



The Future of Lifelong Learning

Designing for a Learning-Integrated Life



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Special thanks to **André Côté**, Principal with Côté & Company Strategies, for his contributions to early drafting and revisions of this paper.

About D2L

D2L develops software that makes the learning experience better. Our cloud-based platform is easy to use, flexible, and smart. With Brightspace, schools and companies can personalize the learning experience to deliver real results. Brightspace is used by learners in higher education, K-12, and the corporate sector, including the Fortune 1000.

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Executive Summary

The "future" of work and learning is not looming in the distance, but a reality of the here and now.

The [D2L whitepaper series](#) on the future of work and learning describe the Fourth Industrial Revolution and the future of skills as the implications of disruptive technologies and rapid change in education, industry, and society are becoming clearer for our jobs and the workforce at large. These whitepapers, and other recent research, reveal a vast shift in the skills required of individuals in the workforce, and a growing need for continual skills development throughout careers to keep up. They also highlight that the systems of learning today are not adequately addressing this changing skills landscape.

Faced with these challenges, many are suggesting there is a remedy: lifelong learning. In the broadest sense, it has been described as the learner's ongoing, voluntary, and self-motivated pursuit of knowledge and skills development through life; whether for personal or professional reasons. Beginning with education at the primary and secondary level, lifelong learning is putting greater focus on the opportunities for education and training through adulthood (pre-, during, and even post-employment) that lead to specific outcomes of employability, career fulfillment, and personal growth. Lifelong learning opportunities include both formally credentialed and informal, unstructured forms of learning.

At the same time, enabling continuous learning opportunities is increasingly becoming a necessary element in community economic development. Communities, regions, and countries that make strategic investments in systems of lifelong learning

will be best positioned in a globally competitive environment. At its core, a system of lifelong learning creates globally aware, locally active learners with experiences that will allow them to be continuous participants in the workforce and in their communities.

In practical terms though, lifelong learning is not clearly understood as a concept, nor is it obvious what an effective system of lifelong learning would actually look like at a national or international scale. For instance, what forms does lifelong learning take? Where do systems currently exist and for what purpose? And how can our systems of education, training, employment, and workforce development be adapted to offer more opportunities for lifelong learning calibrated to the skills demands of employers and the needs of workers?

This whitepaper, the third of the [D2L whitepaper series](#) on the future of work and learning, will focus on the critical questions about lifelong learning to inform and spark debate around one of the central issues of the future of work and learning. The first half of the paper will define and map the current landscape for lifelong learning and briefly recap the growing body of evidence and thought leadership around why it is necessary. The second half will offer an ambitious vision for a future system of lifelong learning as a point of departure, with practical conclusions and recommendations for policymakers, industry leaders, educators, and other stakeholders.





The Growing Call for Lifelong Learning

The future of work and learning and its impact on individuals, employers, and countries is one of the major issues of our time. The Third Industrial Revolution saw the emergence of human-to-machine communications through personal computing and digital technologies that radically changed how we work, interact, and live. In the Fourth Industrial Revolution, it is the emergence of artificial intelligence, robotics, nanotechnology, and genetics research, amongst others, that is accelerating the transformation of industries, labour markets, and lifestyles.ⁱ [The first D2L whitepaper](#) on the future of work and learning describes how these forces and the interactions between them will “permeate all aspects of our society.”ⁱⁱⁱ While we cannot forecast the future with any certainty, it is clear that there is an increasing importance on the education and workforce development sectors to prepare working individuals for the jobs of both today and tomorrow.

In more specific terms, changes in the landscape of skills and work are reflected in some notable trends:

1. Working individuals are changing jobs or vocations more frequently in their careers, by choice and out of necessity, due to technological advancement.
2. Employability is determined less on general credential attainment and more on the ability to demonstrate the necessary skills for the job.

While academic qualifications remain an important consideration when assessing job candidates, a growing list of global firms no longer require a postsecondary degree as a prerequisite to a job. As of 2018, the list had grown to include Google, Apple, EY, Whole Foods, Hilton, and Bank of America, and cut across sectors ranging from technology and finance to consumer retail and publishing. IBM’s Vice President of Talent reported that about 15 percent of the company’s hires in 2017 did not have a four-year college degree, with hiring managers prioritizing hands-on experience through coding boot camps and vocational training.ⁱⁱⁱ



15% of IBM new hires did not have a four-year college degree in 2017

Along with new hiring trends is an explosion in the sheer number of distinct skills demanded of the workforce along with the rapid advent of entirely new occupational types, such as digital marketing specialists and data architects. *Hard skills*, those professional or technical skills that are often job-specific, have typically been able to sustain an individual worker for an entire career. However, these skills are now becoming obsolete more rapidly, often within just a few years.^{iv} The decrease in value of hard skills over time requires individuals in the labour market to upgrade their skills or develop new ones throughout their careers to stay employable.

This is not to say hard skills are no longer valued in the workplace, but industry leaders and employers are increasingly valuing the *soft skills* and competencies that contribute to adaptability, interaction, and resiliency in any work environment. D2L describes these as “**durable skills**”: cognitive and non-cognitive skills that range from essential skills, such as literacy and numeracy, to higher order skills, such as critical thinking, creativity, emotional intelligence, and collaboration. These durable skills are signals to employers that an individual can adapt and learn as business needs change. For employees, durable skills are readily transferable across jobs and careers with greater lifelong relevance. For these reasons, researchers describe durable skills as the core skill set for the workforce of the future.^v

The shifting landscape of skills and the accompanying need for continual learning represents a paradigm shift for our global systems of education and workforce development. No longer will today’s typical model of “upfront” education, where learning is primarily done prior to entry into the

workforce with limited support during periods of unemployment, be enough to sustain an individual throughout their career. Instead, individuals in the workforce will need access to a learning system that will support them at different life stages, be easily accessed throughout their career, and be much more flexible—with entry and exit points based around skills rather than generalized credentials based on seat time. The learning system will require new pedagogical models, such as shorter-term or modular programs, stackable credentials or badges, modified and adaptable curriculum, and greater use of self-directed and online learning. It will demand a more active employer role through internal training and development, and closer connections with postsecondary, labour, and government partners. More importantly, the individual working learner must feel empowered with a learning mindset to seek out continual learning opportunities and find agency over their continued development, learning pathways, and work options.

For many global institutions, governments, researchers, and commentators, a system with these characteristics is described in one well-worn term: **lifelong learning**.

The Organization for Economic Cooperation and Development (OECD) describes a confluence of global megatrends confronting their member countries that are “combining to make lifelong learning imperative.”^{vi} McKinsey & Company has outlined the need for a shifting mindset for companies, with future success hinging on instilling a culture of lifelong learning throughout the organization.^{vii} A conclusion of the World Economic Forum’s Future of Jobs 2018 report is that “we will all need to become lifelong learners.”^{viii} These claims are echoed by a range of other organizations and commentators.^{ix} Some companies are recognizing that investments in their people is important to not just their bottom line, but also as part of their Corporate Social Responsibility (CSR) initiatives.^x

But what does lifelong learning actually mean? And what does it look like in practical terms?

The following sections of this paper will seek to (a) define it and map the current landscape; (b) paint a vision for continual learning; and (c) offer some conclusions and practical recommendations for realizing the vision.

SUMMARY

1. The first whitepaper in the D2L whitepaper series on the future of work and learning describes how the forces of the Fourth Industrial Revolution will impact education and workforce development.
2. The substantial changes in the landscape for skills and work will put a premium on “durable skills,” which are skills described as most readily transferable across jobs and careers.
3. As education, training, and workforce systems face a paradigm change, many global institutions, governments, and commentators are pointing to “lifelong learning” as a solution.



Defining the Learning-Integrated Life and Mapping the Current Landscape

While lifelong learning is a term often used and widely recognized as a solution to the future of work challenge, there has been little agreement on how it is defined, and inconsistent evidence on how much of it is currently happening, where, and by whom.

Lifelong learning has been defined as incorporating all learning activity “from the cradle to grave.”^{xii}

This includes:

- Credentialed education at the primary, secondary, and postsecondary levels;
- Structured adult education and training with or without a formal credential; and
- Unstructured learning and skills development accumulated through daily life and work.^{xiii}

For the learner, lifelong learning is ongoing and often voluntary and self-motivated — offering opportunities for upskilling, retraining, and professional development to stay relevant and progress at work, as well as life fulfillment and personal growth.

At D2L, we believe the future will demand a “**Learning-Integrated Life**” — where individuals are always in a learning mindset and intensive and episodic opportunities for learning are woven through the fabric of our lives; preparing us for successful careers and rich life experiences. A Learning-Integrated Life belies a strong economic imperative, as lifelong learning — when easily accessed and effectively delivered — has proven to increase earnings and help the unemployed return to work, while improving performance, productivity, and employee retention.^{xiii} It also reflects the intrinsic value of learning in our lives and to our wellbeing, as shown in studies that identify clear benefits to mental and physical health, self-confidence, life satisfaction, and civic participation.^{xiv} Lastly, we believe that inclusive access to learning must be a foundational principle upon which a system of lifelong learning is developed. Learning has the potential to be a great equalizer if it is inclusive; alternatively, it can also widen gaps if it is not.

At D2L, we believe the future will demand a “**Learning-Integrated Life**”—where individuals are always in a learning mindset, and intensive and episodic opportunities for learning are woven through the fabric of our lives; preparing us for successful careers and rich experiences.

For the purposes of this whitepaper, however, the analysis will focus on a certain subset of the lifelong learning continuum—adult learners. This subset encompasses all individuals in the workforce, including gig workers, those in part-time or contract employment, as well as those who are unemployed but intend to return to work, following any “upfront” learning at the primary, secondary, or postsecondary levels (see Figure 1).

Mapping the Lifelong Learning Landscape

With that definition and focus in mind, this section will address some key questions to better map the lifelong learning landscape.

What forms does lifelong learning take?

While efforts have been made to describe broad categories of lifelong learning (see callout box), there is no widely recognized typology of the forms lifelong learning can take.

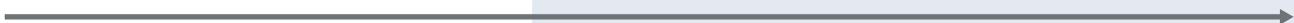
The following broad categories are adapted from the OECD’s Skills Strategy Framework:

- **Formal education and training towards a credential**—learning that leads to formal qualifications at primary, secondary, postsecondary, or tertiary level (including the trades and other formal, apprenticeable recognized credentials or certifications).
- **Structured, semi-formal education or training**—learning that may or may not lead to a formal qualification (though with increasing opportunities for micro-credentialing), such as on-the-job training, open courses, unassessed training, in-class courses or private lessons (e.g. coding bootcamp), seminars, or workshops.
- **Informal learning through work and life**—learning that is unstructured, unintentional, or both, resulting from daily activities related to work (e.g. learning to use Salesforce on the job), family, or leisure (e.g. coaching your kid’s soccer team).

Figure 1

The Lifelong Learning Continuum

Primary Secondary Postsecondary



“Upfront” education prior to employment, typically formalized learning leading to a credential

Focus of Whitepaper: Adult learners in the workforce (including those who are unemployed but intend to return to work)

Adult Education & Training (Formal or non-formal)

Informal, day-to-day learning

Voluntary & self-motivated (usually, structured, and may be credentialed)

Intentional, but not leading to a credential

There are, however, many types of learning generally available in many countries that are oriented to adult skills development and employability. Some of the most common forms include:

- **Higher education programs for adult learners**, offered through a university or college to returning learners on a full- or part-time basis, that lead to a formal degree or certificate. These programs typically imply a skill and knowledge set and aid in advancement within a current occupation or to transition to another (e.g. MBAs, graduate studies, continuing education, and vocational programs).
- **Employer-specific corporate training** is provided to employees and new hires either directly through human resources and training departments or, sometimes, a third-party trainer. The majority of training tends to focus on employee onboarding, job-specific and technical knowledge and skills, or compliance training (e.g. health and safety, accessibility, or anti-harassment).
- **Industry-wide training and credentialing** includes sector-specific training and certification provided or coordinated by a professional association or licensure board; typically leading towards a professional designation (e.g. for professional accountants, financial analysts, human resource specialists, or professional engineers).
- **Trade association and union-led training** ranges from quick learning courses for skills upgrading, compliance training, and professional development for non-trade professions (e.g. teachers and education staff, hospitality workers, and healthcare professionals), to more programmatic training, including on-the-job apprenticeships that lead to a technical certification or journeyperson status.
- **Public adult education and training programs** target unemployed or hard-to-employ individuals through public sector workforce development systems. These programs often focus more on basic skills development (e.g. literacy and numeracy), secondary school equivalency, language training, youth employment, and career-bridging or mid-career retraining.
- **Private career colleges** offer shorter, intensive, training programs paid by the learner to transition to specific occupations (e.g. truck driving or cosmetology).
- **Providers of online learning repositories**, including massive open online courses (MOOCs), cover a wide variety of academic disciplines taught by university faculty often in a self-paced model and other private entities that offer short, career-focused, video-based content for self-directed learning through paid subscriptions to the archive.
- **Other rapid upskilling programs** are newer models of learning that are typically paid for by the learner based on outcomes and focused on specific skill sets. For example, bootcamp-style programs for digital economy jobs (e.g. software development, UX design, and tech sales and marketing) offered by for-profit companies with income-based repayment after the learner reaches a pre-determined salary threshold.

Where is lifelong learning happening and who is participating?

The OECD has summarized the broad trends around lifelong learning for adults: “Across all countries and regardless of the type of learning considered, adult learners tend to be highly educated, highly skilled and young.”^{xv} However, statistics across OECD countries offer some revealing and alarming trends. Broadly, less than half of adults (40 percent) reported participating in one learning activity in the past twelve months. Far fewer low-skilled adults (20 percent) receive training than the medium- or highly-skilled (40 percent). Similarly, fewer people in jobs most at risk of automation (40 percent) receive training than those in jobs with a low risk (59 percent).^{xvi}

Only 20%

of low-skill adults reported receiving training — compared to 40% of medium- and highly-skilled adults

Only 40%

of people in jobs at high risk of automation reported receiving training

For working-age adults, participation in learning varies substantially across demographic groups. Surveys from European countries found that younger adults participate more in training than older age groups (17 percent of 25-34 year olds versus 5 percent for those aged 55-64), and the highly educated are four times more likely to participate than people with the lowest levels of educational qualification

(nearly 20 percent versus under 5 percent).^{xvii} Overall, participation rates in education and training are low across all groups of working-age adults, but are particularly low among those most in need of training to maintain and upgrade skills, i.e. individuals with a secondary-level education or less. In the European Union alone, over 70 million adults fit this category of having only a low level of education.^{xviii}

While these cross-country averages present a useful aggregate picture, conditions vary widely across countries. The United States, for instance, is a middling performer compared to its OECD counterparts, with poorer outcomes in youth and adult education, lower average skill levels, and greater inequity in skills development, but has a stronger culture of adult education. Germany, on the other hand, benefits from a stronger foundation in education and skills development among youth entering work, with higher foundational skill levels across the workforce.^{xix} Among northern European countries, the share of adult learners participating in skills development approaches 30 percent, compared with under 3 percent in some parts of Eastern Europe, with these trends consistent across population groups.^{xx}

Variations aside, skills data generally shows that strong education systems, from early years through postsecondary, contribute to high performing adult learning systems, signaling the importance of ensuring learning opportunities across the full lifelong learning continuum.

What factors and trends influence access to lifelong learning?

Access and availability of education and training opportunities are the basis of participation. Government investment to scale availability of learning is an important driver of higher participation rates — an increase in investment of

one percent of GDP is associated with a six percent increase in participation.^{xxi} Developing access that is low- or no-cost to participants is also an important consideration. Countries, such as those in northern Europe, with higher rates of public spending on adult learning, have substantially higher participation, less inequality in access, and better outcomes.^{xxii}

1% → **6%**

investment
of GDP

higher participation
in training

It is important to note that simply lowering financial barriers and creating greater access to low- or no-cost training does not automatically result in higher rates of participation among lower-skilled workers. For example, massive open online courses (MOOCs) are plentiful and many reduce the financial barrier by providing learning at low- to no-cost, but research has shown that they actually reinforce the disparities we have already established in this paper. MOOC learners are generally highly credentialed and skilled individuals, and also tend to be young, employed, and from developed countries.^{xxiii}

A greater driver of participation rates amongst all workers, especially those of lower skill, is the ability to show value in the learning where it is not explicit. That is, for those with lower skill or educational attainment and older individuals, motivation to participate may be increased when learning opportunities are explicitly linked to the value of outcomes, such as increased income, continued employment, and relevancy in a changing global economy.

For Example: Industry-Academic Partnership with Fedex and the University of Memphis Global

Faced with high turnover rates among frontline employees, the global delivery giant FedEx recognized skills development as a key factor in improving retention. Headquartered in Memphis, Tennessee with 13,000 local employees, the firm partnered with the University of Memphis Global division to launch the Learning inspired by FedEx (or LiFE) program. Leveraging the D2L Brightspace learning platform and enterprise training supports, the FedEx-UofM Global program was rapidly designed and launched as a custom degree initiative tailored to the needs and contexts of the employees. With over 3,000 employees enrolled, the company has seen reduced employee attrition and offered its people more opportunity for career progression, while UofM Global has developed a new, scalable model for supporting working adult students.^{xxiv}

What is the present and future demand for lifelong learning?

The demand for lifelong learning can be evaluated through different lenses, but in aggregate it appears to be strong and growing in both the short-term and the future. On a macroeconomic scale, up to 375 million workers across the global workforce — or **14 percent of all workers** — may need to change occupations and learn new skills by 2030. The share is much higher in advanced economies, with up to one-third of the workforce in the United States and Germany affected, and nearly half in Japan.^{xxv}

According to a World Economic Forum (WEF) global survey of member organizations, in the four-year period from 2018 to 2022, the average employee will require 101 days of retraining and upskilling.^{xxvi} More simply, individual employees will require the equivalent of 25 days per year for retraining and skills development, or nearly half a day per week. The WEF findings suggest that learning is not an issue for a distant future, but an immediate need for employers in their business strategy and workforce planning.

To maintain status quo economic relevance, **every worker will require an average of 25 days per year of training and skills development**, or nearly half a day per week, according to the World Economic Forum.

C-suite and human resource leaders are recognizing the implications of the demand for lifelong learning. Deloitte's 2019 global human capital survey of 10,000 leaders from across countries and industries identified learning as the top organizational need ahead of leadership, access to talent, and a number of other pressing issues.^{xxvii} Despite recognizing the significant importance of learning however, survey respondents also noted that organizational readiness to provide learning is low.^{xxviii} In addition, at those companies where learning opportunities are offered, the link between offerings and the organization's skills needs is often weak.

For individuals in the labour market, the demand for learning is increasingly urgent; particularly among those with low education and skill levels. The OECD's Programme for the International Assessment of Adult Competencies (PIAAC) assessment of adult

skill levels across member countries paints a bleak picture. On average, over 25 percent of adults are able to complete only very basic reading and mathematical tasks, while 37 percent have very limited or no digital problem solving skills.^{xxix} Yet, as noted above, the groups of disadvantaged workers most in need of learning opportunities—the low-skilled, older workers over 55, the unemployed, low-wage earners, and those working for small- and medium enterprises (SMEs)—consistently receive less training and development. As an aging population increases pressure on labour markets, the demand for learning and training for older workers and other groups, to support them in transitioning careers or preparation for retirement, will only increase.

Despite economic indicators that show the need for learning and skills development in the workplace, when individuals are polled directly, the perceived demand is mixed. Despite their low participation rate in training today, demand is particularly strong among less-educated adults. In the United States, nearly half (46 percent) of those without a four-year degree report that they will need additional education and training.^{xxx} However, among the total adult population, demand is lower. Only a small minority (11 percent) of working-age adults across OECD countries report that they want training but cannot access it, whether because they lack the time, funds and employer support, or for family reasons (see graph).^{xxxi} Yet, nearly half report not receiving any training in a given year, *and do not express any desire for it*.^{xxxii} This could in part be because only half of those who do participate in training find it to be useful for their job. It could also be because a substantial amount of training is for compliance purposes, for things such as health and safety (an average of over 20 percent of all training hours across European OECD countries), rather than for new skills and development that working individuals perceive as more valuable to their jobs and careers.^{xxxiii}

Reported Barriers to Participation

- Lack of Time Due to Work
- Family Reasons
- Financial Resources
- Inconvenient Time or Location
- Lack of Employer Support



In sum, there is strong immediate and long-term demand for lifelong learning which is reflected in macroeconomic trends across labour markets, organizational needs expressed by employers, and skills gaps for many individuals in the labour market. Where training and development is currently provided to working-age adults, participation is highest among the highly-educated and lowest among the most disadvantaged and at-risk workers. Training programs are often poorly calibrated to labour market need and organizational skills gaps. For training offered outside of an employer or trade association, the options available generally lack the job relevance necessary to motivate working individuals to participate voluntarily. Transitioning from this current state to the lifelong learning imperative will require a major transformation in the systems of education and workforce skills development.

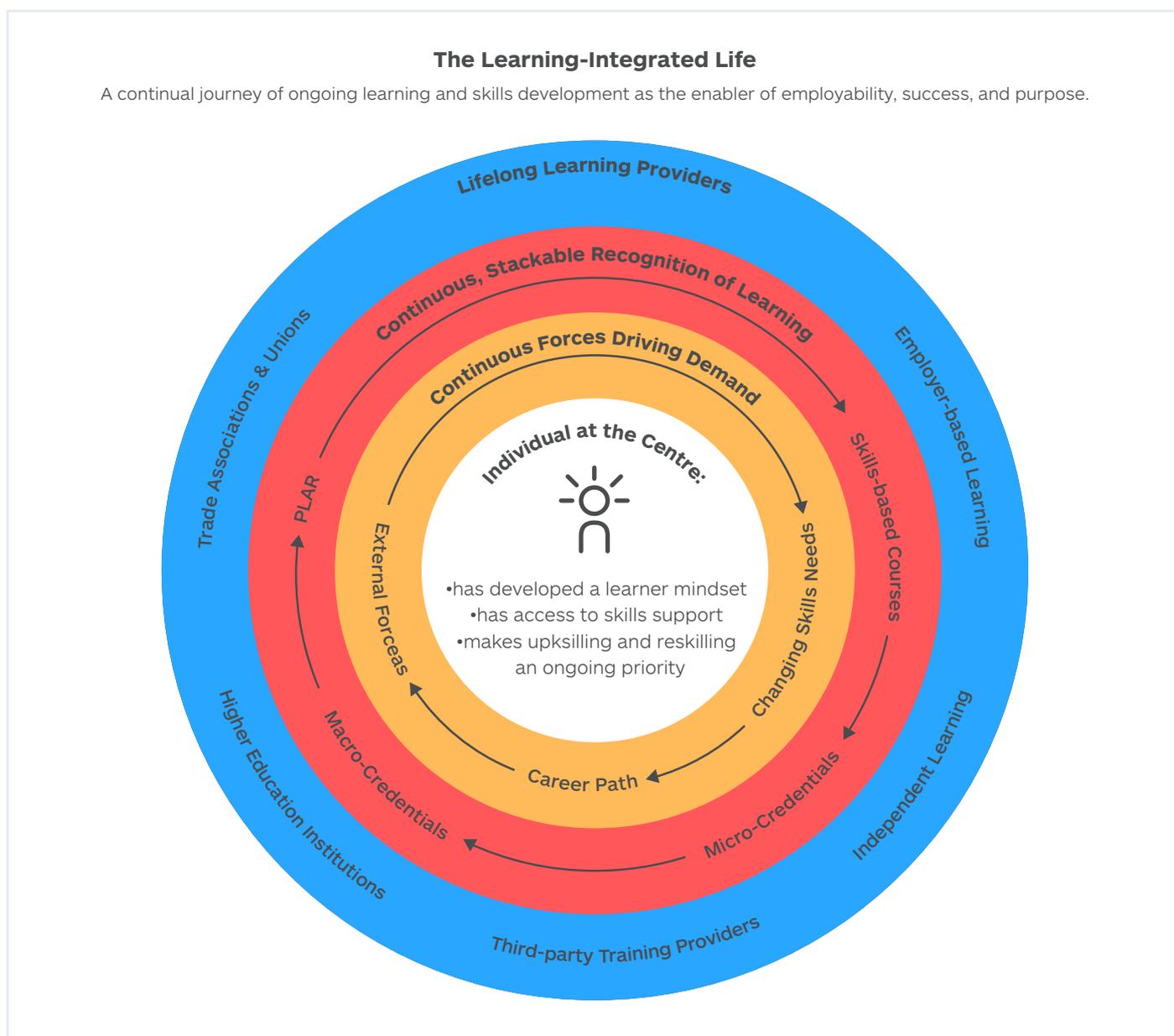
SUMMARY

1. Creating a continuous system of learning, both inside and outside of a workplace setting, is critical to enabling individuals to keep up with the skill shifts of the workforce throughout their careers.
2. There are many types of learning generally available across countries for adult skills development and can be offered through higher education institutions, employers, trade associations and unions, public programs, and private providers.
3. Mapping the landscape for lifelong learning reveals strong demand amongst individuals in the workforce, but also shortfalls in adult learner participation and motivation (particularly amongst the lower skilled), availability, quality, and calibration to labour market and employer needs.

The Vision: The Lifelong Learning System of the Future

A first step in the transformation of education, training, and skills development is establishing a clear vision for the lifelong learning system of the future.

At the heart of this vision is the idea of a **Learning-Integrated Life** — where every person's path through compulsory education and working career is a continual journey, with ongoing opportunities for learning and skills development as enablers of employability, success, and purpose. To lead a Learning-Integrated Life requires that one has the permanent mindset of a learner and access to a system of learning to capitalize on that mindset.



For the most part, today's global society is not one of constant learning. Individuals are in a learning mindset through their formative childhood years and pre-employment education (i.e. primary, secondary, postsecondary). Once in the workforce though, mindsets shift from one of a learner to one of a worker—typically not reengaging in intentional learning unless mandated by employers or by necessity (e.g. unemployment). Skills and knowledge we obtain over our careers and life tend not to be recognized explicitly as learning, but more as something that happens to us—it is passive rather than understood, proactive learning.

For individuals who do have a learner mindset while in the workforce and choose to engage in intentional, ongoing learning, their ability to do so is hampered by a complex and fragmented learning system. Traditional postsecondary education offers degree or diploma programs requiring years of commitment to complete, or continuing education programs that may not always prove relevant or beneficial to the workplace. Access to these programs is typically self-driven and self-financed—often expensive and without a clear return for the investment. On the employer side, availability of learning opportunities is often limited by the capacity of the human resources team to manage a program; most often restricting learning to the job skills of most need to the employer at that time and compliance training.

The Learning-Integrated Life necessitates we break down the cultural mindset barriers of working versus learning and build an accessible system of lifelong learning opportunities that give agency to individuals to control their learning pathways and thus their career progression.

Enabling the Learning-Integrated Life

Traditionally, we separate life into three distinct phases—learning, work, and retirement. However, it is apparent now that learning must be a lifelong endeavor rather than an independent phase. Creating learning as a lifelong endeavor is not just the same traditional learning for a longer period of time and more often. It is a fundamental shift in thinking and approach.

To realize this vision of continual learning, society and our existing systems of learning must encourage the mindset for a Learning-Integrated Life. Individuals must be equipped with the tools and support to understand their skill needs and to develop deliberate learning pathways with various providers—higher education, employers, associations, etc.—to acquire them. The benefits of a system of lifelong learning must be understood and shared among individuals and employers, across society, and the economy at-large.

Armed with a learning mindset, individuals require a learner-centric system of lifelong learning designed with entry points based on their existing skills, experiences, knowledge, and abilities; along with exit points based on their personal learning pathway. It must be flexible enough to meet varying life circumstances, including family and work commitments, and affordable to ensure the benefits are inclusive. The predominance of the traditional degree as the primary labour market signaling function is changing as employers increasingly seek specific, verifiable skill sets in potential employees. A Learning-Integrated Life will increasingly value the ongoing, stackable accumulation of skills.



Achieving a Learning-Integrated Life requires a paradigm shift in our current models of education and skills development. A lifelong system of learning must be guided by a series of practical principles:

 **Affordable and accessible for learners** — whether through employer-funded training, publicly available skills development programs, or individually-accessed courses, learning must be readily available and at low- or no-cost to enable participation by lower-skilled and disadvantaged workers.

 **High-quality, personalized and flexible**, where learners can map their own unique career pathway, access learning opportunities that are not “one-size-fits-all”, progress based on skill mastery rather than seat time, and participate in a continually improving learning system.

 **Motivated and encouraged**, through a “Continual Learning Culture” that is valued by society and promoted and incentivised to learners by employers, educators, society, and public policies.

 **Data-driven**, informing decisions from a systems-level down to unique learner pathway to ensure available learning opportunities will have value in the job market and learners will know which options are most appropriate to their community.

 **Technology-enabled**, leveraging the emergence of new, scalable digital tools that can enhance access to learning and improve assessment, while offering educator and learner analytics, personalization at scale, improved success rates, and greater cost effectiveness.

 **Assessed against learning outcomes**, where prior learning assessment and recognition (PLAR) and ongoing tracking of learner progress and outcomes in skills development is consistently applied across the system.

 **Responsive**, with learning opportunities that adapt as learner demands, employer needs, and workforce trends continue to rapidly evolve.

Examples:

Massive Continuing Education at Southern New Hampshire University (SNHU)

SNHU offers a compelling template for the transformation of higher education by tapping the burgeoning demand for flexible, online, competency-based learning. A small, regional non-profit institution, SNHU's on-campus student body is less than 4,000.^{xxxiv} Faced with declining enrolments, rising tuition, and financial pressures, SNHU reinvented itself through the launch of its College of Online and Continuing Education—with a bold agenda to offer online education at a national scale to working adults. The results have been astonishing, with growth in online enrolments from 3,000 students in 2003 to 132,000 today. "Outcompeting major private players like the University of Phoenix through a focus on reducing time between enrolment and program start date, lower tuitions, and higher quality."^{xxxv}

Uruguay's Plan Ceibal for Technology-Enabled Lifelong Learning

The emergence of new technologies in the 2000s offered transformational potential for education, but policymakers and educators in the South American nation of Uruguay recognized that there was substantial inequity in access across the population. In 2007, Plan Ceibal was launched as an ambitious education policy initiative for inclusion and equal opportunity through technology. The program offered access to a personal computer and internet connectivity to each student in the country who entered the public education system. By 2009, all children in primary education had access to a computer for learning—300,000 in total. As of 2015, the program has extended to students at the secondary level, as well as to other groups of lifelong learners, such as lower income retirees. Plan Ceibal offers learners access to educational platforms such as Ceibal Digital Library, distance education in adaptive mathematics, digital technologies such as robotics and 3D modeling, and language training in English. Through Plan Ceibal, Uruguay is a member of the Global Learning Network, along with Canada, the United States, Finland and others, to share pedagogical best practices.^{xxxvi}

Examples Continued:

The Canada Training Benefit for Working-Age Adults

In early 2019, as part of a national innovation and skills agenda, the Government of Canada introduced the Canada Training Benefit—an integrated suite of worker assistance benefits that directly cover education and training costs, as well as income support and job protection needed during time off for reskilling. The program was designed to respond to the evolving nature of work.^{xxxvii} The centerpiece is a tax benefit for working-age adults aged 25 to 64, which accumulates over time and can be applied against 50 percent of tuition expenses for eligible education and training—with similarities to Singapore’s SkillsFuture Credit program and to worker-controlled lifelong learning and training accounts proposed in the United States.^{xxxviii} Workers can also access four weeks of income support benefits to help cover costs, and job leave provisions to ensure employment remains secure while taking time off for training.

The CléA Certificate for Recognizing Prior Learning in France

Skills recognition can be a major barrier to finding a job, especially for unemployed workers who have relevant on-the-job experience but no formal postsecondary qualification. To address this gap, social sector and labour organizations in France introduced the Certificate of Professional Knowledge and Skills (CléA) in 2016 as the first national, inter-professional certification program for basic knowledge and vocational skills. The program assesses and validates an individual’s skills in a number of domains, including communication, calculation and math, computer use, teamwork, independent initiative, and willingness to learn. Endorsed by lifelong learning and literacy stakeholders, training organizations are authorized to undertake assessments against the CléA specifications.^{xxxix}

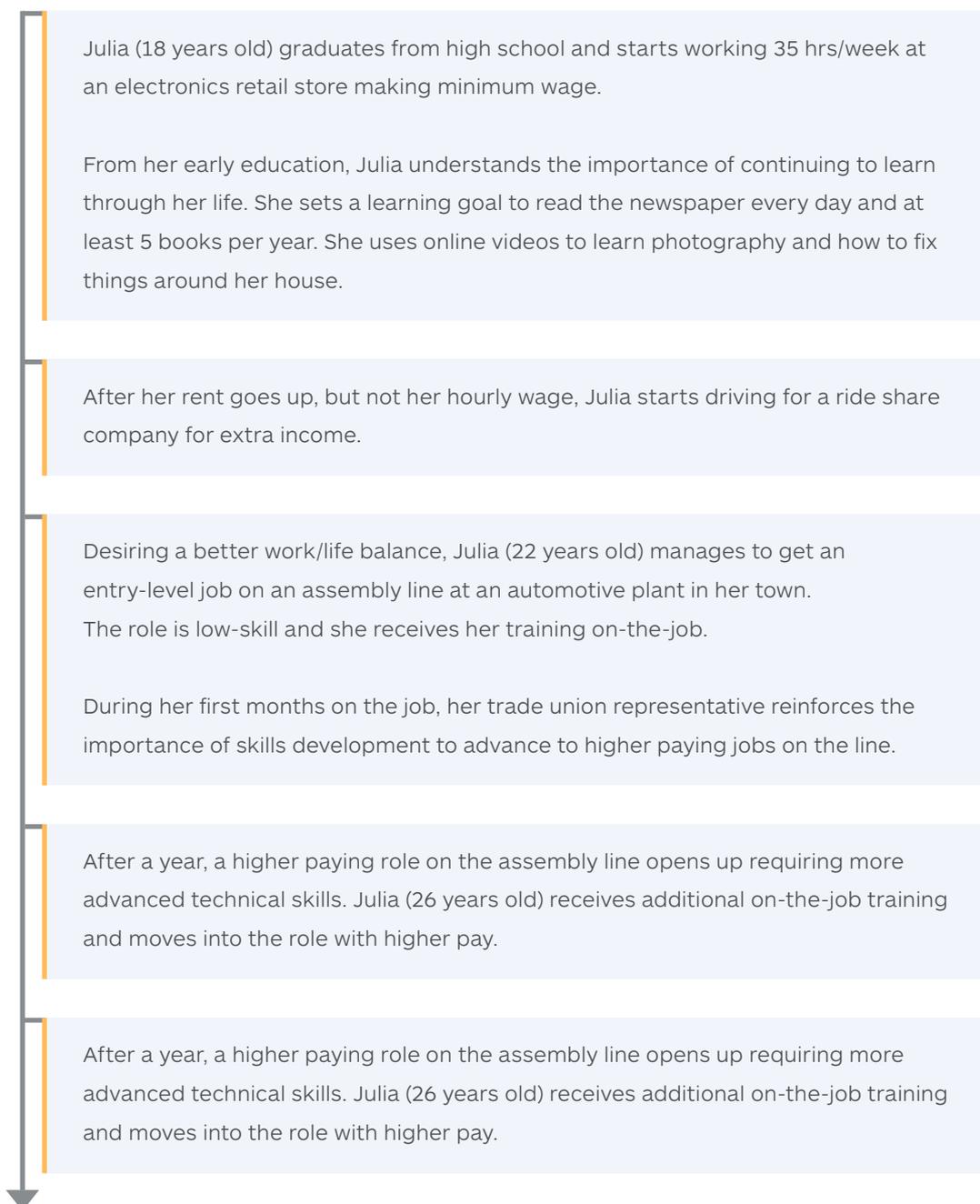


The Profile of a Learning-Integrated Life

A broad lens on systems-level structures, policies, and partnerships for lifelong learning is essential. However, it is equally important to consider the learner's lens, whereby each individual will increasingly chart their own unique work and learning pathway to sustain a 40- or 50-year career.

This section offers an example of an individual's Learning-Integrated Life. It is not meant to be comprehensive, but rather to provide a scenario-based model of the Learning-Integrated Life supported through an effective system of lifelong learning.

A Learning-Integrated Life



A Learning-Integrated Life Continued

Julia's employer announces her plant will shift to 100% electric vehicle assembly over the next year. With fewer moving parts, electric vehicles require 30% less labor to assemble.

Desiring better job security, Julia (30 years old) wants to move into a leadership role. She inquires with HR, but she's missing two core skill requirements—basic business writing and relationship management.

Her employer does not offer training for these skills internally, but Julia has an Individual Training Account which is funded with contributions from her employer. Julia seeks training outside of her employer.

The local community college offers self-paced, competency-based education (CBE) courses online for both skill sets. She enrolls and completes within 3 months, in part because she already possessed much of the knowledge from prior experiences. Julia earns a verifiable micro-credential for her learning.

Four months after completing her courses, Julia (31 years old) attains a leadership position on the nightshift at a food processing plant in the neighboring town.

Julia (32 years old) wants to move off the nightshift and into a salaried position. In her leadership role, she works with the quality assurance (QA) team and would like to move into that field.

A regional university has an online credential in QA which is mastery-based and aligned to specific skills. Julia uses Prior Learning Assessment & Recognition (PLAR) to demonstrate her existing skill sets, which she learned on the job. She tests out of much of the required basic skill sets and focuses on the advanced QA research and auditing skills. Her Individual Training Account helps her finance her learning again.

Rolling together her community college micro-credentials, PLAR scores, and university courses in QA, Julia (33 years old) earns a skills-aligned degree in QA.

A Learning-Integrated Life Continued

Julia (38 years old) has been working as a quality assurance manager for five years at the food processing plant. Through on-the-job training and regular engagement with the National Association of Quality Assurance Managers, she maintains her QA knowledge.

In her personal time, Julia learns about a national online skills hub where she can pursue learning in other areas of interest to her. She takes a creative writing course and, with a passion for hiking, camping, and photography, starts an outdoors blog in her spare time. Overtime, the blog draws enough web traffic to generate a small side income.

When the plant announces its abrupt closure, Julia (45 years old) had become the quality assurance supervisor.

As she falls back on her blog income during her job search, she uses her QA and management skills to develop a product evaluation strategy and starts reviewing outdoor gear. Quickly she increases her page views and generates a larger income from ad revenue.

Julia's website is noticed by outdoor equipment manufacturers and, because of her rigorous review rubrics and standards, they begin to reach out on a consultative and partnership basis.

Taking courses through the university system skills hub on small business law, Julia (45 years old) establishes a QA consulting business.

Julia continues to learn, improve, and expand her business to retirement. She now takes language and history courses for fun.

SUMMARY

1. The **Learning-Integrated Life**, where every person's path through childhood and working career is a continual journey with regular and ongoing learning and skills development as the enablers of employability, success, and purpose.
2. Achieving the vision of a Learning-Integrated Life requires a paradigm shift in the current models of education and skills development, and guided practical principles such as affordability, accessibility, quality, and personalization.
3. Each individual will chart their own unique work and learning pathway, with an effective system supporting a wide variety of learner profiles, contexts, career pathways, and learning opportunities.

QUESTIONS FOR CONSIDERATION

- Who should be responsible for leading the systemic changes necessary to achieve the vision of the Learning-Integrated Life—employers, governments, or institutions of higher education? How do we differentiate between job-required learning and growth learning?
- What are the barriers to the “supply side”—i.e. universities, corporate training, other forms—shifting to a true ongoing system of lifelong learning for adults at the scale, quality, and flexibility needed to address the expected demand? Are new providers, such as boot camps and for-profit schools, going to fill the void before public systems of learning can adapt?



Where to Go from Here?

Conclusions and Recommendations

This whitepaper, the third in the [D2L whitepaper series](#) on the future of work and learning, explored the issue of lifelong learning. Despite pervasive calls for lifelong learning as a solution to rapidly changing workforce dynamics, it is a concept that has not been consistently defined and described. Nor is the architecture for an effective system of lifelong learning evident. This whitepaper aimed to inform and spark debate around a shared vision for lifelong learning.

At the heart of this vision is the idea of the **Learning-Integrated Life**—where every person’s path through childhood and working career is a continual journey, with regular and ongoing learning and skills development as enablers of employability, success, and purpose.

It is important not to overlook the barriers to innovation that must be overcome to enable a Learning-Integrated Life for individuals. With systems of education and training that have developed over centuries, enacting change quickly can be challenging. This includes legacy challenges in higher education, such as campuses with physical infrastructure that biases towards the physical classroom, inflexible credit hours, seat-time-based credentials, rising costs for participation, and systems of incentives which prioritize research over teaching innovation. It also includes quality assurance and measurement gaps across existing education and training systems. At the same time, both individuals and employers express cultural and motivational barriers to learning. Public policies, funding models, and regulatory structures can limit the space for change and innovation.



At the core of the D2L vision for a system that elevates the Learning-Integrated Life is an understanding that we all benefit from learning and talent and, therefore, must share in the leadership and responsibility to increase the availability and access to quality opportunities for learning.

- **Governments and education systems** need to prioritize modern, flexible learning opportunities and fund promising practices to better connect individuals to meaningful learning opportunities. Specific attention is needed to ensure no one is left behind due to lack of durable skills, including basic literacy, numeracy, social-emotional and digital skills.
- **Employer** investment in training needs to grow. Promising examples are surfacing, and companies are increasingly understanding the competitive advantage that comes from investing in their own talent.
- **Individuals** also need to invest in a Learning-Integrated Life, including increased amounts of their time, for intensive and episodic learning opportunities linked to successful careers and enriched lives.



We don't have an enrollment crisis as much as a resistance crisis. People will continue to learn just as they continue to listen to music or read books, more so as technology explodes. They just don't need the packaging we insist upon. Will colleges adapt[?]"

*Tweet by Greg Fowler
President of SNHU Global
(@SNHUGlobalprez)*

A shared commitment to creating accessible and high-quality learning opportunities for a Learning-Integrated Life is a necessary and required starting point. There is reason for optimism as a shared understanding of the need to better link learning opportunities into a cohesive system and to provide the necessary wrap-around supports is growing.

Recommendations

There are some practical and urgent recommendations that can be put forward to guide key stakeholders—policymakers, educators, employers, labour organizations, individual learners, and others—towards the vision of a lifelong learning system and the Learning-Integrated Life.

1. Create a national imperative for lifelong learning and a strategy for creating learning opportunities for adults, with special attention to low-skilled and disadvantaged individuals.

A strategic vision for a cohesive system of learning, accessible by everyone, is necessary to drive change at scale and to garner buy-in from key stakeholders. Acting as a convener, governments can leverage a national strategy to create a shared commitment between government, public education systems, and employers to create a cohesive lifelong learning system.

A national strategy could include:

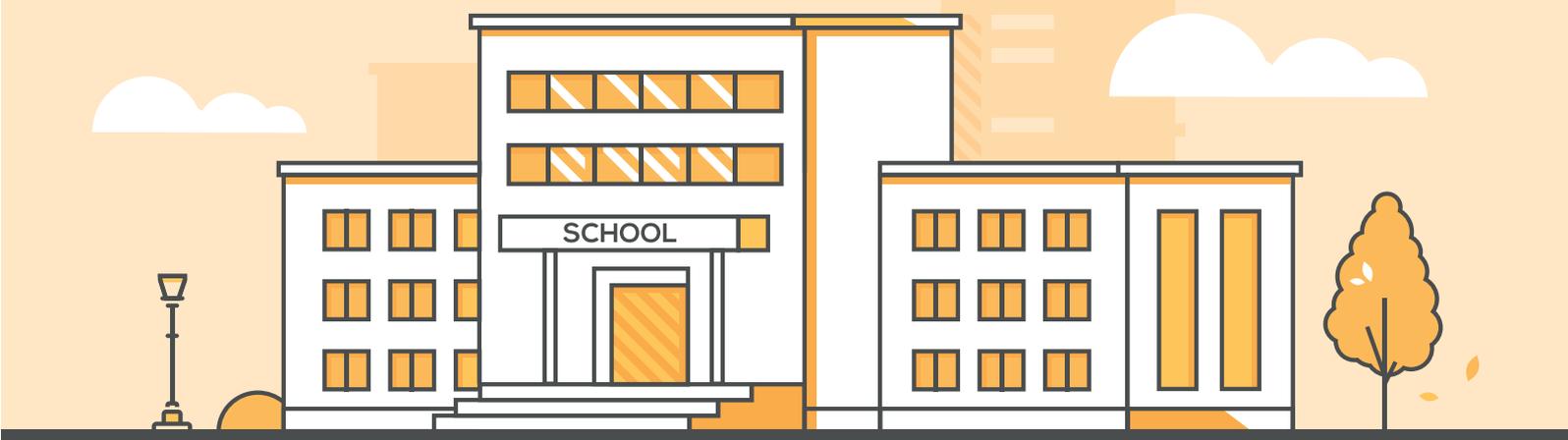
- An emphasis on essential skills upon which further learning and skills development rests—literacy, numeracy, basic digital, and social-emotional skills.
- Consideration for programs of direct support to working individuals through new models of portable, personal learning credits or training accounts to help them define their own learning paths, regardless of their status (e.g. employed, gig worker, or unemployed).
- Consideration for small- and medium-sized enterprises without sufficient resources to develop high-quality internal learning programs.

2. Develop more industry-led learning partnerships.

Industry-academic co-design of programs have shown compelling benefits for workers, employers, and educational institutions. Industry-led partnerships with labour organizations offer similar potential in preparing new workers and upskilling existing workers for changing technologies and business processes. While these partnerships require boldness, investment, and experimentation, they are an important element in a more demand-driven, employability-focused learning system.

Employers:

- Actively seek out partnerships with learning providers, including trade associations and unions, to offer ongoing upskilling opportunities to their employees aligned to skills in demand.
- Create robust work-integrated learning (WIL) opportunities for learners to gain practical work experience and apply their skills in practice prior to entering the workforce. WIL programs can also serve as a direct recruitment pipeline for building experienced talent.



3. Address the demand for learning through new, flexible models of higher education for adults.

With their pedagogical prowess, expertise across a vast range of fields, and capacity, higher education institutions are well-positioned to address the growing demands for lifelong learning at scale. Students should not be considered as one-time learners for a capstone degree, but as lifelong, active participants in learning. Creating a more accessible marketplace of learning, based on skills, could offer new models of engagement for individuals such as a lifetime or annual learning subscription for skills development. This would require adapting existing models, repurposing resources, and repackaging programs to align with the needs of working-age adult learners.

Governments:

- Review any accreditation processes for postsecondary institutions to consider new models of learning based on measuring outputs versus input. For example, increasing emphasis on measuring mastery versus seat time.
- Enable postsecondary institutions with the agility to develop and start new programs quickly to meet the rapidly changing needs of their local communities. Examples to consider include allowing for express accreditation processes, which balance quality requirements with agility, or programs that support experimentation and innovation while providing data to improve future policies.

Postsecondary education:

- Develop more modular and mastery-based programming to cater to working individuals and those who are learning outside of the traditional classroom.
- Redesign how degrees are described by more explicitly mapping programs to the skills and knowledge they deliver for a more representative credential as a sum of its parts, rather than a generalized calculation of seat time. As credentials shift to digital forms, having this metadata will give individuals and employers a more aligned method of verifying capabilities against job requirements.
- Leverage the continuing education side of the institution to create more opportunities to learn or demonstrate knowledge and skills than is currently available in continuing education. This includes expanding options for skills-based courses, offering PLAR services to assess and verify existing skills, and short-course-based stackable micro-credentials that give learners shorter-term credential value on a path towards longer-term macro-credentials.

4. Develop models for assessment and recognition based off what already works.

An effective, scalable system of lifelong learning must be built upon reliable and verifiable signaling mechanisms (e.g. micro-credentials, certifications, degrees, etc.) for skills, experience, knowledge, and abilities that are recognized by employers in talent management decisions, and thus valued by individuals.

Governments:

- Convene a stakeholder group which includes employers, postsecondary institutions, and workforce representatives to develop a framework for micro-credentials that will create a common understanding of their components, scope, how they are issued, how they are verified, and how they can be digitized and made portable. Review the work of organizations like IMS that are developing standards and specifications around open badging portability that are critical to the digital credential ecosystem.
- Consider supports for gig workers and other individuals to assess and verify the learning they do independently of employers, postsecondary institutions, or other training providers. Prior learning assessment and recognition (PLAR) needs to be affordable and accessible.

5. Promote the development of durable skills.

While there is a vast and growing array of job-specific technical skills, knowledge, competencies, and experience to succeed and sustain in work, all should be encouraged and supported to develop the durable skills, such as critical thinking, creativity, and emotional intelligence, that are critical across occupations and for career adaptability. Just as vital is instilling the importance of communicating attained durable skills to potential employers alongside technical skills.

Governments:

- Ensure development of durable skills is explicitly included as deliberate learning outcomes throughout primary and secondary education curriculum.

Postsecondary education:

- Explicitly define durable skills as necessary learning outcomes throughout postsecondary programs. Measure, assess, and recognize these skills.
- Consider a shift to extended or skills-based transcripts, or include supplemental verification of earned skills, such as assessed badges, certificates, or other micro-credentials where applicable.

Employers:

- Consider the addition of a score for durable skills, in addition to technical and professional skills, during the recruitment and evaluation process of job candidates.

6. Reinforce the Learning-Integrated Life imperative and increase its relevance.

Most working age adults do not regularly see themselves as participating in learning as they don't consider themselves to be learners or in a learning phase of life. Changing this “non-learner” mindset is clearly a central challenge. Efforts to engrain the learner mindset in individuals should start at an early age and continue through adulthood.

Governments:

- Embed the concept of leading a Learning-Integrated Life as a cross cutting theme into education curricula.
- Promote learning pathways and the importance of continued learning for personal economic success through PSA-type campaigns to keep adults aware of their options and the necessity.

Employers:

- Consider if and how their employees are getting at least a sustaining amount of skills development on an annual basis. According to the WEF, the average employee will require 25 days on average per year of learning and training. This can be either integrated into work assignments, intermittent training, or other mechanisms.
- Consider adding employee learning and development programs and investments to Corporate Social Responsibility (CSR) reporting. Companies that invest in their people invest in the overall wellbeing of the communities in which they operate.

7. Better workforce data and LMI to guide decisions.

In order for the shift in our learning systems to be realized and to meet the needs of a Learning-Integrated Life, data must flow more seamlessly between government, industry, and education. Feedback loops must also be shortened.

Governments:

- Shift from job data collection and reporting to skills data. As job requirements rapidly shift, similar titles between companies and industries can incorporate vastly different skills requirements. Data collection based on skills would provide greater resolution on the real needs of the workforce.
- Move towards real-time data collection on labour market information. While plenty of historical data exists on trends, the exponential pace of change today means it is no longer realistic to rely on even last year's data to plan for next year.

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