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Culture and Environment for Learning and Development of the Next Generation Workforce in the Age of AI and Robots

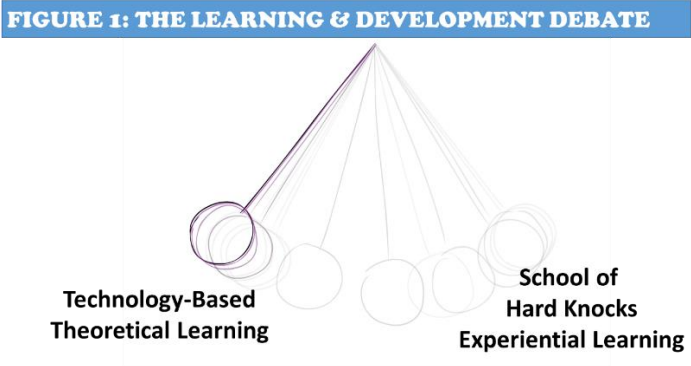
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Workforce Disrupted
Seeking the Labor Market's Next Equilibrium

The advent of artificial intelligence (AI) tools necessitates the development of human skills that allow workers to use these new technologies to create value that AI tools cannot on their own. Learning programs and methods need to be adapted to help humans learn in an accelerated and effective manner. There is an ongoing debate about the role technology-based conceptual learning should have in developing human capital. On one hand, these technologies can help workers acquire new skills as old skills are taken over or made obsolete by machines and software. On the other hand, experienced-based learning might be a more effective method to distinguish uniquely human capabilities from AI prowess. Such a debate may ultimately be infructuous. In the future, both modes of learning will have to be leveraged to enhance human capital abilities and distinguish these skills from what software (artificial intelligence) and machines (robots) can do. Rather than allowing learning modes to swing like a pendulum between technology-based learning and experience-based learning (see Figure 1), companies that leverage both modes would create optimal learning environments for training the next-generation workforce.

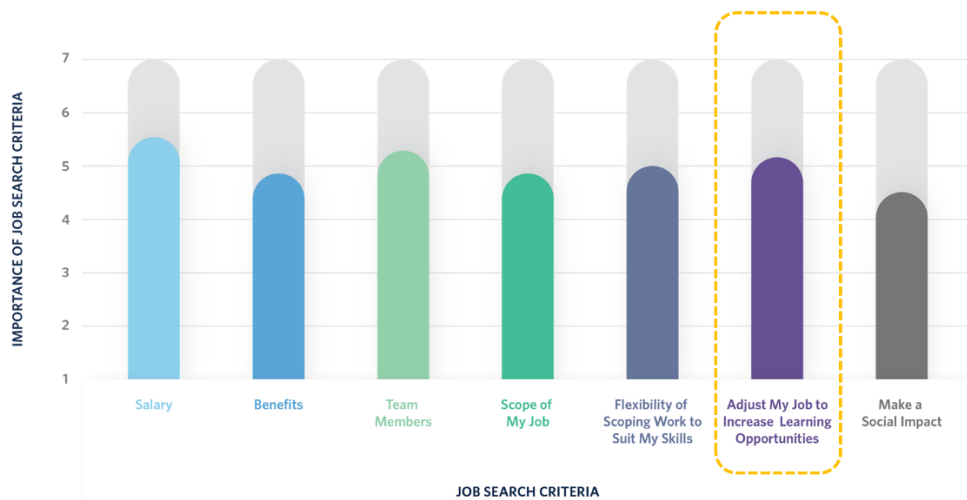


Why is Learning and Development Critical for the Next Generation Workforce?

In recent research, we surveyed respondents in the Generation Z demographic (or those born between 1997 and 2012) asking what they look for in their job search (Palmer 2022). As shown in Figure

2, this group highly seeks “learning opportunities” in their work; only “salary” and wanting to work with good “team members” rank higher. Gen Z workers are looking for their next job to be a dynamic learning opportunity rather than repetitive, “dull” work. In our interviews with the Gen Zers, the nature of the job’s learning opportunities repeatedly came up as a key criterion. Respondents seemed comfortable with the idea that they would conduct their work in an environment where they will have to leverage and work with AI and Robotics. Given that AI and Robotics are expected to shape their work environment, Gen Zers are seeking jobs that would enable them to build a portfolio of useful skills. These young workers want to join companies that would provide a diverse range of work experiences and help them develop new skills.

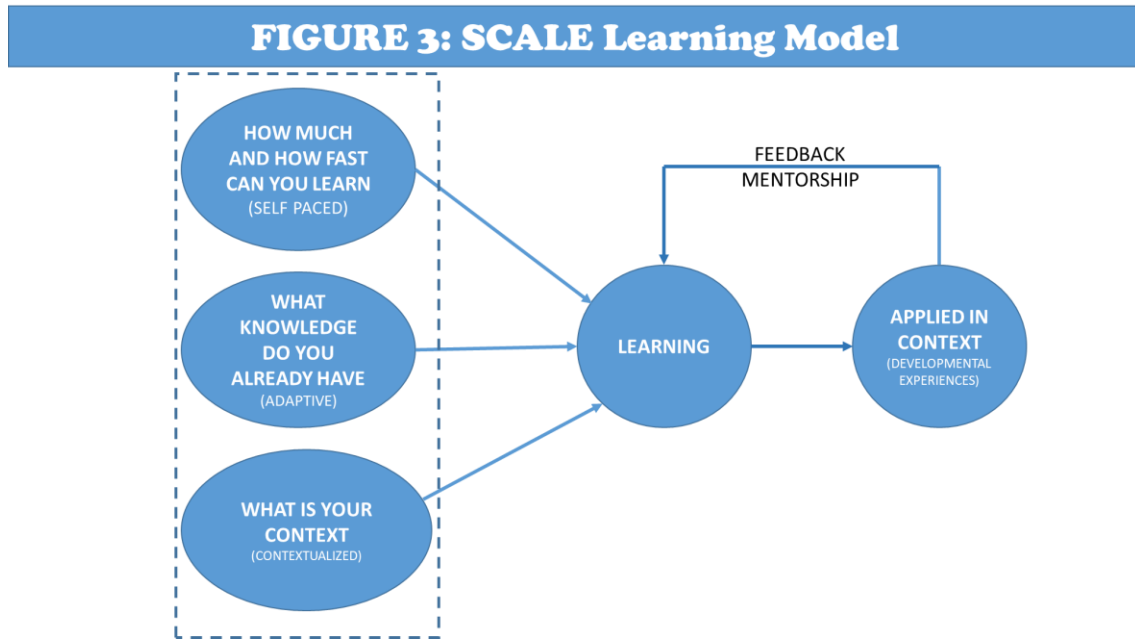
FIGURE 2: JOB SEARCH CRITERIA FOR THE Zs



The Need for SCALE Learning

Self-paced, Contextualized, Adaptive, and Experiential (SCALE) Learning is a conceptual model (Figure 3) used to examine future learning and development. Organizations have explored, implemented, and used self-pace, contextualized, adaptive, and experiential learning as independent separate elements for training and development. Given the urgency to hone human ingenuity in the utility arms race with

machines, leveraging all of SCALE modes together may be the most time efficient approach. To evaluate this idea, let us examine each element of the SCALE Learning Model.



Self-Paced Learning

Using asynchronous learning modules based on learning management systems, individuals can pace their learning – how much they learn, how fast they learn, and when they learn. There is a rich tradition of this manner of learning, which is often called self-directed learning (Garrison 1997; Knowles 1975; also see meta-analytic review by Boyer et al. 2014) and autonomous learning (Martin-Gutierrez et al. 2015). Self-paced learning has become a central focus of learning management systems in companies, especially during and post-Covid. This approach enables individuals to learn what they want at the pace that works best for them. Self-paced, asynchronous modules in learning management systems are one important component of these schemes. This form of skills acquisition is conducive to continuous and life-long learning. Workers can choose to learn about topics and develop skills that may not directly pertain to the job they are performing. And yet research shows that self-paced learners outperform non-self-

paced learners, and self-paced learners choose to allocate their time to learning more difficult subjects (Tullis and Benjamin 2011). This mode would apply well in organizations that want individuals to learn advanced skills in the age of AI and Robotics.

Adaptive Learning

This second element of the SCALE Learning model considers the various points from which individual learners start in the learning process. This learning mode may best educate individuals from a wide variety of backgrounds, possessing different levels of prior knowledge. Adaptive learning recognizes that, as individuals learn at different paces and levels, they may learn different things in different ways. As described by Kelley (1969): “The primary requirements of adaptive training are that performance be continuously or repetitively measured in some way, and that the measurement be employed to make appropriate changes in the stimulus, problem, or task.” Instead of giving the same task or learning modules to everyone, human or machine-based systems may give progressively harder tasks to those who perform better on easy initial learning tasks, while others may be given the variants of the easy initial task until they hone their performance to a satisfactory level. In this way, adaptive learning systems gauge the learners’ strengths and weaknesses, rather than delivering a one-size-fits-all learning process.

Adaptive learning systems are widely used in education and educational institutions, yet the design and use of adaptive learning systems in companies for effective learning of business and technical skills is still in its infancy. AI meanwhile presents an ideal opportunity for companies to develop better adaptive learning systems. Preliminary research indicates that an adaptive learning system is most effective for acquiring new knowledge (Zhao and Abuziam 2015). Because adaptive learning systems personalize the knowledge to be learned to each learner, individuals learn faster, more effectively and have increased knowledge retention.

Contextualized Learning

The SCALE Learning model's third element is contextualized learning. Simply put: context matters. Basing the skill or knowledge to be learned in an abstract setting or a very specific setting may lead to a majority failing to learn the basic subject. When new skills and knowledge are presented in a way that specifically focuses on the context of the learner, or the context that the learner is most interested in and comfortable with, better outcomes ensue. Walkington (2013) provides an example of contextualized learning and its effectiveness. In the experiment, 145 subjects (Algebra 1 students) were separated into two groups. The first group was tasked with solving conventionally framed algebra story problems. The second group received problems framed as a story based on their out-of-school interests such as movies and sports. This second group of students solved the problems faster and more accurately.

Of all the elements of the SCALE learning model, contextualized learning may be the most foundational – and yet receives the least attention. When a subject's context resonates with the learner, learning occurs more potently. Applying abstract information in context may be an appropriate way to develop contextualized learning, and the abstract learning of knowledge and skills when applied in the context of a specific job may be a more effective way to learn. If the current job, however, is not one that the individual wants to continue then learning in such a context may be suboptimal. Job rotation programs, which were once a popular way to match worker ability with the right job, may again be effectively employed. Once the appropriate context is found through a job rotational program, learning and development in that context can occur more effectively. In a recent study, 97 percent of Gen Zers expressed the desire to find better opportunities beyond their first job (Mekari 2023). As they discover through the job rotational program what their next job may be, each of the stops (jobs) along the way may be a context for specific learning. The coupling of job rotation programs with the learning of specific skills or knowledge thus may yield the best-developed human resources in the future.

Feedback

As knowledge learned, either through information systems or through practical experiences, is applied in context, the connecting loop in learning and development is formed through feedback received from supervisors and peers. A large part of learning is trial and error; both positive and negative feedback is needed to adjust and solidify learning. While organizations have developed means and mechanisms to deliver positive feedback, they have not given the delivery of negative feedback the same attention. There are learning and developmental benefits from receiving positive as well as negative feedback (Moss and Sanchez 2004), yet providing negative feedback to younger generations in the workforce can be especially challenging (Anderson et al. 2016). Managers should therefore be deliberate in their actions giving negative feedback. In particular, feedback must be continuous and consistent, and the future benefits of such feedback must be explicated (Anderson et al. 2016).

Research has shown that Gen Z prefers frequent, face-to-face, and constructive feedback (Aluthwala, 2020). The careful design of feedback systems to reinforce and correct learning is an essential component of an effective SCALE model of learning.

Conclusion

Managers and senior executives in companies should consider that traditional education and development systems may not be ineffective for the next generation of the workforce—especially for the cohorts that have been using the SCALE model to learn in school. When these young workers arrive in the workplace, they expect similar elements in corporate learning and development systems. While technology is rapidly advancing, its use in enabling and facilitating SCALE model learning is still in its nascent stages. More needs to be done to develop human skills that complement and keep ahead of the machines – AI and Robotics. Based on the World Economic Forum’s 2023 job report, some of the most important skills of the future include machine learning, sustainability analysis, business intelligence analytics, information security analysis, and data science (World Economic Forum, 2023). These skills

would lend themselves for SCALE learning as described in this paper. Organizations must develop learning systems based on the principles of adaptive and contextualized learning to develop the skills needed in these emerging areas.

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