Market Milestone

Leveraging Learning Science: Why Skillsoft's Technology and Developer Learning Content Drives Continuous Adaptability in the Digital Age

AMALGAM INSIGHTS

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Executive Summary

Key Stakeholders: Chief Learning Officers, Chief Human Resource Officers, Learning and Development Directors and Managers, Corporate Trainers, Content and Learning Product Managers as well as CIOs, IT Managers and IT leaders within the organization.

Why It Matters: The modern workplace is undergoing a dramatic and rapid transformation, and nowhere is this more apparent than in technology and software development. Cross-functional product teams are the rule, not the exception, the boundaries between areas of expertise are blurring, and the need for broad technical proficiency is at a premium. Maintaining proficiency requires continuous adaptability and learning of new hard skills, behavioral skills, people (aka soft) skills, and situational awareness, all while continuing to complete one's day-to-day tasks. Thus, there is a strong need for engaging, scalable, cost-effective, and learning science-based training content designed for today's technology professionals.

Top Takeaway: Skillsoft's Technology and Developer Content portfolio meets the need for continuous adaptability and effective engagement of the task appropriate learning system in the brain with their "watch," "read," "listen" and "practice" content and delivery methodology. Delivering the Technology and Developer Content portfolio with Percipio's ELSA ensures that the portfolio is efficiently organized, is easily accessible on any device, is searchable and is seamlessly integrated into the employee's flow of work. Finally, Skillsoft's newly developed "Aspire" offering helps the employee realize their aspirations and desires by building an "Aspirational Persona" and developing a digital learning journey to support career advancement.

Continuous Adaptability: Learning and Development in the Age of Digital Transformation

The modern workplace is constantly changing as new digital technologies are developed and deployed, often on a daily basis. This digital transformation has the potential to increase productivity, efficiency and innovation, but it requires a workplace culture that embraces continuous learning and adaptation. Companies that embrace these digital assets and commit to continuous learning will see higher revenue, profits and market valuations. Companies that do not will find themselves falling behind more digitally savvy competitors.

The speed of change and need for continuous adaptation is especially apparent in technology and software development. Technology and software development cycles are getting shorter and the approaches to development are qualitatively changing from linear to iterative, lean, and agile approaches. Cross-functional teams are becoming the rule, not the exception, and the boundaries between areas of expertise are blurring. This strains collaboration and communication and requires continuous learning and adaptation to ensure effective product development.

An excellent example of cross-functionality, blurring of boundaries, and need for effective collaboration and communication tools can be found in DevOps. Until recently, two distinct learning paths existed. One path is for the Enterprise Technologists who build infrastructure, such as networks of integrated systems, emphasizes troubleshooting, maintenance and data security, and demonstrates proficiency through certification testing. A second path is for Software Developers who build software products, have excellent programming and development skills, and who emphasize testing, integration and deployment. DevOps has blurred the boundary between these two learning paths and cross-functional product teams require each to gain some measure of expertise in the others' domain and to collaborate and communicate effectively.

Today's technology professionals face a fascinating and challenging learning problem for at least two reasons. First, one has to continuously upskill to stay current in their primary field (e.g., Enterprise Technology), and continuously reskill to maintain competence in a related field (e.g., Software Development) in which extensive collaboration is required. Second, the learning content that drives this continuous adaptation must be delivered in such a way as to be minimally invasive on the day-to-day work flow. Adequately addressing these learning challenges is a tall order.

From a learning science perspective -- the marriage of psychology and brain science – continuous adaptation and the upskilling and reskilling required in for today's technology professionals cuts across all skill domains including hard skills, behavioral skills, people (aka soft) skills and situational awareness. Employees must continually obtain new sets of hard skills (e.g., network terminology or APIs), new sets of behavioral skills (e.g., coding in Python), new sets of people skills (e.g., digital collaboration with Slack or Zoom), and the situational awareness to know what skills to apply when.

Because hard skills, behavioral skills, people skills, and situational awareness are mediated by distinct learning systems in the brain that each have unique processing characteristics (Ashby & Maddox, 2011; Kahneman, 2011; Maddox & Ashby, 2004) meeting the challenge of continuous adaptation and learning requires that different content and delivery methods are used to train each class of skill.

Skillsoft's Technology and Developer Learning Content is Launched on Percipio

In October 2018, Skillsoft, a global leader and innovator in corporate Learning & Development launched its Technology and Developer Learning Content portfolio on its Percipio learning experience platform. Skillsoft's learning portfolio features more than 10 competency areas that include: Network/Ops, Programming, Security, Data, and DevOps, to name a few. While curating the content in 2018, nearly 16,000,000 hours of content were consumed, making this one of the most popular of Skillsoft's many learning portfolios.

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The overriding aim of Skillsoft's Technology and Developer Content portfolio is to enable professionals at any stage of their career to continually improve their proficiency in their chosen field and to prepare for essential technical certification exams when relevant. Another primary goal is to enable professionals to expand their competencies into related fields that are integral to their cross-functional development teams or into fields that they aspire to work in. Critically, Skillsoft does not focus solely on technology topics. In addition to technology topics, Skillsoft also offers learning portfolios covering Leadership Development and Business Management Skills and Training. Augmenting technical training with soft skills can play a critical role in the success of technology projects requiring not only technical knowledge, but also effective leaders and communicators to manage execution and implementation.

Learning Science Evaluation Criteria

The effectiveness of any learning technology can be determined from a learning science evaluation of the content construction and delivery. First, the content construction must be evaluated.

- Is the content engaging?
- Does it come in multiple medium?
- Is it organized effectively?
- Does it engage the relevant brain systems?

These evaluation criteria are critical for learning because engaging, organized content presented across multiple media recruits more areas in the brain that ultimately accelerate information acquisition and lead to greater information retention and generalization. Second, the delivery mechanisms must be evaluated. Does the content engage the three main learning systems in the brain: the "what" or cognitive skills system, the "how" or behavioral skills system, and the "feel" or emotional learning systems in the brain, and is each learning task delivered in such a way that the appropriate learning system in the brain is engaged?

The Learning Science of Skillsoft's Technology and Developer Content Construction

Skillsoft's Technology and Developer Content portfolio is engaging and well-constructed. The portfolio is hosted on Percipio, Skillsoft's Learning Experience Platform, where the content is available across multiple media and is grounded in the principle of "watch," "read," "listen." Although it is an open scientific question whether people truly have different "learning styles" (Willingham, 2010), there is no question that individuals differ in the preferred learning medium, and that the most efficient learning medium may differ with changes in context. For example, I may prefer to "watch" as I learn, especially when I have a quick specific business need that is best solved with a 3-minute video, but when driving to work I may prefer to listen to an audiobook. The learner's present goal is also important and is addressed with "watch," "read," "listen." Whereas some video content is built to follow microlearning principles of brief, engaging, targeted content that meets a pressing business need, audiobooks or eBooks generally target macrolearning concepts that facilitate a deeper dive into a topic. It is especially critical for learning content geared toward technology professionals to facilitate microlearning and their associated quick wins, as well as the macrolearning needed to broaden one's capabilities.

Skillsoft recently added a fourth learning pillar called "practice". "Practice" cues the learner to practice skills in the workplace that they learned via "watch," "read," "listen." This is critical for developing behavioral and people skills (e.g., leadership) and is especially important for technologists as so much of what they do is hands-on and behavioral. "Practice" in the Technology and Developer Content portfolio includes CodeX, Skillsoft's hands-on practice lab for both coding and infrastructure scenarios, live and virtual bootcamps, as well as integrated mentoring and support.

Although engaging content that comes in multiple media and directly trains behavior is important to continuous learning and adaptability, this content must be organized efficiently, be easily accessible, and minimally invasive on the day-to-day work flow. Pecipio's ELSA (Embedded Learning Synchronized Assistant) uniquely addresses these needs as well or better than most competitor's platforms as no other provider offers such a capability. ELSA provides just-in-time, searchable and suggested content, all seamlessly integrated into the employee's flow of work. This reduces the cognitive barriers to entry (e.g., attention and working memory), and leads to an approach motivational state (Maddox & Markman, 2010). No need to shift one's attention and working memory from the task at hand to open a new software tool for learning. Rather, the learner types a few keywords into a search bar and relevant and engaging content is immediately delivered to the learner within the flow of work.

The Learning Science of Skillsoft's Technology and Developer Content Delivery

As summarized in the previous section, Skillsoft's tech-focused content is engaging, comes in multiple media, and is organized effectively to be utilized within the flow of work. Here we ask whether Skillsoft's learning content for technology professionals is delivered in such a way as to effectively engage the task appropriate learning and memory systems in the brain.

An extensive learning science literature supports the existence of at least three distinct learning systems in the brain, that each mediate the learning of different types of skills (Ashby & Maddox, 2011; Maddox & Ashby, 2004). The cognitive skills learning system in the brain recruits the prefrontal cortex, hippocampus, and medial temporal lobes, relies on working memory and attention, and mediates hard skills learning. The behavioral skills learning system in the brain recruits the basal ganglia and mediates behavioral and people skills learning. This system does not rely on working memory and attention and instead relies on interactivity in which behaviors are rewarded or punished in real time. Rewarded behaviors lead to dopamine release in the basal ganglia and an increased likelihood that behavior will be elicited again in the same context. Punished behaviors do not lead to dopamine release in the basal ganglia and lead to a decreased likelihood that behavior will be elicited again in the same context. The emotional learning system in the brain recruits the amygdala and other limbic structures, and mediates processing in the cognitive and behavioral skills learning (Kahneman, 2011). Emotional learning is at the heart of situational awareness learning.

Skillsoft's Technology and Developer Content portfolio is delivered within the Percipio platform. The Percipio platform is highly effective at engaging the cognitive skills learning system in the brain, and thus at training hard skills. The rich content, broad set of content media, 24/7 availability, and knowledge checks optimally recruits the cognitive skills learning system and facilitates long-term memory storage in the hippocampus. The recent

introduction of "practice" as the fourth pillar to complement "watch," "read," and "listen" addresses the critical need for a tool that engages the behavioral skills learning system. "Practice" in the Technology and Developer portfolio might include practice loading and using real equipment and software, virtual and live bootcamps for skills development, as well as integrated mentoring.

As noted earlier in this Market Milestone and in a previously published Amalgam Insights report, Skillsoft's commitment to storytelling and scenario-based learning in its Leadership Development and Business Management Skills Training content facilitates people skills training by engaging the emotional skills learning system in the brain. The people skills necessary to maneuver the digital workplace are extremely challenging, and courses on digital soft skills competencies and virtual work help develop these important competencies in concert with the more technical focused training found in Skillsoft's Technology and Developer Portfolio. Digital innovation requires cross-functional collaboration, but there are barriers to effective cross-functional collaboration such as territorial behavior and poor negotiation skills that are exacerbated in the digital workplace. Virtual collaboration is also critical and requires unique behaviors and practices in order to be effective. When possible, concepts are trained within a rich context that draws learners in and allows them to "walk a mile" in one or more of the character's shoes (Maddox & Markman, 2010). This engages the emotional learning system in a way that enhances people skills learning and primes the system for behavior change. Finally, scenario-based learning content simultaneously builds situational awareness around the relevant hard, behavioral or people skill of interest, thus making the case for organizations to also consider soft-skills training for their technical workforce.

One final aspect of Skillsoft's Technology and Developer Content Portfolio that is worth mentioning is the new "Aspire" offering that serves as a fifth pillar in Skillsoft's foundation. The idea is to help learners realize their aspirations and desires by building an "Aspirational Persona" and developing a digital learning journey. For example, suppose you are a traditional data analyst who primarily works with legacy data bases and has a solid understanding of Excel, but would ultimately like to become a data scientist. By leveraging "Aspire" you could build a pipeline of training content to teach you data wrangling skills, such as data normalization and cleaning and the fundamentals of Python. From there you could learn skills needed in Data OPS, such as governance, security and integration, all while continuing to build your programming skills and passing certification tests along the way. Finally, you would complete your path toward data science expertise by learning about recommendation engines, APIs and the data science essentials. Many modern employees have long term aspirations to further themselves and offerings like Skillsoft's "Aspire" allow them to realize these dreams and enjoy career advancement within their current organization.

Overall Evaluation

My overall evaluation of Skillsoft's Technology and Developer Content portfolio is that it is an excellent offering that Learning and Development Directors, Managers and others such as CIOs and IT Managers and IT leaders within the organization should seriously consider when addressing the clear need for continuous adaptability in the workplace. The portfolio meets the two huge challenges associated with continuous adaptability. First, it trains hard, behavioral, people and situational awareness skills with learning tools that effectively engage the distinct learning systems in the brain that mediate each type of skill learning. The cutting-edge instructional design, emphasis on scenario-based storytelling in Skillsoft's leadership and business skills training, and the four pillars of "watch", "read", "listen" and "practice" combine to successfully train hard, behavioral, people and situational awareness skills

using different tools, but all residing within the Percipio platform. Second, it achieves this high level of continuous learning and adaptability within Percipio and with the assistance of ELSA that provides just-in-time, searchable and suggested content, all seamlessly integrated into the employee's flow of work and thus reducing the cognitive barriers to entry. Learning and Development Directors and Managers who want to address the need for continuous adaptability that covers all of the bases (hard skills, behavioral skills people skills, and situational awareness) and effectively recruits all of the relevant learning systems in the brain should strongly consider Skillsoft's Technology and Developer Content portfolio. Combining this portfolio with others in the Skillsoft library (e.g., the Skillsoft Leadership Development Program or Business and Management Skills Training) provides complete, end-to-end corporate L&D offering. The team at Skillsoft clearly put significant time and effort into constructing this portfolio, and it has paid off.

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Todd Maddox, Ph.D.
Learning Scientist and Research Fellow
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About Us

TODD MADDOX
LEARNING SCIENTIST/ RESEARCH FELLOW

ABOUT AMALGAM INSIGHTS

Todd is a Learning Scientist/Research Fellow at Amalgam Insights. He focuses on the Learning & Development sector and the challenge of leveraging learning science—the marriage of psychology and brain science—to provide customers with optimized learning and development solutions.

Prior to Amalgam Insights, Todd:

- Established himself as a leader in the field of human learning, memory, and performance in a 25-year career as an academic and researcher.

- Was awarded over $10 million in federal research funds for his own human learning and performance laboratory.

- Published over 200 peer-reviewed research reports and was cited over 10,000 times by fellow researchers.

Is a leading research and advisory firm focused on the strategy, collaboration, and scientific approach needed to optimize Technology Consumption.

Our focus on the management, utilization, and adoption of technology bridges key strategic gaps in maximizing the value of enterprise technology.

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- DevOps and Security
- Enterprise Collaboration
- The Science of Learning and Development

Phone: +1 415 754-9686
Website: www.amalgaminsights.com
Twitter: @AmalgamInsights