are essential for interacting with neighbors and other community members, and we use AI applications frequently in our personal lives.

3. Employer demand for human skills

Despite the increased use of technology in the workplace, employers continue to seek applicants with human skills. Human skills, also called soft skills, durable skills, and power skills, are uniquely human skills, unable to be replicated by technology, which are essential to performing work-related tasks. Studies and surveys of employers consistently identify human skills as necessary for success in the workforce, even for jobs with primary responsibilities related to technology. In "Shifting Skills, Moving Targets, and Remaking the Workforce," it is noted that "Digital jobs don't just demand programming skills. These technical jobs now demand a balance of soft skills as well" (Sigelman, 2022). The report, which scans millions of job advertisements every day, lists teamwork, collaboration, communication skills, problem solving, and creativity as human skills required for digital jobs such as mobile application developers, web developers, computer programmers, UI/UX designers/developers, and computer specialists (Sigelman, 2022). This is counter to the view that those who occupy these roles do not interact with others and focus on just the technical aspects of their work. In addition to technical expertise, these technical roles require human skills.

Many of the human skills listed in the *Shifting Skills* report were also identified by employers as important in the Association of American Colleges & Universities (AAC&U) report, "How College Contributes to Workforce Success: Employer Views on What Matters Most." Ninety-three percent of employers in the AAC&U survey rate the ability to work effectively in teams as very important or important, 95% rate critical thinking skills as very important or important, 93% rate ethical judgment and reasoning as very important or important, and 92% rate creative thinking as very important or important. In terms of communication, 90% rate the ability to communicate through writing as very important or important, 93% rate the ability to communicate through speaking and presentation skills as very important or important, and 89% rate the ability to communicate/work with people from different cultural backgrounds as very important or important (AAC&U, 2021). While it is often reported that technical skills enhance employability, employers are also seeking applicants with human skills.

The two reports above highlight current demand for human skills, but it is also projected that human skills will remain in high demand for the foreseeable future. In the “After Everything: Projections of Jobs, Education, and Training Requirements through 2031,” it is noted that: “The skills most needed in the decentralized and distributed workplace of the future are the high-level cognitive skills most often learned in postsecondary education and training” (Carnevale et al, 2023). These high-level cognitive skills, which overlap with lists of human skills and include strategic thinking, creativity, and interacting with others, will be important to accomplishing the missions of organizations of the future due to their decentralized and distributed structures. The report notes: “Jobs that rely heavily on interpersonal skills—such as education and personal care jobs—or jobs that require a high degree of creativity are at the lowest risk from automation. Musicians, artists, and dancers are examples of jobs that require creativity, but creativity is also found in jobs that require broad strategic thinking” (Carnevale et al, 2023). Even with projections of advancing technological capabilities, creativity, an essential human skill, is likely to be more important than ever.

In another report focused on the future of work and informed by a survey of 18,000 people in 15 countries, researchers propose: “The need for manual and physical skills, as well as basic cognitive ones, will decline, but demand for technological, social and emotional, and higher cognitive skills will grow” (Dondi et al, 2021). This is because technology will be able to perform many of the manual and physical tasks that humans perform now, and it will also be able to perform tasks requiring basic cognitive skills such as scheduling, responding to basic customer requests, and even summarizing documents. What will be in demand from employers will be higher cognitive skills such as “creativity, critical thinking, decision making, and complex information processing” (Dondi et al, 2021). The report offers the following advice to job seekers: “in a labor market that is more automated, digital, and dynamic, all citizens will benefit from having a set of foundational skills that help them fulfill the following three criteria, no matter the sector in which they work or their occupation: add value beyond what can be done by automated systems and intelligent machines, operate in a digital environment, [and] continually adapt to new ways of working and new occupations” (Dondi et al, 2021).

The foundational skills mentioned in the McKinsey report are divided into four categories: cognitive, interpersonal, self-leadership, and digital. The first three categories are comprised mostly of human skills, but human skills are also included in the digital category (i.e., digital ethics and digital collaboration). In the cognitive category, some of the skills listed are “structured problem solving, logical reasoning, understanding biases, storytelling and public speaking, creativity and imagination, and adopting a different perspective.” The interpersonal category includes “empathy, humility, resolving conflicts, and collaboration.” The self-leadership category includes “self-control and regulation, driving change and innovation, and coping with uncertainty” (Dondi et al, 2021). It is interesting to note that a report focused on the future of work places so much emphasis on human skills of the type that undergraduate degree programs are designed to develop.

Human skills enable people to perform activities and complete tasks that technology is unable to complete. Multiple reports suggest that human skills are important in the present and will continue to be important in the future, which means that they should be embedded in bachelor’s degree programs and other educational programs. As much as the continued importance of human skills is a reason to cheer for advocates of the liberal arts, this not enough to ensure success for students in the current or future workplace. Students will also need to be technically competent. An article from the Quality Assurance Commons captures this need well: “Employability skills will evolve to encompass a blend of technical and soft skills that enable individuals to work effectively alongside AI, leverage its capabilities, and contribute value in areas where human traits and judgment are essential” (Quality Assurance Commons, 2023). To thrive in the workforce, students will need to possess both human skills, which allow them to perform tasks that technology is unable to perform, as well as technical skills that enable them to leverage AI to improve their efficiency and effectiveness. The next section highlights the importance employers place on technical skills.

4. Employer Demand for Technical Skills

It is not surprising that technical skills are important, yet they are not important in the way that many think. There is some debate regarding whether everyone needs to know how to code, but where there is consensus is that people will need to know how to work with AI. The title of an article by Karim Lakhani, “AI Won’t Replace Humans — But Humans With AI Will Replace Humans Without AI,” reflects the relationship between workers and technology that will be most common as people who use AI will be much more efficient and effective than those who do not. In many ways this resembles knowledge of how to use a web browser and the internet in the way that it helped enhance human capabilities, but it is different in significant ways. AI will be integrated into how we work and will be used to complete some tasks on its own and assist with others. AI will be a tool that we work with rather than as a resource, which is how we have used the internet. Like internet use, however, AI use will be widespread across many types of jobs. Lakhani recognizes this point when he writes that, “You need to understand the machine learning stuff and the AI stuff, not because you’re going to become an AI engineer or an AI scientist, but because that is now going to be a critical table stakes for you to understand how business works” (Lakhani, 2023). This requirement goes beyond those seeking MBAs, as he was referring to in his article, but also for most who will be entering the workforce over the next decade, as suggested by employer views described below.

Because of AI’s ability to perform many routine tasks, employers are now prioritizing human skills with 59% responding in a 2023 Cengage Group Employability Survey that, “the growth of AI has prompted them to prioritize different skills when hiring, with 66% saying they are now looking for ‘uniquely human’ skills” (Cengage Group, 2023). But employers also express the need for employees who are able to use AI as a tool in the workplace with 79% of employers in the same survey responding that, “employees could benefit from training on working alongside AI and other new technologies in their current roles” (Cengage Group, 2023). What this survey demonstrates is that human skills are important given that AI will be used to complete routine tasks, but that employers also value the ability to work with AI. Recent graduates also recognize this need as the same survey shows that 52% of recent graduates question how prepared they are for the workforce due to AI, and 65% are eager for “training on working alongside AI” (Cengage Group, 2023). Both employers and recent graduates recognize the importance of being able to work with AI.

Although they value the ability to work with AI, employers note a gap in what they need and the skillsets their teams possess. A Multiverse survey of business leaders found that 45% identified AI “as their most significant skill gap (Multiverse, 2023),” and 49% percent think that this skill gap will have a very negative or somewhat negative impact on their business (Multiverse, 2023). To address this gap, employers will need to establish training in their organizations, but it would also help if students were familiar with and had used AI tools when they enter the workforce. This will give them an advantage when seeking employment and will allow them and their organizations to be more successful as 69% of leaders surveyed believe that AI will increase workplace productivity and enhance the customer experience, and 68% believe that AI will improve decision-making and business strategies (Metaverse, 2023). Because of the expected benefits of AI use, organizations that do not effectively use it will be left behind. The same can be said for employees who are not able to effectively use AI.

Current job advertisements demonstrate the benefit of having experience using AI tools. An evaluation of job postings on LinkedIn found that “LinkedIn job posts that mention AI or GAI have seen 17% greater application growth over the past two years than job posts with no such mentions” (LinkedIn, 2023). The LinkedIn report also found “74% of executives believing that GAI [generative AI] will benefit their employees, and 47% of professionals globally believing that AI will help them move their careers forward by providing faster access to knowledge and insights” (LinkedIn, 2023). The importance of broader digital skills is reflected in the Shifting Skills Moving Targets report, which was mentioned in the previous section. It highlights the importance of digital skills for nondigital occupations that traditionally would have relied mostly on human skills. These occupations include advertising sales representative, merchandiser, financial services sales agent, insurance sales agent, and marketing assistant/associate (Sigelman et al, 2022). This suggests that many jobs will require at least basic digital skills, especially skills associated with AI use. The AAC&U survey also provides support for this view as it shows that 91% of employers view digital literacy as very important or somewhat important for college graduates they seek to hire (AAC&U, 2021). In fact, the report notes that between 2018 and 2020 digital literacy became one of the top five outcomes

ranked by employers, demonstrating the increasing importance of ensuring graduates possess the skills to use digital tools. What is apparent is that both human skills and technical skills are very important in the current job market.

Despite the clear benefits of AI, there are also concerns. A survey from portal26, State of Generative AI 2023, found that while 82% of C-suite and tech leaders believe generative AI will give them a competitive advantage, 73% have already had generative AI misuse incidents. Additionally, while 84% of these leaders have already invested in generative AI, or plan to do so, 85% have concerns about privacy and security associated with generative AI use (portal26, 2023). Having experience using AI in their course of study will strengthen students' employability and will allow them to help employers use AI tools to benefit their organizations while also mitigating the risks associated with using these tools, especially the ethical risks.

There are also indications that being able to use AI and other digital skills will be important in the future. In looking out to 2030 to consider the characteristics of the future of work, a McKinsey study shows the potential impact of growth in generative AI: "Workers will need to gain proficiency with these tools and, importantly, use the time that is freed up to focus on higher-value activities. When managers automate more of their administrative and reporting tasks, for example, they can spend more time on strategic thinking and coaching. Similarly, researchers could speed up projects by relying on automation tools to sort and synthesize large data sets" (Ellingrud et al, 2023). This points to the need to produce graduates who have human skills related to thinking and interacting with others, but who are also able to create additional time to employ these skills by using AI to automate the completion of certain tasks and support project completion. Employees will only have these additional opportunities to employ human skills if they are able to use AI. The McKinsey report also predicts that AI and other forms of automation will enable greater productivity. It notes that generative AI "has the potential to increase US labor productivity by 0.5 to 0.9 percentage points annually through 2030" and that "[a]ll types of automation could help drive US productivity growth to 3 to 4 percent annually" (Ellingrud et al, 2023). To achieve the promise of greater productivity, organizations will need teams and will seek job applicants who have the skills to employ AI and other technology.

The current and future job market requirements to use AI and other technologies are why the QA Commons considers digital literacy to be one of the eight essential employability qualities that "ensure a learner's preparedness for educational attainment, greater economic mobility, and prosperity - regardless of industry or discipline" (QA Commons, 2022). It defines digital literacy as follows:

- "Possessing the ability to use various digital platforms and applications aligned to job functions"
- "Displaying the ability to use digital platforms and applications to find, evaluate, create, and communicate information"
- "Responsibly using digital platforms and applications for their intended use and protection of private information" (QA Commons, 2022).

To strengthen their students' employability, HEIs should have a type of developmental goal that addresses digital skills, especially AI-related skills.

5. What does this mean for higher education institutions?

The feedback from employers about current and future skill requirements is good news for those who advocate for the importance of human skills. Human skills are essential now and will remain so in the future, but this is not an either/or situation; it is a both/and situation. Skills related to AI, and the digital skill set of which they are part, are also important, even for non-technical jobs. This means that the graduate of the future needs to have a solid foundation of both human skills and technical skills to strengthen their employability and enable their success in the workforce. This advice to lawyers illustrates the balanced development that those entering the workforce require: "while AI may reduce demand for some junior lawyer positions, the legal profession involves complex reasoning and relationship-building that human experts still excel at. So rather than avoid law altogether, future lawyers should utilize AI tools while focusing on the uniquely human aspects like advocacy and negotiation that machines can't replicate" (Minevich, 2023).

Many HEIs currently have learning outcomes that resemble the types of human skills that employers are seeking and are attempting to develop in their teams. To more closely align current learning outcomes with human skills related to employability, HEIs and employers should communicate frequently through direct contact and through advisory boards at the institutional and program levels. This communication may lead to some refinements in learning outcomes, the way that courses are designed to help students achieve the learning outcomes, and the way students' levels of learning outcome attainment are assessed. Human skills should also be developed and assessed outside of the classroom when students participate in internships and other activities. This will provide students with experience employing human skills in non-academic environments that often are more like the work-related and personal contexts in which they will employ their human skills after they complete their degrees. Finally, an HEI should have common definitions of human skills so that its faculty, staff, and those who sponsor students in internships and other activities are all seeking to develop and assess students in similar ways. These common definitions should also be made available to students so they can share with employers how they have developed by completing their programs.

HEIs also need to promote familiarization with AI and other technologies to prepare graduates for work and life. How this is done is important as Leo Lo explains why we must be careful that teaching students to use AI does not undermine the development of human skills: "Future employers will expect graduates to utilize AI tools intelligently and responsibly, making AI literacy an essential skill for the workforce. Unchecked use of generative AI tools may produce a generation of graduates lacking vital critical thinking and writing skills, leaving them ill-equipped for professional environments that demand adaptability and innovation" (Lo, 2023). To review and revise a document produced by generative AI, students must understand how to write and think critically and creatively. If not, they will rely solely on generative AI to produce a product, which may be deficient, and they will not develop the human skills needed to excel in the workforce. Maintaining this balance while prioritizing and promoting the development of human skills and AI-related skills will be both a challenge and opportunity for HEIs over the next decade. How this is done will vary by institution and education level, but it is important that HEIs make it a priority.

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