Transforming Workforce Training:

The Impact of AI on Soft and Traditional Skills Development

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Abstract

In recent years the use of Artificial Intelligence (AI) has experienced increased proliferation in the advent of greater ease of access and a low barrier to entry for workplaces, K-12 and higher-education institutions. Workplaces are beginning to see the value in training soft skills using feedback from generative AI that generates human-like responses, produces images, and consolidates data for analysis. This literature review focuses on applications for the use of AI in workforce training and adult education to determine if similar methods and strategies for training soft skills can be used to train traditional skills like sailing and sewing, and what challenges may occur during implementation. The bulk of the research indicates that AI will affect the workforce landscape because of how technology can complement human efforts, and that new training and development programs will need to be implemented (Morandini et al., 2023). The literature also shows that AI in education (AIed) can be used to train soft and traditional skills by enabling "persistent conversations among humans and artificial language processors" (Sharples, 2023, p. 160), and also by analyzing student input and providing corrective feedback, generating automatic scoring, helping with revisions, and using feedback to help identify learners' strengths and gaps (Zhang & Aslan, 2021). Best practices for implementing AI technology will be identified in this paper, along with considerations of negative implications. Future studies on AI in workplace training and adult education should strive to provide clear steps for schools and organizations to implement AI technologies and understand its practical implications.

Keywords: AI in Education, AI in Workplace, Soft Skills, Traditional Skills, Feedback, Workforce Training, Generative AI, Adult Education, Skill Development, AI Tutors.

Cheating or Learning? Leveraging AI for Effective Skill Development

Typically, human beings are hesitant to immediately trust and incorporate new technologies into their daily lives. In his TED talk, *Cheating or Learning? Walking the AI Tightrope in Education*, Erik Winerö (2023) notes that learning takes place when we are challenged, and that AI can coach us and guide us up the hill by our own effort rather than carry us to the top. Winerö (2023) references the example of Khan Academy and explains how its math tutor using ChatGPT-4 helps to guide students to find the solutions to problems themselves without giving away the answers. Winerö (2023) suggests writing texts or emails first and then submitting to GPT for feedback instead of having it write for us. The focus of this paper is on how AI generated feedback is being utilized in not just education but also in the workplace to improve soft skills and hard skills to ultimately discover what similar AIed strategies can be applied in the learning of traditional skills such as sailing, painting or gardening in self-directed adult education.

Optimizing Skill Development through AI Feedback

Studies suggest that feedback is imperative for building skills and is one of the most critical influences for human learning (Hattie & Timperley, 2007). AI can now be used by teachers to provide feedback 24/7 (Tapalova & Zhiyenbayeva, 2022). The importance of feedback in learning is shown in research into the Generated Questions Learning Model where Crogman & Trebeau Crogman (2016) identify how experience acts as feedback in the learning process and how experience also assists in the effort of how learners solve problems. One example of how AI is used in the workplace in providing feedback to customer service agents to improve their soft skills is noteworthy. Xueming et al. (2021) researched the feedback levels of AI coaches in training sales agents and found that the AI coaches in collaboration with human

coaches outperformed the AI or human coach alone. In another study related to AI feedback and role-playing in the workplace, Malatesta and Ciani (2022) research how the creators of SkillGym provided a safe space for executives to practice "key conversations" to provide them opportunity to develop a greater self-awareness, and found that after a two-month study the learners "leveraged a fully practice-based approach on soft skills development in a way they had never done before" (Malatesta & Ciani, 2022, p. 55).

We are at the beginning of an AI in the workplace revolution due to AI having an unparalleled capacity for training and feedback. In *Competencies Needed by Business Professionals in the AI Age: Character and Communication Lead the Way*, Cardon et al. (2024) highlight how learning objectives in the age of AI are shifting towards "constant upskilling and human-AI collaboration becoming common aspects of the workplace... [and] educators should adapt curricula to align with shifting priorities in the workplace based on the best available information" (Cardon, et al., 2024, p. 224). Upskilling with AI is important for learners in the workplace as this technology is continuously evolving and becoming more efficient to use. Current research continues to prove how using AI to develop both soft and hard skills is crucial in the workplace.

AI in Action: Boosting Employee Competencies

Numerous studies link the use of Virtual Reality (VR) and AI tutors for training hard skills in the workplace. For example, in the book *AI in Learning: Designing the Future,* studies show the net effects of how an Intelligent Tutoring System (ITS) provides pedagogical guidance and helps learners like crane operators interact with the ITS by creating two decision loops: an outer loop, which is selecting a task that best helps them learn, and an inner loop which guides

the learner by instructing them through the steps in the task (Niemi, 2022). These experiences in turn scaffold learning through a constructivist framework, like training wheels on a bike. Gradually, through more AI assisted VR training, those "wheels" can be removed, and the learner becomes more confident in their industrial job performance. More examples include healthcare settings where there are advocates for AI training implementation into curricula, and even recommend that the Python language (used to develop AI) be taught to doctoral students in their undergraduate programs (Naqvi & Mishra, 2024). Additionally, Human Resource Management (HR) has been researched to determine the effectiveness of implementing AI into hiring and other HR processes, with authors suggesting that AI be adopted while considering both positive and negative impacts (Baldegger et al., 2020).

Global studies have examined the effects of training soft skills in the workplace with AI. One study found that AI-enabled soft skill training can be personalized for each learner delivering better outcomes than traditional methods (Ostin, 2023). Ostin (2023) reviews multiple surveys from LinkedIn, identifying a connection between digital and leadership skills and emphasizing the need for leaders to harness AI to improve their soft skills. Wang et al. (2024) discuss various use cases for ChatGPT in the workplace, noting that tasks best suited for GPT "involve repetitive information gathering, data entry, and calculations, which do not require extensive contextual understanding or social interactions" (p. 12). This increases productivity, particularly in roles like tax examiners (Wang et al., 2024). The personalization of the learning environment in the workplace has turned educators into "coordinators" and "mentors" (Tapalova, 2022, p. 642), reflecting a significant shift in training practices in the age of AI.

While AI has enhanced the training of soft and hard skills in the workplace in the short term, many factors must be considered when implementing this technology into curricula. In *The dark side of generative artificial intelligence: a critical analysis of controversies and risks of ChatGPT,* Wach et al. (2023) express concerns about the lack of regulation in the AI market, poor quality and bias, automation-spurred job losses, personal data violation and weakened ethics and goodwill. Their exploratory study concludes that, despite the many benefits of generative AI, proper regulation and ethical considerations are necessary. Challenges in implementing AI technology to improve workplace skills are significant, yet the benefits remain compelling. Wach et al. (2023) also emphasize the importance of developing and recognizing transversal (soft) skills among employees, noting that problem-solving, critical thinking, communication, and collaboration are crucial for increasing productivity with AI systems (Wach et al., 2023).

Sharples (2023) raises concerns about AI's current capability to produce desired learning outcomes. AI, in its present form, lacks long-term memory processing, the ability to reflect and consolidate knowledge, and does not capture the affective and experiential aspects of the learner-teacher environment (Sharples, 2023). While this is true to a point, the author does not consider the latest update of ChatGPT-4, where longer usage within the same chat account allows the AI to use old memories to generate new and informed responses. As a result, the more a large language model (LLM) gets to know the learner, the more "affective" the individualized learning experience becomes. It may only be a matter of time before these LLMs can act beyond mere behavioral and cognitive agents. Still, as Hicks et al. (2024) determine in their study, educators need to be weary to call mistakes the LLMs make “hallucinations” and instead call them out for

being actual “bullshit.” In their view, ChatGPT is “not even attempting to convey accurate information in its utterances” (Hicks et al., 2024, p. 9).

AI Applications in Traditional Skill Training

Even with the growing pains of adopting new technologies, AI educators and trainers in the workplace are moving AI education forward with a competitive push for greater efficiency and capabilities. There is a correlation between the benefits AI provides for workers and those same people outside of work as they pursue passions or learn skills like sailing, pottery, or painting. AI can help teach traditional skills in adult education in similar ways to in the workplace, though the literature is not as extensive. In his recently published and already seminal book on AI in education, *Brave New Words: How AI Will Revolutionize Education (and Why That’s a Good Thing)*, Salman Khan (2024) states that AI is "shifting the barriers to entry that once limited people from learning a variety of crafts” (p. 48). Khan describes how AI tutors and assistants can offer inspiration, guidance, and constructive feedback in real-time (Khan, 2024, p. 48). Imagine uploading a picture of your painted landscape to ChatGPT and asking the AI to "help create my trees and skies like Bob Ross, how would he paint this landscape?" You would receive instant feedback with examples to ensure your color choices and brush strokes are on point. Immediate feedback and a Socratic tutor will exponentially increase growth in learning traditional skills, eliminating the need to wait for instructor feedback in a monthly art class. Nervous students won’t need to feel they must overcome the fears of showing drafts to another human before tackling edits and improvements. The ability to get instant feedback without emotional recourse and the round-the-clock availability are crucial for modern training and development (Morandini, et al., 2023).

The traditional skill of research and dissertation writing is examined in the article *AI Technology and Academic Writing: Knowing and Mastering the "Craft Skills."* Diggs (2023) states that in the age of modern AI, chatbots and Natural Language Processing (NLP) may take over roles traditionally filled by faculty collaboration and conference presentations by providing feedback on writing style, suggesting further research sources, and even offering emotional support (Diggs, 2023, as cited in Storey, 2023). Practical uses of AI demonstrate feedback and knowledge recommendations at the forefront, with chatbots now offering emotional support. Learning a traditional skill can be lonely, but AI can help learners through difficult times when no one else is available. In the context of learning a traditional skill like sailing, AI can similarly support learners who need to refresh their skills before practicing on the boat. Numerous studies have proven how "AI systems can analyze student input and provide corrective feedback instantly" (Zhang and Aslan, 2021, p. 6).

Conclusion: Embracing AI for Comprehensive Skill Development

In this literature review, I have covered numerous use cases for generative AI in adult education and the workplace. Returning to the lessons from the TED talk by Winerö (2023), we must take heed to his advice and consider whether handing over a task to AI "robs us of valuable learning opportunities" or not. In the daily practice of using generative AI, this question can help determine if AI will help us or hinder us in our quest for knowledge, and Winerö's (2023) point is that this choice is ultimately ours. When AI aids in learning without taking away the learning moment or opportunity, learners can fully harness its potential benefits for developing hard and soft skills in the workplace and traditional skills in adult education. Used correctly, AI can drive exponential growth, like the Olympic pole vaulters utilizing stronger technology though history

to exponentially "raise the bar" as in Winerö's (2023) analogy, by primarily enhancing the quantity and quality of feedback in education.

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