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COMMENTARY

Adapting to the future: How microcredentials fuel self-directed learning in the evolving workplace

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The authors (Beier et al., 2025) highlight changes that are currently or predicted to be taking place in the workforce, raising concerns about the future of jobs and how to prepare for these shifts through training and development. The anticipated shifts in jobs and the skills relevant to them are most notably attributed to recent advancements in technology. With these changes, they urge for a paradigm shift of learning systems, emphasizing that "organizations increasingly need workers who can rapidly develop skills for shifting roles" (Beier et al., 2025, p. 5). Otherwise, without this ability to adapt, employees may struggle to stay competitive as jobs evolve. We aim to explore the relationship between learning and skill adaptation in response to the current evolving nature of the workplace. Although we agree with the authors that workers will need to learn to seek out the training they need, we disagree that this lessens the responsibility organizations have in providing training and support. In fact, as self-directed training becomes more important, we believe organizations have even more responsibility to support their employees' development.

AI & the future of workforce skills

It is evident the transformation taking place in the workforce will lead to workers and organizations having to determine what is necessary to adjust to the new jobs and skills that now are going to be in demand. The emergence of artificial intelligence (AI) and its rapid integration into daily life has led to significant changes in the job market (Idrisi et al., 2024). Tasks are now able to be automated and analyses are being replaced by algorithms (Ellingrud, 2024). This is known as Industry 4.0, which is characterized by changes in connectivity, computational power, analytics, and machine–human interaction (Sung, 2018). This revolution is reshaping the workforce by quickly changing the skills workers need to keep up with technology and reshaping job roles. This raises a critical dilemma for many organizations: How can they develop their workers' existing skills to align with the evolving roles and avoid losing their current workforce?

AT&T case study

This scenario has played out within AT&T, which employs approximately 280,000 people. Over the past 2 decades, the company's connectivity network has transitioned primarily to a software-defined architecture, resulting in a significant shift in job demands. In response, AT&T has chosen to allocate resources toward adapting its current workforce to meet these changes, with half of their employees now being developed to acquire skills for roles that didn't previously exist (Donovan & Benko, 2016). They employed upskill tactics to get their employee's skills aligned with new jobs by providing interested employees with learning resources in an online self-service

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platform. This included courses for emerging technology and access to relevant advanced degrees at a reduced cost. To retain their workers, they provided the necessary tools for skill development, enabling workers to adapt to evolving roles. This example challenges the notion of relying solely on self-directed learning and placing the responsibility for skill development entirely on the individual.

Self-directed learning barriers

We believe that to prevent losing employees and their valuable company knowledge to job transitions, organizations should provide guidance and resources to help employees acquire the skills needed to advance to the required level. Due to the addition of AI to the workplace, 6 out of 10 workers will need training before 2027, yet only half currently have access to sufficient training opportunities (World Economic Forum, 2023). The authors suggest work-related, self-directed learning to address skill gaps in employees, but there are many situational barriers that can hinder its effectiveness. Even if individuals are motivated to pursue self-directed learning, they may lack essential resources such as time, money, or access to tools and programs (Zirkle, 2004). However, when these barriers exist, administrators and organizational support have been shown to be facilitators of self-directed learning (Jeong et al., 2018). Thus, to promote work-related, self-directed learning to address skill gaps arising from organizational trends, companies should provide these critical resources to their employees.

Microcredentials as a tool

An emerging trend we believe organizations will find valuable and be willing to offer to promote work-related self-directed learning is microcredentials (MC). Microcredentials are a new and quickly growing tool that put focus on learning through small, incremental skill development. They provide an alternative to traditional certifications like diplomas, certificates, and grades by recognizing specific skills through digital badges (Gish-Lieberman et al., 2021). MCs are competency based, personalized, on demand, and easily shareable, they and offer a personalized approach to professional development that companies can invest in to combat skills gaps for their employees. Individuals who complete an MC are awarded a digital badge, which includes metadata detailing the issuer, the requirements for earning it, the date it was awarded, and any expiration information (Hunt et al., 2020). Because of the ability for MCs to target specific skills, show that those skills have been obtained, and promote the upkeep of skills through expirations, they could be ideal for organizations that are, like AT&T, wishing to promote skill acquisition to adjust to changes (Donovan & Benko, 2016). MCs would also be ideal for individuals facing barriers related to work-related self-directed learning, because they have reduced time constraints and access would be provided by the organization. This can be accomplished through an organization taking initiative to connect employees with MCs by providing access to educational institutions that provide them or by creating them in-house. Some employers have developed their own MCs to train new and existing employees while promoting self-directed learning (Murphy et al., 2022). By developing their own MCs for employees, organizations become supporters of self-directed learning by providing the access directly to employees.

Considering that MCs are a recent trend, it is fair to question their authenticity and the value placed in them. A 2020 study in the *Journal of Competency-Based Education* investigated employers' perceptions of recently graduated job seekers that had previously obtained MCs. They found that the competency and experience were more valuable to employers than a degree because MCs showed applied expertise of a skill (Gauthier, 2020). Outside of the value placed in MCs by employers, it is important to distinguish that individuals are utilizing them as a learning tool rather than an outward display of proficiency. In fact, early research on MCs has shown that

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recipients place greater value on the structured learning path than on the opportunity to showcase their achievements (Dyjur & Lindstrom, 2017). Although there are still challenges in ensuring trust in MCs due to the wide variety of programs, organizations wishing to integrate them into the toolshed of self-directed learning resources can control the standard by providing access to quality-assured MC programs (OECD, 2024). This allows organizations to support the continuous learning that is necessary in the rapidly changing job environment.

Adapting to rapid technological change

Organizations and employees are also struggling to keep up with Industry 4.0 and the rapidly developing skillsets needed to match it. Skill anticipation is carried out based on knowledge of technological innovation, but the velocity and variety of data in this context leaves companies struggling with reshaping their skill inventories (McAfee, & Brynjolfsson, 2012). As a result, tools are being developed to estimate the impact that rapid technology development will have on job profiles and necessary skills. Researchers have investigated text mining techniques to analyze job descriptions and identify skills required for emerging technologies, such as software-defined architectures and automation. This results in characterizing job categories by the ways that technology would impact them and the transferrable skills needed to adapt (Fareri et al., 2020). We believe that by using these techniques, organizations will have the ability to recommend which skills need to be obtained based on job categories and provide tools like MCs to allow their employees to adapt to the changes. Organizations should highlight the value and unique learning opportunity that MCs provide to encourage employee use. By providing and promoting MCs, organizations can create a culture of continuous learning. This culture not only encourages employees to engage with MCs but also reinforces their importance in career development.

Work-related self-directed learning is essential for employees to keep up with the ever-changing workforce. Although it is based on individual learning and requires employee motivation, organizations must support employee development by providing resources to reduce barriers in access with quick and adaptable learning programs like MCs. This still puts learning in the hands of the employees while supporting the idea of lifelong learning to adapt to technological advancements and the subsequent skills needed in their jobs. Using AT&T as an example, employers should emphasize the value of MCs for job retention and advancement, especially for those at risk of losing their jobs due to technology advances. Providing these programs is simply one way that organizations can ensure their employees are able to keep up to date with the necessary skills and avoid losing their workforce to a lack in the now necessary skill development.

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