Futureproofed!

How science-based training keeps your organisation from becoming history

STELLAR LABS
FUTURE LEARNING TODAY

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Foreword.

Every day our world creates more than 2.5 quintillion bytes of data. That data has no value without someone to interpret it or use it for innovation. New jobs have emerged over the past years as the data & digital economy surges. Many more will follow.

85% of jobs that today's students will do in 2030 haven't been invented yet. The future tells us 9 out of 10 jobs will require digital skills. However, 44% of EU's citizens still do not have even basic digital skills. It is clear why ''tackling the skills gap'' is the one phrase on everyone's lips. But how?

> "Tackling the skills gap.

A KornFerry study shows that companies in the United States spent roughly $87 billion on training in 2018. On average, employees each received 46.7 hours of training last year. And yet the question remains: **what are people learning and how?** And does this huge investment lead to improved business capability and performance through the transfer of the required skills & capabilities to the workplace?

Despite the importance leaders place on establishing a learning culture for business success (a Google search on the topic returns 2.18 billion results) their enthusiasms don't appear to be catching on. A recent survey of 1.000 employees receiving professional training, found 75% of them believe their organization doesn't have an **effective learning culture.** Moreover, 23% of employees described learning and development opportunities as a "tick the box/afterthought" at their organization.

Digital transformation, a shortage of properly skilled talent, globalization, and other factors have elevated learning agility **— the ability to acquire new skills and apply experiences to new situations —** to the top of the list of the traits leaders look for in talent. The belief is that learning-agile talent will foster a culture of values and practices to increase shared knowledge, build skills and achieve business goals.

However trying to attract people with this highly valued skills set, will not do the trick, simply because it's a complex set, not easy to develop without support and therefore not many people master it fully. But we shouldn't blame our employees but instead as leaders we must search our own conscience and accept our responsibility. We have to admit that L&D departments aligned with business strategy that embrace an evidence based, effective learning approach with measurable ROI, are still very rare birds within the industry.

Looking at the demographics and the dramatically increasing global shortage of tech talent, developing an **effective learning approach** will become one of the most important **enablers to future-proof our companies** and in our opinion, needs to be valued as much as technology. Organizations that do not regard L&D as strategic and don't have 'effective learning' at the top of their agenda today, will undoubtedly face a difficult future.

With this white paper, we aim to **inspire** and make everyone aware of the **possibilities of science based learning.** It is also an open invitation to join forces within the L&D community and to put 'effective learning' on top of the agenda.

Let's not act as followers in this evolution, but as true leaders paving the way forward.

Wishing you much joy and inspiration in reading this white paper,

Stella Collins
Chief Learning Officer

Raf Seymus
Chief Executive Officer

Executive Summary.

Service industry skills had already lost their charm by the time the COVID-19 pandemic hit. The virus just caused the hunger for the more desirable STEM skills to intensify.

Businesses across the spectrum, from local shops to start-ups to multinationals, all need to make sure they have a robust digital backbone not just to compete, but to exist. Yet, without a massive education overhaul to support new ways of working, market-ready talent will stay in short supply.

Since scarcity breeds fierce competition, recruiting a tech-capable workforce takes more effort and cost, than sourcing non-tech workers. Looking abroad has been a common tactic, but is it sustainable? The development of Deep Tech, such as artificial intelligence, machine learning and cyber security, continues to increase demand for a skilled workforce.

In order to continue to innovate and advance, CEOs and human resource departments want to acquire specialist talent on a broad scale—but how?

Skills of the future are not always tech related. People skills (like creativity) or capabilities (like learning to learn) must also be acquired and honed. One answer, **upskilling,** proves promising in bridging the gap between available positions and available talent in both tech and non-tech fields. But even with the best approach, some methods are more attractive than others, such as those rooted in science.

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HR's daunting task.

So, if 40% of today's companies already deal with a skills gap and 45% of company leaders expect to encounter a skills gap within the next five years[1], where should employers look for top talent?

In the past, highly trained computer professionals were imported from places like India, Ukraine, Russia, Bulgaria, and Turkey. As the digital transformation has become a global phenomenon, local workers have become less willing to leave the comforts of home. Local salaries offer enough compensation so that the bureaucracy, need for a foreign language, and family disruption become less attractive.

At the same time, the political climate is not friendly towards large-scale, high-skilled migrant schemes. Visa procedures (such as the US H1B or the UK's Tier 2) deter migration by design. **Expensive and time-consuming, immigration applications burden the HR professional's regular workload.** Yet, it remains problematic when vacancies for mission critical jobs go unfilled because of **lack of available talent locally.**

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Take the security hacks at Cathay Pacific Airlines, CapitalOne, or the University of Maastricht. At Cathay Pacific, the passport numbers, email addresses and credit card info of 9.4 million people was illegally accessed in 2018. A data breach at CapitalOne exposed one million credit card applicants and the impact lasted fourteen years until 2019! At the end of 2019, University of Maastricht had to pay €200,000 to Russian hackers to release the ransomware which locked its computer system. It explains why 87% of UK CEOs[2] and 89% of their American counterparts[3] fear cyber-threats to their business. During COVID-19, Europol issued a warning to expect a spike in ransomware and phishing attacks.[4] Preventing and repairing a firewall collapse or security breach, however, takes specialised training rarely available in-house.

To hire and retain the profiles specialised in averting such security calamities can overwhelm human resources. In a 2017 **study of 250 cybersecurity professionals by the Californian firm MarketCube,** nearly half of the professionals surveyed hear from recruiters on a weekly basis whether they are actively looking for a job or not.[5] **High demand talent** not only expects an **attractive offer,** they look for an **exceptional environment** to encourage them to stay.

In that same cybersecurity study, 88% of respondents ranked **"investment in training and certification"** very important while 75% believe the same about "cybersecurity training." In fact, in both cases training was rated higher over "clear job description" (63%) and "investing in emerging technologies" (50%).

HR professionals can conclude that upskilling, or offering meaningful training programmes to their current employees, operates as an incentive to both join and stay.

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Better culture for better results.

Employees in more human-facing, less technical roles, prioritise development, too. When given the choice between offers, training is a key differentiator in determining whether prospective employees will ultimately sign and stay. Rightfully so: skills become obsolete every three to five years.[6,7] Not only does mastering new subjects prevent irrelevance, it promotes engagement and counters job malaise.[8]

In the 2019 Future of Work and Employee Learning report from Sitel Group, a global customer experience management company, 79% of employees regard employer training programmes as "important."[9] Workers are not the lone beneficiaries — customers see gains, too. The report also states,

> "Ninety-three percent of U.S. employees believe regular, on-the-job training helps deliver better customer experience, customer service and care to clients[10]."

CEOs see the value of making sure their workers continually improve capacities because it supports the culture. Eighty-five percent of CEOs believe their upskilling programme creates stronger corporate culture and employee engagement.[11]

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AI versus automatons.

A 2018 article in MIT Technology Review cites a landmark Oxford University study[12] in which researchers were able to analyse the jobs most likely to be replaced by computerisation. Jobs where more social and cognitive skill were needed were less likely to be duplicated by machines.[13]

The advent of Deep Tech does mean some jobs will be eliminated. The till worker at the grocers is steadily being replaced by self-checkout stands. Airline gate agents are displaced by kiosks issuing boarding passes. Once the domain of factory workers, logistics centres house robots which dart and dash to pull and package merchandise for shipment. Typically, cashiers and factory workers are considered low skill because their jobs are mostly physical in nature. Technology has always replaced humans as the lack of modern-day telephone switchboard or toll booth operators can attest.

One difference now is that even the jobs that are comparatively high-skilled, (require training and are cognitive in nature) can be replaced, or at least supplemented, by artificial intelligence and machine learning. Hollywood script readers, members of the legal profession, translators, compensation and benefit managers, for example, are all seeing automation encroach on their field. Being prepared today beats being unemployed tomorrow.

Still, the Oxford study shows that soft skills like "originality, negotiation, persuasion, social perceptiveness, and assisting and caring for others all of which are highly valued have a low risk of computerisation."[14]

> "No matter how technologically advanced an organisation, soft skills will be needed to maintain competitive advantage.

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Chatbots are a good barometer of current technological limitations. Simple requests can be automated, but any complex query currently gets re-routed to a human.

Another study by a research consortium headed by MIT found that simply moving one group of skilled professionals to another role will not bridge a skill gap because, a doctor, in their example, cannot learn to be a civil engineer without investing in training of an equal magnitude. Similarly, positions that are low-skill and "physical" in nature offer fewer opportunities to acquire "socio-cognitive" skills, the ones labourers need to advance.[15]

Failing to expose workers to more challenging, thinking-based skills can leave companies vulnerable to layoffs. Companies who are unable to transfer "socio-cognitive" skills en masse see large redundancies like layoffs in the auto manufacturing and telecoms industries have shown.[16]

"Workforce reductions negatively impact corporate reputation and the bottom line. A more flexible approach, like implementing training programmes that incorporate a wider range of skills, such as negotiation or design thinking, can be part of a futureproof strategy."[17]

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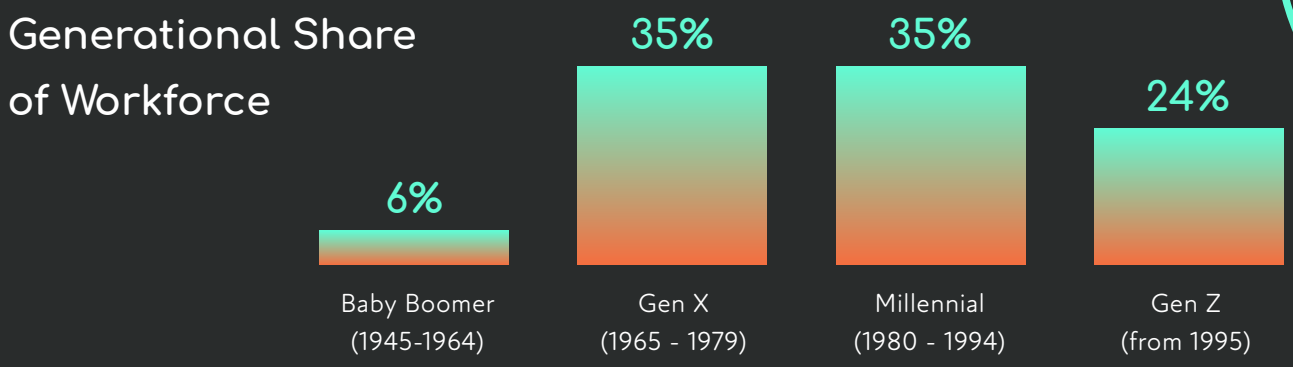
Where will the workers come from?

Any hiring strategy must be in line with today's demographics where Millennials and Generation Z form the largest block of workers for the coming decades.



According to the 2014 Deloitte Millennial Survey, Millennials tend to align with organisations who innovate and view financial performance as just one indicator of achievement. Failure to set up Corporate Social Responsibility programmes or invest in people fosters neither trust nor loyalty among this group.

Members of Generation Z, the youngest in the workforce, already show preferences that differ from Millennials. Whilst Millennials want their environment to be challenging but fun, members of Generation Z seek work that is self-directed but varied (project-based versus team-based). A whopping 84% of Generation Z expect on-the-job training.[18]

The Center for Intergenerational Kinetics, an intergenerational research and consulting firm from Austin, Texas, states that Generation Z, "wants both constructive skills-based feedback as well as personal check-ins." Any sustainable recruitment and retention strategy must be focused on skills and development with personal interaction in order to appeal to the coming generations. Without a view towards personal growth opportunities, both Millennials and Generation Z will switch jobs faster.

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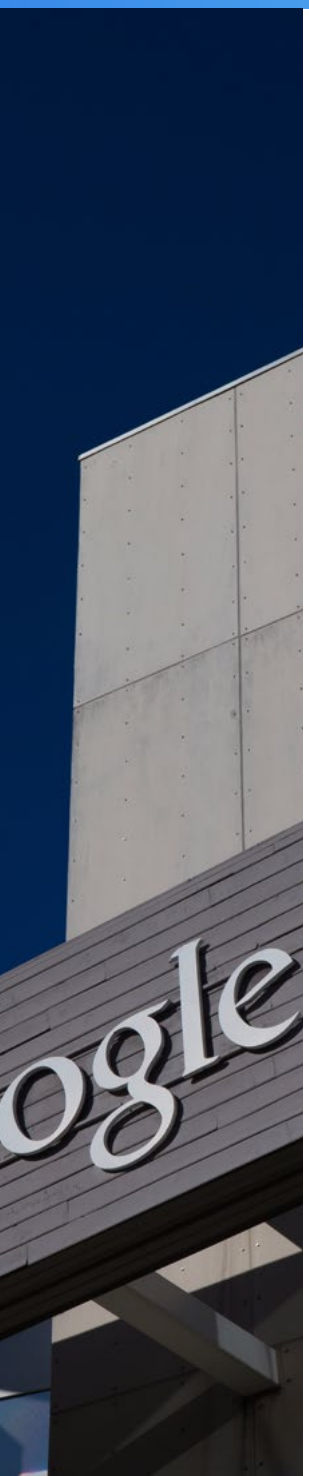
Organisations must be the new educators.

Since the 1800s, the current higher education system provides learners with valuable theoretical frameworks, knowledge management and ideally, critical thinking skills.



Universities, for the most part, are not designed for students to pick up hands-on knowledge or specialised, practical applications. This renders colleges out-of-sync with today's labour market (in the U.S., for example, cybersecurity is not part of the computer science curriculum at any of the top ten computer science programs).[19] Skill acquisition falls to organisations.

For the labour market, there is a difference between "education" and "skills acquisition." Universities can give the former; organisations must provide the latter. McDonald's was one of the first known companies to roll-out a corporate training programme in 1961. In a six-week course, employees could take training courses in leadership, management and company culture. Upon completion, they were awarded a "Bachelors in Hamburgerology."

The McDonald's "university" model has spawned an industry in its own right. Companies, like Google, Apple, General Electric, Shell, Mars, Amazon and IKEA, formalised corporate learning and development departments and offer their own tailored curriculums.

A Gartner survey of 400 HR professionals across 35 countries revealed that for 2020, "66% of HR leaders are prioritising learning and development for employees."[20] Without investing in continuous learning, college graduation (typically at 21 years of age) would mark the last time people encounter structured learning—as if knowledge acquired during four years at university is adequate to meet the changes that will span the subsequent four and half decades of employment.

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What does current L&D look like?

Most traditional universities still use old-fashioned teaching methods such as speaking at the front of the class (with the occasional PowerPoint presentation). Students listen quietly and take notes. Though questions can be asked and answered, the professorial monologues are not conducive to active learning. **Knowledge stays abstract with this centuries-old method.**

The majority of corporate learning and development programs replicated the familiar traditional classroom model using Instructor-led Training. In this setting, trainers became the equivalent of modern-day hypnotists.[21] Programmes were seen to be inefficient and costly; the poor results stemmed from the lack of knowledge retention (especially with technical subjects). **Skill mastery is difficult when it depends on rote memory alone.**

8

With the arrival of laptops and personal computers, institutions of higher education sought to stay relevant and democratize knowledge. Distance learning was developed to bridge the urban-rural gap between students and knowledge. In 2011, Stanford University, with the Ivy League universities soon following (all with an annual tuition fee of $30K+), started putting their prized professor lectures on iTunes for free. The move ultimately inspired organisations to revolutionise learning by embracing digital methods. Digital delivery had obvious advantages: classes could be taken anywhere and anytime by anyone with computer access.

More people could be trained at once. **Virtual Instructor-led Training became the new format.** Only the Virtual version proved to be **as dull as the original** Instructor-led Trainings variety: more theory than application.

An entire industry of Massive Open Online Courses (MOOC) soon followed. A more extensive form of virtual learning evolved into e-learning; learning programmes consisting of a mix of written text, audio, video, interactive assessments and/or discussion forums were delivered online. Despite initial enthusiasm, even Millennials who grew up behind computers, were unlikely to finish a course.

According to a study of one million MOOC users, the University of Pennsylvania Graduate School of Education found that only half of enrollees viewed a single lecture. Worse, participation dropped significantly in the first weeks with only 4% of those who first registered bothering to finish.[22]

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Two challenges. One answer.

On one hand, organisations must locate capable profiles within a shrinking talent pool. On the other, they must continually offer training and development with practical and engaging methods.

> To upskill the large numbers of workers and transfer knowledge and skills, corporate L&D should consider incorporating a new dimension: **science-based learning.**

Digital tools alone do not create a knowledge transfer superhighway since technology and automation cannot replace essential human functions like empathy or originality to adequately engage learners. Absorption and mastery are optimised when a "human" training integrates with digital tools. Tools offer ease and efficiency, but 'brain-friendly' learning best enables cognitive-based skills.

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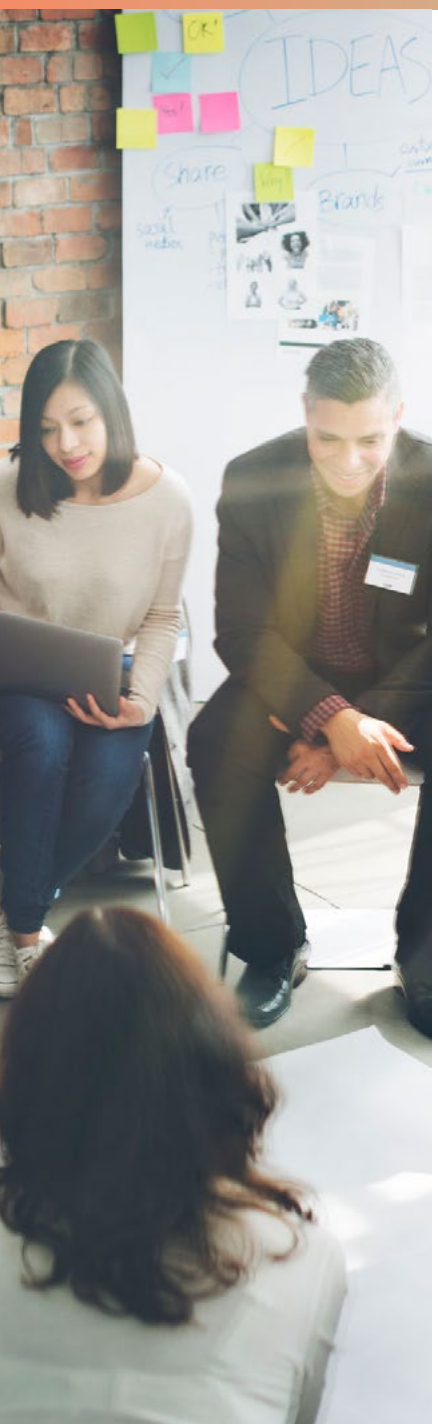
Upskilling with a science-based approach.

Most learning programs measure success by checking attendance: did an employee take the course or follow training?



Instead, there needs to be a deeper analysis in terms of material retention and application. A learning programme must combine the best possible methods to allow employees not only to absorb concepts but practice skills and transfer them into the workplace. An accessible modular format can transform learning into habit.

Learning has traditionally centered on repetition and memory. Repeating "Creativity is useful," for example, will yield superficial understanding. Exercises that engage an array of different brain areas, and appropriately include physical exercises, mindmapping or music, bring passive information to life. Giving "creativity" richer meaning, makes the concept more concrete, retrievable and actionable.[23]

Incorporating science-based learning at the organisational-level requires a focus on business goals but also leverages a learner-centric approach. For one, there is a focus on reducing passivity and anxiety, the latter often overlooked as a roadblock to learning. Science-based learning purposely builds in more support to alleviate stress. It also eschews the top-down, one-way teacher-to-student flow that is heavy on theory.

Multifaceted methods blend a logical process with a creative approach. Learning is embedded with exploration, practice and constructive feedback to increase engagement.

What does science-based learning look like? A 'brain-friendly' approach might employ the following format over a three-month period: early assessment, digital preparation, hands-on exercises, learning with peers and a mentor, practical lab time, quizzes, solving challenges in groups — all which culminate in work-based activities. And finally accurate measurement of performance. For instance, cybersecurity training might include actual "white hat" hacking (where hacking is sanctioned) using specific examples from the organisation.

No matter the topic, whether designed to teach technical or soft skills, a strong skills development programme can be broken down to include the following features:

Comprehensive

A single component, tool, or measure will not succeed with every employee every time, rather a successful training programme curates a holistic blend of targeted and effective methods. Training with a focus on mastery and practical applications is delivered in ways that adapt to environmental, social and cultural factors (individual vs. group, language level, etc). In other words, a good programme is tailored to the needs of the organisation and the learners.

A programme does need three specific elements:

1. **Emotional engagement**
comes through story telling and personalisation to make the material resonate

2. **Spaced repetition**
to make sure the material can be recalled and applied

3. **Mentoring**
with targeted questions and individualised answers so learners have a human resource to deepen their understanding. Work based activities make subjects meaningful and applicable in context.

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Scientific

Using neuroscience as a foundation strengthens the training environment. Begin by designing a systematic and strategic process that motivates the audience even before they start learning. Programmes need to look inviting. Next, the learner must be immersed in a psychologically and physically appropriate environment. Material must hold the learners' **attention**: it is relevant and with real world context. Content can be shared through stories and vignettes, or by nudging the learner to guess or explore rather than passively hear what is being presented.[24] Information is better absorbed by integrating movement; adding **physical activity** aids **memory retention. Learners** who **build on prior knowledge find it easier to retain ideas and concepts.** Opportunities to exercise and practice give learners **confidence** so they believe they can succeed. Knowledge and skills need to be repeated regularly to embed long term **learning and re-learning.**

Social connection

Since the time our ancestors lived in caves, human beings have learned through others: demonstrating, tutoring and sharing in-person. Needing **face-to-face** time with experts, mentors and peers is hard-wired and so critical to learner comprehension and motivation. Pure online learning can become wholly disparate from the business environment and objectives, not to mention isolating. Instead, online labs can be interspersed with **work-based actions** and **contact with others.** By keeping the content **modular and relevant** and offering multiple formats (audio, video, face-to-face, online tools, whiteboards, breakouts etc.) learners feel both engaged and connected. Online learning is social when it is well-designed.

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Upskilling effectively

One obvious concern for organisations is ROI: will employees use the training offered and will it be worth it? Will employees remain in their job or, as a newly skilled workers, look for positions elsewhere? **Training as a co-investment benefits both parties.** Managers can give tools and support while the employee can offer time and energy. Further, a self-paced, personalised programme that is specific to both company and employee needs allows the investment to be flexible, yet targeted. When American telecom AT&T needed to hire large numbers of cyber-security experts, it looked among its own workforce at specific IT profiles and upgraded a select group rather than blanketing an entire division with irrelevant training.

> “Training as a co-investment benefits both parties.

Another way to lower costs over time while increasing the efficacy is through using artificial intelligence. User data collected from training programmes can be used to better predict and improve personalised learner journeys. Learners will gain intelligent and responsive content that feels more intuitive and engaging. Extracting insight though analytics to iterate and refine the material will lead to the most effective programme possible in terms of time and cost.

Much attention has been placed on learning soft-skills, like creativity, resilience, leadership (which incidentally can be taught in brain-friendly ways, too). But no matter how well-designed the programme, upskilling still depends on motivation. Employees have to show dedication and persistence to master knowledge and skills and maintain learning. Personal ‘grit’ is a business-critical asset that needs nurture and attention.[25]

Upskilling simultaneously develops employees’ skills and talents and hones their persistence during the process.

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Takeaways.

Having technological skills or working for a company that has secured major investments does not offer immunity to layoffs. In 2019, Ford Motor Company, Oracle, 23andMe, and Disney collectively issued termination notices to thousands of workers.

Following the COVID-19 pandemic, countless stable and healthy organisations found themselves suddenly having to improve their digital operations or shutter. Founder of Tsundoku Ventures, Patrick Cooman, wrote:

"Big shifts in buying/spending behavior will lead to companies realizing they need to invest in real-time market analytics and models to predict spending scenarios and allow them to quickly adapt their go-to-market strategy, services or products according to the new reality as it happens. There will be a big increase in spending for technology that can help companies measure and predict the market."

He ends that statement by adding, "the talent gap will become a talent 'Grand Canyon,' unless efforts are started immediately to train and re-skill people."[26]

Of course, challenge creates opportunity. In the new online business magazine IDG InsiderPro, Sharon Goldman says, "...some of the largest sectors ... may even see increased demand in some areas, including healthcare, financial services, government and data-driven technologies."[27] Coronavirus or not, employers and employees have no choice but to adapt to changing demands and technology.

11

The search for talent has HR teams in overdrive trying to locate competent workers to manage the technological changes.

> The largest growing segments of the workforce, Millennials and Generation Z, not only expect training and development, they want personalisation, feedback and less rigid constraints.

When the local talent pool is exhausted, the search for workers leads HR abroad on more expensive, and not necessarily fruitful, expeditions.

Upskilling is not only essential to dealing with the impending workforce talent shortage, it mitigates exposure to risk while ensuring better performance. Financial incentives are obvious; being able to innovate and stay current means continued market share. Top performing companies like Amazon (who are investing $700 million in training), Randstad, Facebook and Siemens see the value of advanced but tailored learning and development programmes.[28]

With upskilling, not all approaches are equal. In the first place, evidence based training is more engaging which leads to higher completion rates. Secondly, it is modular and flexible, so employees can learn in chunks. Designed with the brain in mind, science-based learning taps into our natural learning process rather than working against it. Companies with an eye towards growth invest in a high-impact learning culture. This is not to acquire single skills, but a process that strengthens better work habits overall. The result? Increased employee productivity and retention with a direct route to optimal performance.

Better to futureproof your business than go the way of dusty history books forgotten in an old-fashioned classroom.[17]

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