

Fostering AI-Ready Creating & Experiencing CTE Pipelines

Implications for Policy, Practice & Research

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The mission of the Education Research & Opportunity Center at the University of Tennessee Knoxville is to produce high-quality research, conduct high-impact outreach, and promote effective policies and practices that increase educational success and opportunity. Our research informs our outreach; our outreach informs our research. Our research and outreach inform—and is informed by—our strategic partnerships with policymakers, education systems and advocates. Learn more at ero.utk.edu

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Advance CTE is the longest-standing national non-profit that represents State CTE Directors and related professionals, equipping those leaders with knowledge and inspiration to move education forward. Across the country, Advance CTE members advance opportunities for learners by increasing access to and success in an innovative career preparation ecosystem. Learn more at <https://careertech.org/>

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The Association for Career and Technical Education (ACTE) is the nation’s largest not-for-profit association committed to the advancement of education that prepares youth and adults for successful careers. ACTE represents the community of CTE professionals, including educators, administrators, researchers, school counselors, guidance and career development professionals and others at all levels of education. ACTE is committed to excellence in providing advocacy, public awareness and access to resources, professional development and leadership opportunities. Learn more at <https://www.acteonline.org/>

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Introduction

Like the cotton gin and the Internet, AI is predicted to fundamentally reshape how, where, when, and what Americans do for work (Cazzaniga et al., 2024; Ellingrud et al., 2023; Makridakis, 2017).

There is widespread speculation that AI will generate new fields of work, more jobs, and overall economic growth (Shine, 2023; Stewart et al., 2015), but this is far from certain (Frey & Osborne, 2017). Indeed, there is little consensus on the degree to which AI might change the number of available jobs (Hatzius et al., 2023; Kessler, 2023).

Less contentious, however, is the belief that AI will likely change the composition of jobs. Existing research is clear: advances in technology have, over time, increased demand for jobs and workers able to perform non- routine, cognitive, and social tasks (Acemoglu & Autor, 2011; Acemoglu & Restrepo, 2019). It is not entirely clear if, and to what degree, the accelerating usage of contemporary AI will reinforce this trend (Bick et al., 2024). Furthermore, not all education providers have the information or resources they need to act today and prepare students for the workplace of tomorrow.



The Education Research & Opportunity Center at the University of Tennessee Knoxville, Advance CTE, and ACTE are partnering on a series of briefs focused on the intersection of AI, workforce development, and community college career and technical education (CTE). This brief focuses on how current and projected developments

in AI are revolutionizing occupations within the Creating & Experiencing CTE Career Cluster, the potential exposure of Creating & Experiencing occupations to AI-driven workforce automation, and how Creating & Experiencing CTE providers can prepare their learners for a workplace increasingly shaped by AI technologies.

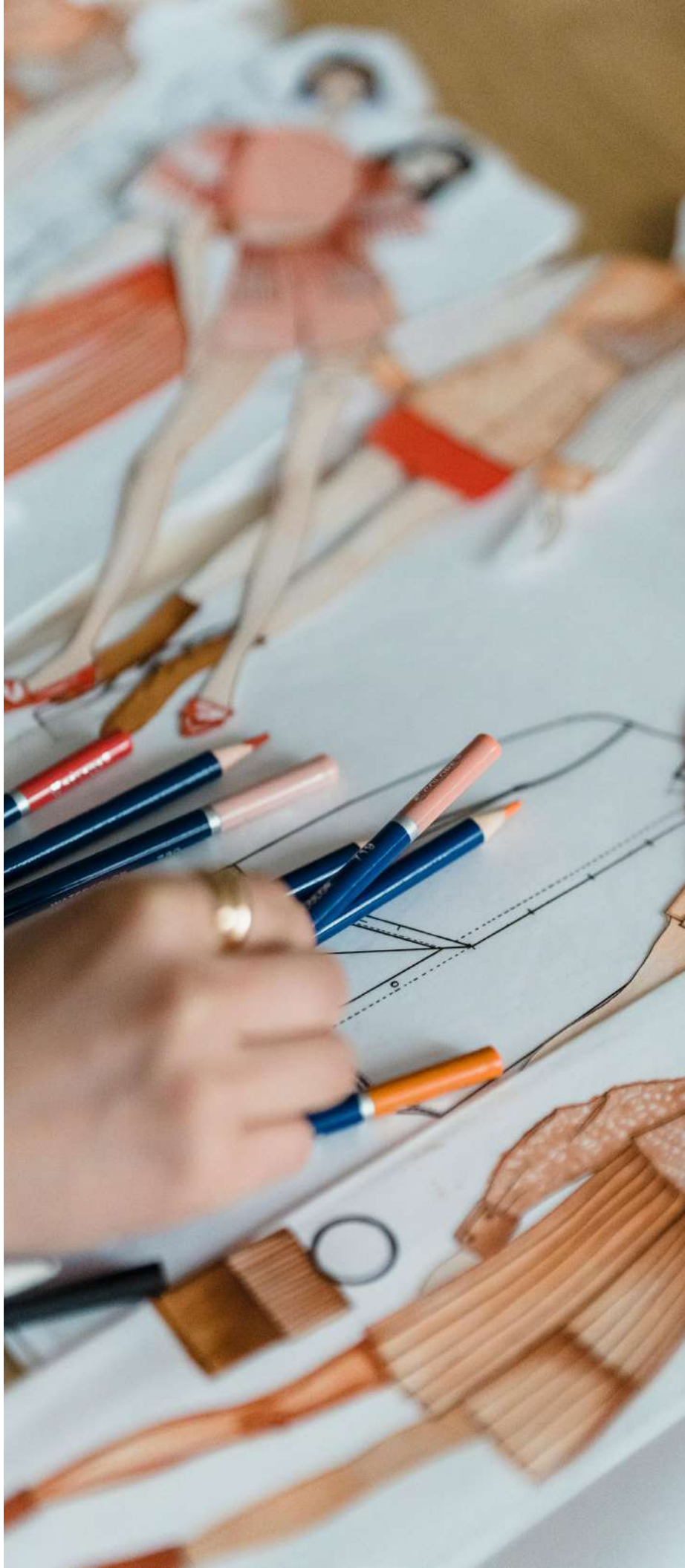
What Occupations are Within the Creating & Experiencing Cluster Grouping?

The National Career Clusters® Framework managed by Advance CTE provides a shared structure and language for CTE program design across the United States. In 2012, 94% of states had adopted the Career Cluster framework. Advance CTE recently released a modernized Career Clusters Framework designed to serve as a bridge between education and work and a central building block for consistently designed and high-quality [CTE programs](#). This framework includes 6 Career Cluster Groupings that serve as purpose-driven meta-sectors that help guide young people toward Clusters that are aligned with their interests, their sense of purpose, and the impact they want to make on their communities.

The Creating & Experiencing CTE Career Cluster Grouping consists of the Hospitality, Events, & Tourism and Arts, Entertainment, & Design Career Clusters. Fields of study within the [Hospitality, Events, & Tourism](#) appeal to students who are interested in the food and beverage, lodging, and travel industry; this could include catering to events and bringing experiences to life. Students pursuing studies in Hospitality, Events, & Tourism are prepared to deliver exceptional customer service experiences to guests, visitors, and

attendees across diverse industry settings. Sub-Clusters within the broader Hospitality, Events, & Tourism Cluster include: Accommodation, which focuses on hotel and hospitality management, Conferences & Events focusing on event and conferencing planning, Culinary & Food Services, and Travel and Leisure. Occupations within the Hospitality, Events, & Tourism cluster include, but are not limited to, manager in a hotel, food & beverage, event coordinator, concierge, travel guide, travel agent, and chef.

The Creating & Experiencing CTE Career Cluster Grouping houses the [Arts, Entertainment, & Design](#) Career Cluster, which appeals to learners interested in the arts and those who enjoy sharing artistic designs and creations. Sub-Clusters within Arts, Entertainment, & Design include Design & Digital Arts, Fashion & Interiors, Fine Arts, Lighting & Sound Technology, Media Production & Broadcasting, and Performing Arts. Occupations within the Arts, Entertainment & Design Career Cluster include, but are not limited to, graphic designer, talent agent, fashion & interior designer, museum curator, sound engineer, and producer.



Creating & Experiencing Clusters and Sub-Clusters



Hospitality, Events, & Tourism

- Accommodations
- Conferences & Events
- Culinary & Food Service
- Travel and Leisure



Arts, Entertainment & Design

- Design & Digital Arts
- Fashion & Interiors
- Fine Arts
- Lighting & Sound Technology
- Media Production & Broadcasting
- Performing Arts

How is AI Revolutionizing Creating & Experiencing Occupations?



Hospitality, Events, & Tourism

Artificial intelligence is fundamentally reshaping the hospitality, events, and tourism industry through enhanced operational efficiency, personalized customer experiences, and data-driven decision making. This technological transformation addresses critical industry challenges while creating new opportunities for service excellence and competitive advantage.

For example, AI is helping to automate complex processes and enhance guest experiences across multiple customer interactions. Modern AI systems enable hotels to optimize revenue through dynamic pricing algorithms that adjust room rates in real-time based on demand patterns, competitor analysis, and historical data (Mercier, 2024). Uber provides the most prominent example of this approach through its surge pricing algorithm, which analyzes real-time request volume and traffic conditions to adjust rates dynamically. When driver demand exceeds availability, the system automatically increases pricing to balance supply and demand while incentivizing additional drivers to enter the market (Sahota, 2024b).

Major international corporations have implemented similar dynamic pricing strategies with notable success. For example, Amazon and American Airlines continuously monitor competitor pricing and market conditions to adjust product prices in real-time, ensuring competitive positioning while

maximizing revenue opportunities (Sahota, 2024b). Guest service capabilities are being revolutionized through intelligent chatbots and virtual concierges that provide 24/7 support, handle routine inquiries, and facilitate seamless booking modifications (Hotel Tech Report, 2025). One of the more popular AI softwares for hotel management and operations is Duve, a platform where “AI Agents automatically analyze conversations and mark urgent ones as prioritized based on the tone of voice detected, stage in the guest’s journey, and the inquiry topic” (Duve, 2025).

Other AI-driven features in platforms such as Duve include AI-powered predictive analytics that help property managers anticipate maintenance needs, optimize housekeeping schedules, and forecast occupancy trends with remarkable accuracy.

Additionally, personalization engines analyze guest preferences and booking histories to deliver tailored recommendations and customized experiences, while automated inventory management systems ensure optimal stock levels and reduce operational costs (Hotel Tech Report, 2025). These technological advancements collectively enable hotel operators to increase

“AI has to be connected to all the tools of the hotel; the booking engine, the customer success system, the customer relationship management system, the task management system, etcetera... Because an AI doesn't have any arms or any legs. That means that it has to be connected to everything. Can AI write me a marketing plan? It will do it perfectly. Hospitality is not fancy logic. Hospitality is hard logic. Which means AI needs to work alongside people in the hospitality industry.”

Daniel Doppler, President of QuickText

efficiency, reduce manual workloads, and deliver superior service quality that meets the evolving expectations of today’s travelers.

Customer service management has evolved through AI-driven chatbot implementation, providing continuous guest assistance and streamlined reservation processing.

These systems operate continuously to address routine inquiries, process bookings, and deliver personalized recommendations, thereby improving guest satisfaction while reducing operational overhead (Jaddoud, 2025).

Hilton Hotels, The Cosmopolitan, and Marriott Hotels exemplify this transformation with AI-powered chatbots and virtual assistants that

provide continuous guest support, personalized recommendations, and automated booking services, resulting in measurably improved guest satisfaction scores (Sahota, 2024). AI-powered analytics also enable comprehensive personalization by examining operational data, guest behavior patterns, seasonal trends, and cost management metrics. These insights inform tailored service offerings, customized pricing strategies, and targeted marketing approaches that enhance guest experiences while optimizing business performance (Anubala, 2024). These analytical capabilities significantly reduce operational costs while improving service delivery consistency across multiple customer touchpoints. The integration of AI-driven automation also extends beyond analytics to include robotics applications for routine operational tasks. Automated systems can now even manage room cleaning protocols, food service delivery, and

inventory management with enhanced precision while reducing labor dependencies. The Placer Process Systems’ Automated Clean In Place (CIP) system is a standout example, integrating with existing equipment through installed control systems and sensors that monitor and execute automated cleaning processes with minimal oversight (Placer Processor Systems, 2025). This operational transformation allows human staff to focus on higher-value guest interactions and complex problem-solving activities. “Other prominent reasons why the food and beverage industry is installing CIPS systems are: (1) faster cleaning process and (2) overall standardization of the sanitization process. Importantly, use of this system does not completely eradicate human work, as humans still need to start the input process, but the manual cleaning is taken over by the CIP system.

Event organizers can now leverage AI-powered platforms to optimize entertainment venue selection, predict attendance patterns, and manage dynamic pricing strategies that maximize both participation and revenue (Keiper, 2023).

Smart scheduling algorithms, like the software platform Motion, analyze attendee preferences and session popularity to minimize conflicts and optimize room utilization, while automated registration systems handle complex workflows including payment processing, credential verification, and personalized agenda creation (Motion, 2025). It’s important to note that platforms like Motion primarily serve the administrative side of event management. For attendees of events such as conferences, AI

enhances the experience through intelligent networking platforms that facilitate meaningful connections based on professional interests and goals, real-time language translation services that break down communication barriers, and chatbots that provide instant support for navigation and scheduling inquiries.

Furthermore, AI-driven analytics platforms collect comprehensive data on attendee behavior, session engagement, and content performance, enabling event planners to measure success metrics more accurately and make data-informed decisions for future events (Thirusanka & Ai, 2024). This technological integration allows event professionals to focus on strategic planning and relationship building while AI handles routine operational tasks, ultimately resulting in more successful events that deliver greater value to both organizers and participants.

These developments will further enhance operational consistency and customer service capabilities across global hospitality operations. The hospitality, events, and tourism sector currently demonstrates moderate AI exposure relative to its transformative potential. AI technologies that are deployed are used to support workers who are in guest services, such as concierges, travel guides, and travel agents, rather than replace them, ensuring that they serve as decision-making aids while retaining the essential human element in guest interactions. The substantial opportunity to enhance guest experiences, optimize operational efficiency, and improve guest service positions the industry for continued digital innovation and competitive differentiation through strategic AI implementation.

INTERVIEW SPOTLIGHT

“Let’s say you buy a [plane] ticket to go to New York. AI will have the ability to see there is a concert of The Pixies at the same time you are in New York because AI was able to identify it on your Spotify playlist... It will be autonomous because it will learn from you.”

Daniel Doppler, President of QuickText





Arts, Entertainment, & Design

Artificial intelligence is fundamentally reshaping the creative industries by automating complex processes, amplifying human creativity, and enabling entirely new forms of artistic expression. This transformation spans multiple disciplines and demonstrates AI's capacity to enhance rather than replace human creative capabilities.

Generative AI platforms such as DALL-E and RunwayML have revolutionized visual content creation by enabling artists and designers to rapidly produce concept art, detailed illustrations, and experimental designs. Within web and graphic design, AI is actively streamlining workflows, enhancing user experiences, and making space for rapid dynamic adaptability in a digital landscape. Platforms such as CodeDesign.ai are using AI technologies to democratize website creation by empowering users without extensive technical expertise. Individuals can now build highly functional websites without requiring in-depth knowledge of HTML, CSS, or JavaScript (Oliveria, 2024). CodeDesign.ai achieves this accessibility by offering users a selection of pre-designed templates or, alternatively, allowing them to input specific requirements into the AI system, which then generates customized designs based on their specifications (2025). Graphic designers and artists can use AI technologies to automate tasks such as image manipulation, where AI can adjust brightness and contrast within graphic design images. AI algorithms can also automatically adjust font sizes, color choice, and other elements of the design (Engawi et al., 2022; Mustafa, 2023). These tools significantly reduce the time required for initial creative exploration while expanding the range of visual possibilities available to creators.

INTERVIEW SPOTLIGHT

"In terms of how AI is affecting the industry as a whole, at this stage we're not seeing it just yet. It's like that little thing just on the horizon. We're getting closer and closer to it. We sort of see examples every now and again, you know, there's someone who posts on Instagram or LinkedIn or Twitter. And you just go. Wow! That's an amazing video...In terms of that mass scale, there's still a limited amount of AI artists. We haven't seen that wave just yet, because I think there's just not as many people doing it out there who understand not only the creative approach to scripting and storytelling and putting together a piece of work that (is) actually interesting and entertaining and engaging, but also having that technical skill set to be able to work across not only AI platforms."

Robert Morton, Board Member of Australian Cinematographers Society AI Committee



In sum, AI technology allows professionals to iterate more quickly through creative concepts and explore aesthetic directions that might otherwise require extensive manual development.

Building on these advances in visual design, the animation and gaming industries have also experienced substantial workflow improvements through AI integration. AI-powered procedural generation now enables developers to create vast, dynamic game worlds with minimal manual design work. Previously, animationist and cartoonists had to draw each individual frame, whereas now

they can employ AI software programs to digitally create storyboards (Sharma & Juyal, 2023). Though these developments are transformative, it is the video game industry that is utilizing AI most expansively. As an example, the gaming industry is using Motion Learning platforms, which are AI programs that can learn and identify complex moves from sports, martial arts, dancing, etc., and apply the information it gathers to the environment and characters of the video game (Sharma & Juyal, 2023). Prior to the release of a video game, AI now has the ability to streamline development workflows through automated testing, bug detection, and asset creation, significantly reducing production costs and development timelines (Baqar & Khanda, 2024).

On the player side of the video game industry, machine learning algorithms optimize game balance and difficulty scaling in real-time based on individual player behavior. These algorithms can also drive more realistic non-player character interactions, generate contextual dialogue, and create adaptive storylines that respond to player choices (Anglen, 2025; Skinner & Walmsley, 2019). Together, these advancements allow for more engaging video game play experiences.

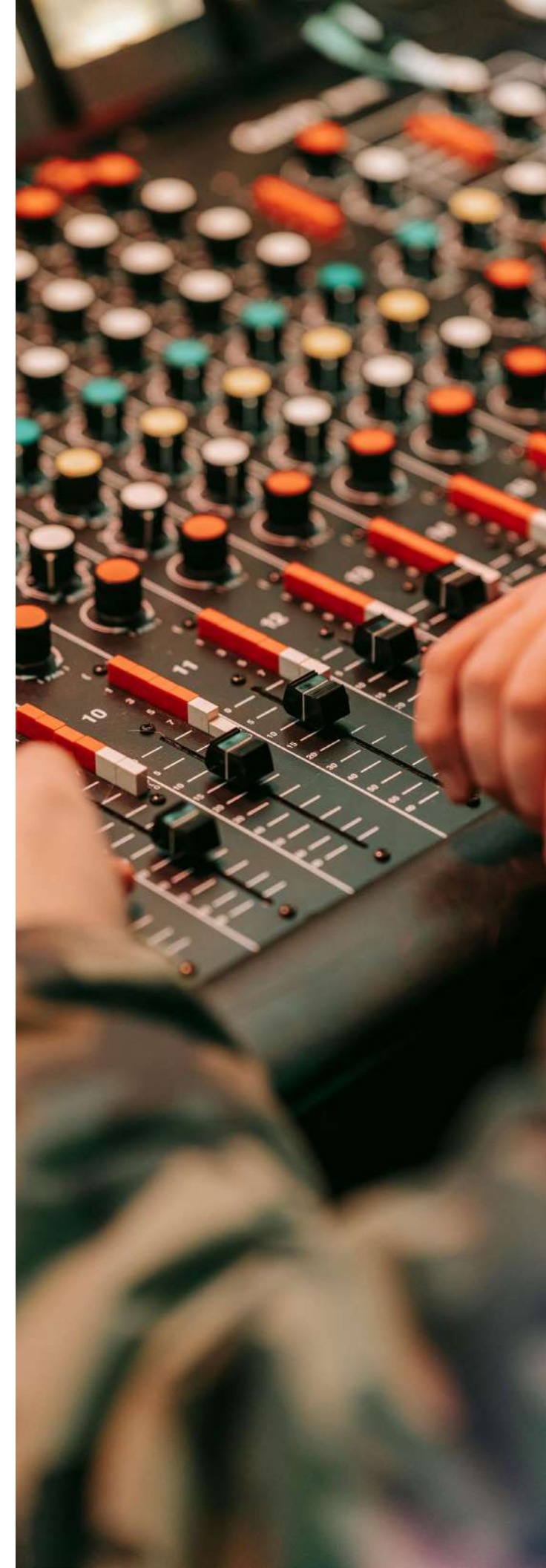
Despite rapid developments in AI technologies and revolutionary applications in arts, entertainment, and design, the industry has not yet reached mass adoption. One significant barrier is the substantial energy required to produce AI-generated art and videos. For instance, creating a 5-second AI video requires 3.7 million joules—equivalent to running a microwave for over an hour (EVOTEK, 2025). Additionally, while major industry leaders like Disney are utilizing AI, their implementation remains largely behind closed doors. This closed door policy stems from recent agreements with the Writers Guild of America, which resulted from the 2023 Writers Strike where AI usage was one of the central concerns. These contractual obligations have created a cautious environment around the future of AI adoption in the entertainment industry.

Despite concerns, AI is growing more integral to modern filmmaking across multiple production phases. During pre-production, AI tools generate storyboards and preliminary visual effects, providing directors with comprehensive scene visualization before filming begins (D’Amico, 2024; Vakhtin, 2023). These tools also streamline scriptwriting through automated story analysis and dialogue generation, while sophisticated visual effects software powered by machine learning creates photorealistic environments and digital characters at significantly reduced costs (Morton, 2024). In post-production, machine learning algorithms enhance efficiency in color grading, editing, and sound mixing, creating seamless integration between digital tools and creative processes. AI-driven editing software can even automatically cut footage, color-correct scenes, and generate music scores tailored to specific moods and pacing (Singh et al., 2023; Sun, 2024).

Beyond production, AI algorithms reshape content distribution and consumption through personalized recommendation systems on streaming platforms, predictive analytics for audience preferences, and automated content moderation at scale.

This technological integration enables filmmakers and producers to achieve their artistic vision with greater precision and efficiency while delivering content that aligns with viewer demand (Sun, 2024).

Within the lighting and sound production industry, AI automates complex technical processes while enabling more sophisticated creative possibilities. In lighting design, AI-powered systems analyze scripts and automatically generate lighting plots, adjust color temperatures and intensities in real-time based on scene requirements, and predict optimal lighting setups for varying times of day or weather conditions during outdoor shoots (Pal et al., 2024). Machine learning algorithms now control intelligent lighting rigs that adapt dynamically to actor movements and camera angles, thereby reducing manual adjustments and allowing lighting designers to concentrate on creative vision rather than technical execution (Shah, 2025). The world renowned Broadway play, Hamilton, uses AI-powered lighting to ensure special lighting effects are synchronized to musical cues (Shah, 2025). In sound production, AI tools are transforming audio post-production through automated dialogue replacement, noise reduction algorithms that isolate and enhance specific audio elements, and intelligent mixing



systems that balance sound levels across different playback environments (Singh et al., 2023). The top cinematic art programs in the United States, such as USC, Chapman, and Loyola Marymount University have begun to offer courses about AI integration with screenwriting (Welk, 2024). AI-driven audio synthesis generates realistic ambient sounds, crowd noise, and musical compositions that respond to the emotional tone of scenes (Morton, 2024). Prior to this sound technicians had to physically create sounds to align with the sound required. For example in the original Star Wars Film, A New Hope (1977), the sound for a lightsaber was manually created by recording TV static. Now, spatial audio technologies powered by AI create immersive soundscapes for theaters and streaming platforms, while real-time audio processing during filming enables sound engineers to identify and correct issues immediately rather than discovering them during post-production.

For stage and set production, advanced AI tools can integrate multiple sensory elements including soundscapes, visual components, and interactive features to create sophisticated, multi-dimensional art installations. For example, designers are able to use AI-powered software to create detailed three-dimensional visualizations of sets before physical construction begins, allowing for precise spatial planning and identification of potential structural issues early in the development

process. The AI-powered design software can generate multiple set configurations based on script requirements, budget constraints, and venue specifications, providing creative teams with comprehensive options that optimize both aesthetic appeal and practical functionality. When physical construction begins to take place, robotic systems guided by artificial intelligence are increasingly used for precise cutting, shaping, and assembly of set pieces, particularly for complex geometric forms that would be challenging or time-intensive to create manually.

As AI technologies continue to advance, their integration into creative workflows will likely deepen, presenting unprecedented opportunities for artistic innovation.

However, this evolution also raises important questions regarding creative authenticity, algorithmic bias, and the evolving relationship between human creativity and artificial intelligence assistance. The creative industries must navigate these considerations while harnessing AI's potential to enhance human artistic expression.

“I've only seen limited examples of AI produced works. The first was a TV commercial by Toys 'R' Us. And I think that was probably mid 2024, late, 2024. The next was Coca-Cola. They did one for their Christmas campaign in December 2024, and then I saw another one recently, which was for KFC, as what they call a spec advertisement. This is when someone creates a video (for a brand) without actually collecting any payment from the brand itself. It was just like, hey, look, I can do this. Here's proof of some of the cool stuff I can make. I think advertising will be the 1st place to get tackled with AI.”

Robert Morton, Board Member of Australian Cinematographers Society AI Committee

Will AI Automate Creating & Experiencing Occupations?

Technology's dual impact on workplace skills operates through two distinct mechanisms: substitution and complementarity.

Substitution occurs when technology is able to perform - and subsequently replace - human skills in specific work-related tasks. As more tasks within an occupation become substitutable, the risk of complete automation rises significantly (U.S. Government Accountability Office, 2022). However, technological advancement frequently leads to complementarity rather than replacement. In these instances, technology enhances human skill, improves task efficiency, and can actually increase demand for both the technology itself and the human skills that work alongside it. This relationship highlights the critical distinction that technology primarily affects individual tasks directly while influencing occupations only as a secondary consequence (Acemoglu & Autor, 2011; U.S. Government Accountability Office, 2022).

AI's transformative impact on Creating & Experiencing occupations may lead to a fundamental shift in how work is structured and performed across these sectors.

The critical question facing organizations and workers is not whether change will occur, but rather what the specific nature of that transformation will be—whether AI will primarily

substitute human workers, complement existing capabilities, or create entirely new task requirements that reshape these professions. Our analysis of O*NET occupational data reveals that Creating & Experiencing roles demand both technical and transferable skillsets. Technical skills encompass occupation-specific competencies such as educational technology platform management, diagnostic imaging interpretation, and specialized computer programming capabilities tailored to Hospitality, Events, & Tourism and Arts, Entertainment, & Design sectors. These skills represent deep domain expertise that provides immediate functional value within specific professional contexts. This pattern suggests that professionals who cultivate strong transferable skills alongside their technical expertise will maintain competitive advantages as AI integration accelerates across Creating & Experiencing occupations.

Appendix Tables 1-2 present the ten largest Creating & Experiencing occupations ranked by 2023 Bureau of Labor Statistics employment data, including the five most critical tasks and skills for each position. The tables incorporate two measures assessing potential AI impact based on occupational composition. The primary measure is the Artificial Intelligence Occupational

Exposure (AIOE) index developed by Felten et al. (2021), which quantifies overlap between AI capabilities and occupation-specific tasks and skills. The AIOE index is standardized with a mean of 0 and standard deviation of 1, where higher scores indicate greater AI exposure and lower scores indicate reduced exposure. Research demonstrates that advancing technology increases demand for jobs requiring nonroutine tasks—those resistant to automation with current technology. This pattern reflects the evolving relationship between technological capabilities and job security, as occupations emphasizing complex problem-solving, creativity, and interpersonal interaction maintain competitive advantages over those dominated by routine, predictable tasks.

The Task Routinization Index (Acemoglu & Autor, 2011) provides our second analytical framework, offering more granular insight than the AIOE's singular occupational score. This index decomposes occupations into tasks that are either routine/non-routine and/or cognitive/manual and determines how relevant each category of task is within an occupation. Scores on the Task Routinization Index range from 1 (not important) to 5 (very important).

Appendix Tables 1-2 reveal substantial variation

in both AIOE and Task Routinization Index scores across principal Creating & Experiencing occupations. While some occupations within Arts, Entertainment, & Design exhibit markedly higher AIOE scores, such as graphic designers,



editors, and interior designers compared to those in Hospitality, Event, & Tourism, this disparity does not diminish the significant AI exposure facing the hospitality sector. Occupations within the Hospitality, Event, and Tourism sector facing automation are receptionists and clerks. Therefore, occupations with above-average AIOE scores typically have a high concentration of routine and non-routine cognitive tasks. By contrast, AI exposure decreases for jobs requiring significant physical abilities (Felten et al., 2021, p. 2203). Research establishes that AI, including generative systems, correlates most strongly with cognitive abilities. A notable paradox emerges within the Creating & Experiencing occupations that demonstrate higher AIOE scores. These roles—graphic designers and interior designers, for instance—appear to demand distinctly human creative elements despite their high AI exposure.

While these professionals may increasingly utilize AI platforms to streamline workflows and enhance visual appeal for consumers, their artistic sensibility and creative judgment remain indispensable to their work.

This suggests that high AI exposure does not necessarily translate to complete automation risk when human creativity serves as a fundamental job requirement.

Appendix Figure 1 demonstrates that Creating & Experiencing occupations exhibit average AI occupational exposure relative to the national landscape, with sector-specific variations. Arts, Entertainment, & Design occupations display AIOE scores marginally above the national average, whereas Hospitality, Events, & Tourism sectors show scores slightly below average.

Though Hospitality, Events, & Tourism sectors show scores slightly below average, they remain highly vulnerable to AI-driven automation, with potential implications for employment displacement that may disproportionately affect women workers.

Given that women comprise 54% of the global tourism workforce as of 2019 (World Tourism Organization), the gendered impact of AI integration in this sector warrants particular attention in policy development and workforce transition efforts among practitioners. Namely, students must be equipped with the technical and transferable skills that will strongly position them for success in an AI-driven workforce.

Appendix Figure 1 reveals significant variation in AI exposure across educational requirements.



INTERVIEW SPOTLIGHT

"Globally, I believe that 52 trillion dollars is paid out in labor to people that are doing things... if AI can fully replace 60% of all knowledge workers, then that means that somewhere between 18 and 22 trillion dollars worth of what is currently being paid out to people in the labor market will disappear. So I believe AI will replace close to a hundred percent of knowledge workers in the next 5 years. Which, if that is the case, then that means that all of a sudden people no longer have a job....I'm interested in this subject, and I talk about it often because I think that it is immoral to tell people 'Don't worry. There'll be new jobs created.' What they're taking that from is like the Industrial Revolution. (It) took a hundred years to go in and fundamentally turn the labor market upside down. This is not going to happen in a hundred years. We are not going to have time to create all of these new jobs. This is going to happen in 5 or 10 years. So the better question we need to be asking is what jobs need to be created for the ones that are going to be lost?"

Jesse Anglen, CEO & Founder of Rapid Innovations



Occupations requiring bachelor's degrees or advanced credentials consistently demonstrate the highest AI vulnerability across all sectors. In contrast, positions requiring high school education or less exhibit minimal exposure risk. This educational stratification reflects two fundamental factors: occupations requiring advanced education predominantly involve cognitive tasks (Appendix Tables 1-3; Acemoglu & Autor, 2011), and contemporary artificial intelligence systems demonstrate strongest capabilities in cognitive functions, particularly information processing tasks (Brynjolfsson & Mitchell, 2017; Felten et al., 2021).

This pattern suggests that AI's transformative impact operates primarily through cognitive task displacement rather than physical task automation, creating differential exposure levels based on educational requirements and associated cognitive demands.

This relationship explains why physicists face greater AI exposure than surgeons. While both professions require sophisticated cognitive capabilities, surgical practice relies on integrated physical, psychomotor, and sensory abilities that current AI cannot replicate (Felten et al., 2021). The distinction highlights AI's current limitations in tasks requiring complex physical manipulation and real-time sensory feedback, versus its growing capabilities in cognitive information processing.

Importantly, AIOE scores represent only one dimension of AI's potential occupational impact and cannot independently determine employment outcomes. These scores indicate correlations between human and AI capabilities within specific occupational contexts but do not predict definitive employment trajectories. While elevated AIOE scores may suggest greater automation vulnerability, this interpretation reflects only one possible outcome among several scenarios. Historical evidence confirms that technological advancement has eliminated positions heavily dependent on routine manual and cognitive tasks. However, occupations with high AIOE scores could alternatively experience increased human workforce demand as organizations require additional personnel to develop, implement, supervise, and enhance AI technologies within their professional domains. The relationship between technological capability and employment outcomes encompasses multiple pathways beyond simple automation. These include workforce expansion driven by increased productivity and demand, skill complementarity where human workers collaborate with AI systems to achieve superior results, and occupational transformation that creates new roles and responsibilities. Understanding AI's true impact on Creating & Experiencing occupations requires analysis that extends beyond exposure metrics to encompass these broader economic and organizational dynamics.

Simply put, where there are higher AIOE scores, there is a higher likelihood that AI will be integrated into those fields of work.

Figure 1 in the Appendix therefore indicates that numerous Creating & Experiencing occupations—particularly those requiring bachelor's degrees—will increasingly incorporate AI, not as a replacement for human capabilities, but as an enhancement to professional effectiveness. This represents a complementary relationship rather than a substitutive one, where technological integration amplifies rather than diminishes the value of human expertise.

How Can Creating & Experiencing Students Thrive in an AI Driven Workforce?

It is unlikely that Creating & Experiencing occupations will be entirely automated by AI. That said, these occupations will increasingly incorporate various AI technologies into their standard operations and, consequently, will see their skill requirements change for future workforce participants. This report has shared specific ways in which AI applications are already permeating work-related tasks across Hospitality, Events & Tourism and Arts, Entertainment & Design opportunities to implement forward-thinking strategies ensuring students develop the necessary competencies and technological literacy to excel in these evolving environments. The development of next-generation Career and Technical Education programs must therefore prioritize these technological advancements, preparing students for a professional landscape where human expertise and artificial intelligence capabilities increasingly complement one another rather than compete.



Career and Technical Education Providers

SHIFT THE NARRATIVE

Career and technical education providers we spoke with repeatedly stressed the tensions on campuses that exist between essentially two “camps” of CTE educators: the early adopters and the cautiously suspicious. The early adopters have eagerly embraced AI for themselves and their students. These are faculty and administrators who actively follow AI developments, regularly use

and experiment with AI tools, and encourage their students to do the same. The cautiously suspicious, by contrast, are far more reserved and reluctant to embrace AI for a host of reasons including, but not limited to, concerns around data privacy, student tracking, and ethics. This group of faculty and administrators is also concerned about plagiarism, instructional quality, and learning assessment.

The narrative needs to shift from “either/or” to “both/and.” AI is fundamentally changing the world of work students are training for. Exposing students to AI tools and technologies cannot be optional, it must be mandatory. Every course and every program within the Creating & Experiencing Cluster grouping must train students on AI applications in the fields of work they are preparing for. At the same time, we must take student privacy seriously, and we must listen to and address the concerns expressed by faculty worried about the downstream impacts of AI on educational quality. We strongly recommend campus/school wide conversations and dialogue. An individual, teacher by teacher, class by class AI policy approach is not only ineffective, it places students at risk and fosters inequities. Yet the individuated model prevails at the current moment.

There is evidence that colleges serving more affluent students are more likely to offer training, courses and programs in AI compared to open access institutions like community colleges (Palmer, 2025). Highly-selective, elite institutions cannot be the only ones aggressively engaging AI; open-access, community and technical colleges providing Creating & Experiencing courses and programs must do the same. Jensen Huang, CEO of NVIDIA, explains why: “If you are not engaging AI actively and aggressively, you are doing it wrong. You are not going to lose your job to AI, you’re going to lose your job to someone who uses AI.”

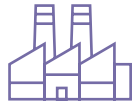
FOCUS ON SKILLS, NOT ONLY JOBS

It is exceedingly difficult to predict which individual occupations will be impacted - positively or negatively - by AI (Merisotis, 2020). Not only is it guesswork, but it is also flawed thinking, rooted in a misunderstanding of how technology impacts work (Acemoglu & Autor, 2011; Park & Kim, 2022).

Technology does not impact occupations directly, it acts on them through tasks and skills and the traditional approach to thinking of education in terms of majors, courses, and degrees does learners a disservice.

By contrast, our focus needs to be on the skills students enrolled in Creating & Experiencing programs of study/pathways acquire. Technical skills are crucial for Creating & Experiencing occupations, but the growing influence of AI in

Creating & Experiencing sectors means learners must also acquire skills to generate (e.g., prompt engineering) and critically audit and assess AI output. These skills, along with fundamental skills in critical thinking, group communication, creativity, problem-solving, and research, will be essential for carrying out job-related tasks in all occupations, including those in the Creating & Experiencing Clusters. Appendix Tables 1-3 show that the most heavily employed Creating & Experiencing occupations already require these skills. But how will AI change what they look like in practice, on the job? For example, what does quality control analysis, writing, critical thinking, judgment and decision making, and reading comprehension look like for lawyers, teachers, and nurses in the AI age? These are critical questions for community college leaders, faculty, and industry representatives to ask and answer.



Industry Partners

BRIDGE THE GAP(S)

Rapid advances and deployment of AI across Creating & Experiencing occupations emphasizes the importance of industry partnerships. Education providers cannot prepare students for AI-driven Creating & Experiencing occupations without knowing the AI technologies and applications employers are focused on. This is the purpose of local workforce advisory boards as well as numerous federal and state policies designed to close the gap between educators and employers. At the same time, numerous CTE educators and industry representatives have shared that industry itself is unsure of the AI landscape and how to respond. One community college dean told us that he was often the voice of authority and information on AI during meetings within industry partners. The challenges of keeping ahead of AI

developments and knowing precisely how to deploy AI are particularly acute for small and medium sized businesses and especially those in rural areas.

Industry partners can support the work of community and technical college Creating & Experiencing programs by identifying and sharing the AI applications and use cases in their industry. Industry partners can also aid providers by advocating for the AI skills they need and will be hiring for. Industry can further assist by equipping Creating & Experiencing classrooms with next generation AI-driven software, machines, technologies, and robotics so students access and train on them immediately.



Policymakers

BUILD ON WHAT WORKS

Recent changes to federal CTE and workforce education policies have given community and technical colleges, as well as employers, many helpful tools to work with. For example, the comprehensive local needs assessment within Perkins V is a fantastic framework on which to build and strengthen private/public partnerships to address the AI exigency. This particular policy requires community and technical college CTE providers to assess local labor market conditions and consult with stakeholders, including local businesses, to help make funding decisions. This policy mandate should be leveraged and improved to address any emergent AI skills mismatches in local economies.

Similar to Perkins, additional policy efforts are needed to increase funding for apprenticeship and work-based learning programs, which would enable students to gain tangible, occupation-specific AI applications and skills.

Policymakers need to act to ensure community and technical college students have access to meaningful learning opportunities at places of work where AI innovations will first appear.

INVEST IN THE FUTURE

It is crucial that Creating & Experiencing classrooms give learners access to the most innovative, state-of-the-art AI tools and technologies. Industry partnerships are crucial for this reason: as close collaborators, industry partners and local employers can provide community and technical colleges with real-world equipment for students to train on. This may include advanced, AI-enabled diagnostic technologies, AR/VR wearables, or robotics.

These technologies are expensive, however, and not every community and technical college can count on local employers for learner access. Recruiting and retaining trained faculty is an additional challenge and cost. Policymakers can help by continuing to funnel investments that foster private public partnerships and help CTE providers gain classroom access to the technologies students will later use in the workplace.



NOT A TIME FOR FEDERAL RETREAT

Though CTE is largely driven by policymakers and system leaders at the state level, the federal government plays an essential role. First, the federal government sets nationwide accountability targets for CTE providers. Second, the federal government provides billions of dollars in CTE funding in the form of state allocation grants through Perkins V legislation. These grants supplement state funding sources and balance out funding shortfalls and reduce inequities. Third, funding for CTE connects with other statutes like the Workforce Innovation and Opportunity Act (WIOA), The Higher Education Act, the Individuals with Disabilities Education Act, and Every Student Succeeds Act.

Collectively, these statutes help CTE providers to braid funding streams to build workforce development pipelines, and increase access and success for disadvantaged learners.

The Trump Administration has expressed commitment to expanding trade school education resources while simultaneously pursuing significant reductions in federal agency scope and operations. This approach creates potential tensions, as President Trump and the Department of Government Efficiency are considering substantial cuts to the Department of Labor, which houses the Workforce Innovation and Opportunity Act (WIOA). Additionally, President Trump has identified eliminating the Department of Education as a policy objective. While efficiency improvements merit consideration, evidence strongly supports the

effectiveness of current Career and Technical Education (CTE) policies. Research demonstrates that CTE students achieve superior outcomes compared to general education counterparts, including higher high school graduation rates, increased college enrollment, and employment and wage premiums (Bozick et al., 2014; Carruthers & Stanford, 2018; Dougherty, 2018; Ecton & Dougherty, 2023; Stevens et al., 2019).

Although state-level initiatives have contributed to these positive outcomes, bipartisan federal action has served as the primary catalyst for CTE success.

This analysis reveals that artificial intelligence presents both significant opportunities and substantial challenges for CTE providers. Rather than federal withdrawal, the current technological landscape demands enhanced federal engagement. The intersection of AI advancement and workforce development requires coordinated policy responses that leverage proven CTE frameworks while addressing emerging skill requirements. Strong, bipartisan federal support for effective and efficient CTE programming has become essential for navigating these transformative changes and ensuring American workers remain competitive in an AI-influenced economy.

Conclusion

We are experiencing a modern Industrial Revolution, yet as Jesse Anglen observed, we lack the century-long adaptation period that characterized previous technological shifts.

The pervasive integration of AI across industries presents both opportunities and challenges. On one hand, AI has catalyzed remarkable innovation, elevated the demand for critical thinking skills, and accelerated advancements in research and design. Conversely, the technology's potential to drastically reshape labor markets and precipitate widespread unemployment raises significant concerns. Like other professional sectors, AI will fundamentally transform Creating & Experiencing occupations. While AI-driven solutions are positioned to automate routine tasks and eliminate certain positions, our findings indicate that many Creating & Experiencing jobs retain substantial relevance and human value. Although AI is increasingly incorporated into educational curricula for occupations within this cluster, the essential human element remains

irreplaceable. The enduring appeal of movies, television series, and video games stems from humanity's fundamental attraction to compelling narratives—stories brought to life through the human artistry of screenwriters, actors, and filmmakers. In these contexts, AI serves primarily as a tool for streamlining production processes rather than replacing creative vision. Similarly, within the hospitality industry, travelers seek authentic cultural immersion and human connection. While AI can provide tourists with destination recommendations and logistical support, it is the spontaneous conversations with locals that create memorable experiences and guide visitors to discover hidden gems beyond conventional tourist attractions.



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TABLE 1
Largest Occupations, top skills, and AI Occupational Exposure: *Hospitality, Events, & Tourism*

Occupation	Top Skills	AIOE	Routine Manual	Non-Routine Manual	Routine Cognitive	Non-Routine Cognitive
Fast food and counter workers	- Active Listening - Service Orientation - Speaking - Social Perceptiveness - Reading Comprehension	-0.39	3.59	3.09	2.42	2.68
Waiters and waitresses	- Active Listening - Speaking - Service Orientation - Social Perceptiveness - Coordination	-0.95	3.50	2.79	2.46	2.81
Janitors and cleaners, except maids and housekeeping cleaners	- Active Listening - Speaking - Monitoring - Time Management - Coordination - Judgement and Decision Making - Speaking	-1.44	2.86	2.62	2.61	2.20
Cooks, restaurant	- Monitoring - Time Management - Speaking - Critical Thinking - Coordination	-0.74	3.23	3.35	2.80	3.14
First-line supervisors of food preparation and serving workers	- Coordination - Speaking - Monitoring - Active Listening - Service Orientation	-0.26	3.38	3.16	2.64	3.26
Receptionists and information clerks	- Speaking - Active Listening - Service Orientation - Critical Thinking - Reading Comprehension	1.01	3.54	2.18	1.63	2.87
Landscaping and groundskeeping workers	- Operation and Control - Critical Thinking - Speaking - Operations Monitoring - Active Listening	-1.82	2.77	3.61	3.28	2.69
Food preparation workers	- Service Orientation - Active Listening - Time Managment - Coordination - Speaking	-1.23	3.59	3.13	2.61	3.15
Maids and housekeeping cleaners	- Critical Thinking - Complex Problem Solving - Reading Comprehension	-1.23	3.501	3.01	2.33	2.44
Bartenders	- Service Orientation - Coordination - Time Managment - Social Perceptiveness - Critical Thinking	-0.62	3.17	2.33	2.49	3.20

TABLE 2

Largest Occupations, top skills, and AI Occupational Exposure: *Arts, Entertainment, & Design*

Occupation	Top Skills	AIOE	Routine Manual	Non-Routine Manual	Routine Cognitive	Non-Routine Cognitive
Coaches and scouts	- Instructing - Speaking - Monitoring - Learning Strategies - Judgment and Decision Making	0.12	1.88	2.22	2.60	3.93
Graphic designers	- Active Listening - Speaking - Active Learning - Critical Thinking - Writing	0.72	2.32	2.06	3.24	3.40
Merchandise displayers and window trimmers	- Active Listening - Speaking - Critical Thinking - Judgment and Decision Making - Coordination	-1.00	2.29	2.71	2.78	3.39
Producers and directors	- Active Listening - Speaking - Critical Thinking - Judgment and Decision Making - Reading Comprehension	0.94	2.30	1.98	2.83	3.62
Data entry keyers	- Reading Comprehension - Active Listening - Monitoring - Time Management - Writing	0.31	2.94	1.88	3.81	3.09
Editors	- Reading Comprehension - Writing - Active Listening - Critical Thinking - Speaking	1.13	2.10	1.87	3.43	3.48
Interior designers	- Active Listening - Speaking - Critical Thinking - Reading Comprehension - Service Orientation	1.12	1.97	1.55	2.96	3.68
Audio and video technicians	- Monitoring - Critical Thinking - Reading Comprehension - Operations Monitoring - Complex Problem Solving	-0.01	3.02	2.81	3.58	3.20
Actors	- Reading Comprehension - Speaking - Active Listening - Social Perceptiveness - Monitoring	0.16	1.68	1.59	3.29	2.89
Photographers	- Active Listening - Speaking - Service Orientation - Complex Problem Solving - Critical Thinking	-0.17	2.05	2.73	2.60	3.15

FIGURE 1

Average Artificial Intelligence Occupational Exposure Scores for Creating & Experiencing Career Clusters

