White Paper

Accelerating Workforce Reskilling for the Fourth Industrial Revolution

An Agenda for Leaders to Shape the
Future of Education, Gender and Work

July 2017

This *White Paper* is the outcome of an international, multistakeholder Dialogue Series organized by the World Economic Forum's System Initiative on Shaping the Future of Education, Gender and Work. The goal of the Dialogue Series has been to bring together leaders to develop a common vision on emerging issues.

As a key output of the learning created by the discussion, this *White Paper* draws upon submissions by leaders and experts who engaged in the dialogue, as well as the latest thinking from international organizations, think tanks, businesses and other stakeholders. It provides a common narrative on the new context for emerging issues, identifies priorities for leaders, and supports the development of policy roadmaps.

The *White Paper* is intended to be a resource for governments, business and other stakeholders interested in strengthening the enabling environment for human capital formation in the Fourth Industrial Revolution. For more information, or to get involved, please contact the World Economic Forum's Education, Gender and Work team at educationgenderwork@weforum.org.

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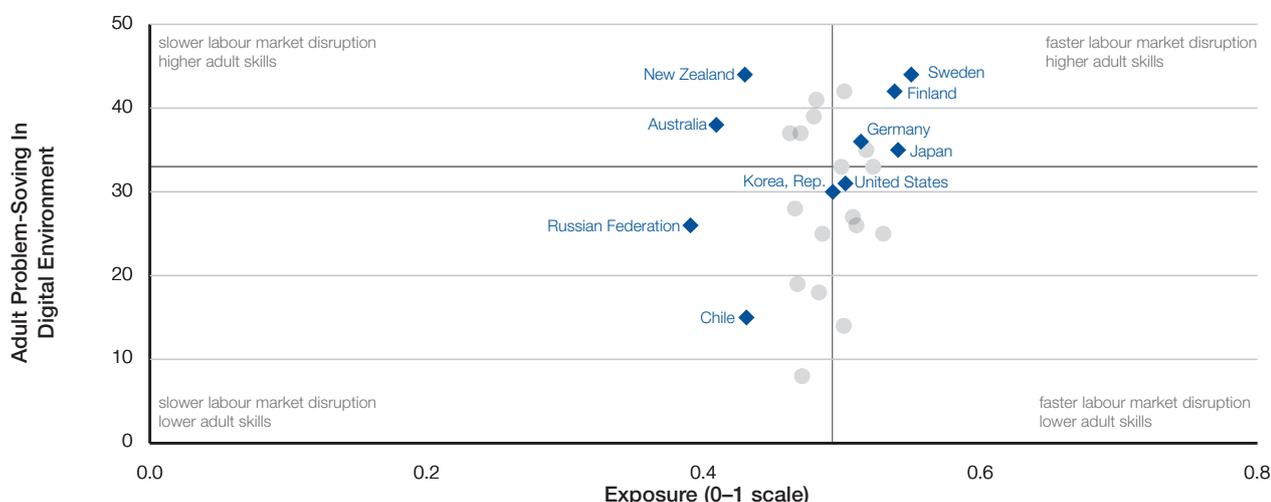# Accelerating Workforce Reskilling for the Fourth Industrial Revolution

The Issue

The way we work, the skills we need to thrive in our jobs and the trajectories of our careers are rapidly evolving. These changes—driven by technological innovation, demographics, shifting business models and nature of work—are significantly altering the skills demanded by the labour market. Over one in four adults surveyed in the OECD reported a mismatch between their current skills and the qualifications required for their jobs.[1] Furthermore, approximately 35% of the skills demanded for jobs across industries will change by 2020.[2] Such skills mismatches and skills churn have increased the need for adult skilling, reskilling and upskilling throughout a person's career. By making the appropriate investments for optimizing the potential of the adult workforce at all stages of the career path, companies and societies can reap the benefits of productive, innovative and experienced employees who continue to adapt and deliver over time.

The speed at which jobs are changing and the capacity of adults to adapt are not uniform across countries (See Figure 1). We have assessed the relative importance of adult reskilling at the country level by examining the relative degree of labour market exposure compared with the level of adaptation skills adults have in digital environments. Labour market exposure is driven by a variety of factors, including a country's economic specialization; the cost incentives for incorporating automation into their supply chains; the supply, cost, and skills availability within the labour force; as well as access to and the adoption of technologies. The capacities of adults for adaptation is influenced by the quality of foundational education, cost and quality of ICT connectivity, prevalence of jobs incorporating digital exposure, as well as opportunities for lifelong learning inside and outside the workplace. Within the framework and range of country specific conditions, we've found that the countries in the top-right quadrant of the figure, such as Sweden, Finland, and Japan, face relatively high levels of exposure to labour market disruption, but also exhibit high levels of adult skills and technology absorption. This strong performance in future-ready adult skills is a result of the multifaceted lifelong learning systems many of these countries have put in place, which continue to support and develop adult skills over the course of their lifetime. Countries in the lower right-hand quadrant are likely to face greater levels of exposure to labour market disruption and may benefit from adopting some of the policy pathways to build and fortify

Figure 1. Adult Problem-Solving, Adaptation Skills and Exposure to Labour Market Disruption in Selected Economies

Source: OECD PIAAC data; World Economic Forum.

Note: The PIAAC Indicator provides the share of adult population in the highest 2 levels of performance in problem solving in digital environments. This indicator was chosen to proxy adult skills and performance in increasingly digitalized work environments. The exposure variable captures the availability of the latest technology, economic complexity, pay and productivity measures as well as unemployment components.

their adult learning systems. Countries such as New Zealand and Australia have relatively low exposure at present and relatively high ability to adapt, while Russia and Chile have relatively low rates of exposure to labour market changes at present and exhibit relatively low capacity for adaptation.

Despite the growing need for adult reskilling, opportunities for broad-based and inclusive reskilling are currently not available at the appropriate levels of access, quality and scale of supply in most countries. Progress has been made in the access to greater amounts of low-cost digital training across many countries; but a cohesive system which addresses the diverse needs of learners, dedicates sufficient resources, and brings together the right stakeholders in providing applied learning opportunities is still lacking. Public and private sources of adult training and learning are often disjointed, and both individuals and businesses are short served. OECD countries reported a broad variation in participation rates in adult learning and training programs, ranging from 27% to 82% of the total adult population, with substantial variation across segments of the adult population depending on age cohort and level of educational attainment.[3] Beyond issues related to the quality of and access to adult education programs, there is also a significant disconnect between the supply of adult learning opportunities and the rapidly evolving demands of the labour market. For instance, in the United States, while 63% of workers have indicated having participated in job-related training in the past 12 months, employers are reporting the highest talent shortages since 2007.[4]

It is time to invest in enhancing the skills and capacities of all segments of our workforce, for an inclusive and equitable future. The short and decreasing shelf life of today's skills, coupled with the quantity and quality of current adult lifelong learning programs, pose particular challenges with regards to exacerbating existing economic and social disparities. The adult education systems currently in place tend to reinforce existing economic disparities, with greater frequency of reskilling and upskilling by more educated adults, with higher income levels, and with digital literacy skills and access to the internet. Meanwhile, adults with lower levels of formal education, as well as half of the adult population across OECD countries who possess only the rudimentary digital skills, face significant informational and motivational barriers.[5] The European Commission noted that only 4.4% of the 66 million adults with at best lower secondary education attainment participated in adult learning in 2015.[6] Results from a Pew study looking at adult learning in the US, in both formal and non-formal contexts, portrayed a similar trend: 57% of adults with completed secondary schooling or less identified themselves as lifelong learners, compared with 81% who had completed tertiary education.[7] Furthermore, 61% of adults surveyed by Pew had little or no awareness of the concept of distance learning, and 80% reported little or no awareness of massive open online courses (MOOCs). Effectively confronting these barriers to participation in adult education requires engaging learners of all employment statuses, across all sectors of employment,

as well as diverse sizes of employer. In particular, workers employed by SMEs, gig economy contractors and members of the 'silver workforce' may encounter greater difficulties in getting access to the appropriate reskilling opportunities.

Growing awareness of technological changes associated with the Fourth Industrial Revolution creates a new window of opportunity for concerted action for investing in the skills and potential of the workforce of the future at all ages. A new deal for lifelong learning is needed globally to provide dynamic and inclusive lifelong learning systems, to resolve both the immediate challenge and to create sustainable models for the future. Given the right balance, a dynamic training ecosystem has the potential to provide deeply fulfilling careers to future workers while enhancing social cohesion and equity. Policymakers, business leaders and other stakeholders need to work together to ensure that adult training and education systems optimize the availability and competence of the labour force, while providing educational opportunities for the entire adult population. This requires multistakeholder collaboration and investment in developing robust and dynamic adult training and education systems.

To make the most impactful investments, education ecosystem stakeholders need to better understand what skills are readily available within the adult population and where the greatest skill gaps exist. This needs to be complemented with information about which skills are in greatest demand in the labour market and how to provide the appropriate reskilling pathways toward new employment opportunities. Reskilling involves delivering the appropriate mix of theoretical and applied learning methods at the right price, and understanding how these responsibilities can be best shared among diverse stakeholders. As education becomes less of a linear process, and more of a modular and continuous cycle, the delivery and institutional organization may also need to evolve with it. Finally, there is a need to understand and change the culture of learning and establish learning as a continuous and lifelong process. This entails inspiring learners to keep enhancing their skills and building the motivation for embracing change and empowered adaptation in the work place.

Serving the needs of the diverse segments of the adult population, and empowering them with the appropriate tools, resources and motivation, is a complex and urgent challenge that will require strong and proactive multistakeholder partnerships. This document aims to support the development of a common set of future-oriented priorities for leaders to champion and implement, including members of the World Economic Forum's System Initiative on the Future of Education, Gender and Work, both through the Forum's platform and their own. It draws upon the latest work in international organizations, think tanks, businesses and other stakeholders, as well as submissions and conversations with dialogue series participants. We hope these priorities can help set the agenda for reform and reinforce the urgency for change.

Key Pathways for Change

Take stock of and recognize existing skills

Learning occurs throughout our lifetimes and across diverse contexts. People accumulate knowledge, skills and competencies through formal, informal and non-formal avenues. At the same time, without regular maintenance, certain skills may depreciate with time. This dynamic context of skill acquisition and loss across environments creates particular challenges for tracking available skills. The lack of comparable information about adult skills and their use complicates the assessment of who needs training, for what and where. There is a need for more regular and consistent information on skills, based on standardized frameworks, to better assess adult training needs. While there are promising nascent efforts at evaluating adult skill levels, such as the PIAAC assessment by the OECD, as well as the European Union Digital Competency and Entrepreneurship Frameworks, more comprehensive coverage across countries and skills areas is needed. Unions and professional associations can also play an important role in this respect as learners tend to be reluctant to admit a lack of certain skills to employers directly, whereas unions can help gather skills gap information from their constituents and help inform and shape opportunities, particularly at the sector level. The assessment of adult skills should also be coupled with competency-based credentialing and recognition of existing skills within the workforce. An effective system of recognizing prior learning is essential for motivating learners and using learning resources efficiently. National and regional qualification frameworks can be instrumental in facilitating this recognition process. For instance, the European Qualification Framework has streamlined the way formal and non-formal qualifications are recognized in national systems in 39 European countries, increasing opportunities for talent mobility and matching and facilitating access to a wider pool of comparable skills and qualifications.

Understand skills demand

As technology evolves and the skills that are in high demand shift, there is a need for a continuous feedback loop between labour market needs and the education system stakeholders at all levels. This calls for effective skills anticipation that informs and engages the relevant stakeholders. Most countries have put in place at least one type of instrument designed to assess future skills demands. These instruments include labour demand forecasting models based on previous economic performance and needs, employer surveys, industry specific strategic foresight groups, as well as emerging initiatives to use big data analysis and create new tools to gather and analyse vacancy information to better understand skill needs and trends (See the CEDEFOP example, on page 10). The approaches and instruments used vary substantially across countries, with Germany, Sweden, Denmark and the Netherlands having in place relatively mature systems (see the example of Denmark's national skills anticipation system, on page 9).

Nevertheless, challenges remain in identifying the type of data that should be collected and how useful it is for informing policymaking and business decisions. New technologies and data held by many platforms can bring great clarity about present and future demand. Bringing together a range of instruments and stakeholders and putting in place the adequate structure for coordination and governance is critical. In this regard, ministerial working groups, sector skills councils, national skills advisory groups and dialogue with businesses and union groups is critical. The information gathered on skills shortages by these systems then needs to feed into processes for building curricula, occupational skills mapping—as well as career guidance services for informing career choices for all labour market participants by providing insight into which areas are in demand and the rewards for attaining those skills.

Adopt the right mix of financing instruments

Resources for adult education continue to be scarce and volatile, heavily influenced by business and economic cycles. Government education budgets tend to prioritize foundational education, with only a small share devoted to Adult Education programs. In light of this scarcity, allocating the necessary resources remains a significant challenge in most countries, particularly in moments of economic downturn. In looking to provide resources for the medium term, some countries are setting up learning endowment funds, to help smooth funding cycles and provide medium term certainty for resource planning. For instance, Singapore set up a Lifelong Learning Endowment Fund in 2001 to emphasize its commitment to securing resources for lifelong learning over time. Singapore uses the interest from this fund to support its initiatives that promote the acquisitions of skills. Learning programs are most successful when all stakeholders have a stake in learning. Co-funded models between government and employers or co-funding coalitions of employers also hold strong promise for scale. Policymakers and businesses have adopted a number of different instruments for sharing the financial investments across individuals, governments and employers. Instruments for businesses include payroll taxes which are dedicated to subsidizing training opportunities, income tax deductions for businesses, special taxes to be paid if a minimum training budget is not disbursed, as well as public grants for subsidizing training especially for smaller sized firms. In addition to supporting workplace learning, personalized instruments are also important for empowering individual learners. These instruments include publicly subsidized vouchers and individual learning accounts, tax deduction and preferential loans. Tax deductions have been found to be particularly efficient and effective in fostering participation in adult training in the Netherlands. In Singapore, a dual approach is used to both subsidize the provision of trainings on the supply side, and to provide credit for individual training accounts to inspire and empower learners on the demand side. Singapore invests over $400 million annually on supply side efforts versus $37 million in learning credits. Finally, financial resources must be coupled with allocation of time for training activities by employers for their employees.

Build and sustain motivation for adult learning through active labour market policies and accessible resources

Impact studies have demonstrated that providing reduced-cost or free training for adults is not enough to foster greater participation or impact in all cases. The evidence from the English Employer Training Pilot showed that making training opportunities available below marginal cost did not increase the participation of the low-skilled employees at which this program was targeted. Studies using randomized experiments with individual learning accounts in Switzerland

and the Netherlands found similar results regarding instrument inefficiencies. Both studies found that more than half of the training vouchers that were redeemed would have been paid by the individuals or their employers.

These results further substantiate that financing mechanisms need to be complemented with more holistic and proactive approaches that effectively address motivation issues related to adult learning, as well as practical information and links to direct employment opportunities where the newly acquired skills can be put to use (see the example of ManpowerGroup's FuturSkill, on page 8). It is crucial to develop a culture of lifelong learning from an early stage with outreach that explains changing skills and job landscape to individuals, emphasizes personal ownership over learning, and empowers learners through adequate and accessible resources. For example, in Singapore, each resident is entitled to an individualized account on a portal known as the My Skills Future Portal—which serves as a one-stop shop offering a suite of tools and resources that enables Singaporeans to understand labour market information, search for employment opportunities and access training offerings. Building motivation for adult learning through campaigns, gamification of learning and peer support groups have also shown positive impact. Integration of learning into the community at large—in order to instil a more inclusive lifelong learning culture—can also help address informational and motivational barriers. Lifelong Learning City Initiatives are one such example (See the example of UNESCO's Lifelong Learning Cities, on page 10).

Create shorter learning modules that foster continued learning

Adaptation to shifting labour market needs requires continuous learning and a considerable paradigm shift from the current frontloaded education system model. Learning methods across all formats and timeframes, including adult-focused reskilling and upskilling, need to be adapted to foster curiosity, creativity, imagination, build confidence in continued learning, and inspire a desire for continued growth and development. Throughout the lifetime learning trajectory, a flexible, learner-centred approach is needed to provide both foundational and experiential learning, as well as empower learners to shape their individual skills acquisition trajectory. This system will need to be increasingly modular and adapted to a variety of technology-intensive and in-person formats for catering to diverse adult learner needs and capacities (See the example of IT Skills in India, on page 8). Furthermore, this system will need to strategically integrate key stakeholders, including teachers and training intuitions, companies and employers, government regulators and ministries, and learners themselves to continue to shape the system and work collaboratively to provide high quality reskilling and upskilling opportunities.

Determine the role of different stakeholders

Disentangling responsibilities and modes of collaboration among diverse stakeholders is critical for success in meeting the needs of diverse learners. In order to serve these needs, individual learners, businesses, community learning centres, universities, unions, professional associations, boot camps, the public sector broadly and other providers need to work together to harmonize strategies. Each group of stakeholders has an important role to play.

For instance, unions can identify skill needs and training gaps at the sector level, communicating training opportunities to workers, supporting apprenticeship programs, and administering and managing some of the coursework (See the example of the Brazilian Fund for the Protection of Workers, on page 10). Unions are increasingly setting up regional or national learning committees and designating Union Learning Representatives in their structures to support their work on skills development. Studies have shown that increased union engagement in skills identification and building leads to higher levels of employer investment.[8]

Government actors are best positioned to coordinate all of the actors needed for an inclusive lifelong learning system, including mobilizing civil society engagement in this process. This also includes intermediaries in the public sector who help to coordinate the actions of the various parties to ensure that workforce development efforts remain coherent. For instance, in Singapore institutions like the SkillsFuture Singapore Agency (SSG), the Workforce Singapore Agency, and the Employment and Employability Institute under the National Trades Union Congress help to identify key skills, develop training programmes and work with training institutions and employers to participate in workforce development through various measures such as funding.

In addition, government actors are well placed to lay the infrastructure and regulatory foundations of the lifelong learning system by: ensuring quality assurance of education programming, setting curricula and standards and frameworks for skill recognition, promoting equality of access by ensuring access to basic education programs for lower skilled adults, securing access to technologies for learning, putting in place social safety nets to helps adult learners through work transitions, finding collaborative funding solutions and partnerships, governing incentives such as time allotted for learning and collective levies, as well as supporting skills anticipation and linking them to training systems both nationally and locally. Broad-based, mass upskilling and reskilling programmes that cater to the need for enhanced literacy, numeracy, and other basic employability skills in some segments of the adult population are traditionally more effective when provided by the public or community centre providers.

Companies are extremely important actors in facilitating adult learning, both within their companies in formal and informal contexts, as well as collectively at the sector or industry level through business and professional associations. Sector-specific upskilling and reskilling may be most efficiently provided through sector-company coalitions in partnership with government and local educational institutions, combining theoretical and applied training (see the example of ManpowerGroup Italy, on page 8). Large companies are most inclined to invest in proprietary technical skills specific to their business model. These technical skills can be provided in partnership with universities or in-house (See the example from AT&T, on page 7). Finding the optimal combinations of stakeholders and methods can help improve efficiency and ensure that adult learners get the investment they need. Beyond their immediate company structure, firms can also play an important role in providing opportunities for reskilling within their supply chains through various initiatives catering to the needs of their suppliers (See the example of Nike/Youngone Bangladesh, on page 7).

Finally, global institutions can play an important role in measuring progress, sharing good practices and helping dedicate resources where they are especially scarce.

Recognize and promote on-the-job training opportunities and maximize informal learning opportunities

A significant share of adult learning is acquired through practical experience, on-the-job training and, especially, interaction with colleagues. Thus, employers are pivotal players in adult education, and their competitiveness is closely linked to their capacity to secure their talent pipeline and maximize the performance of their employees. Better understanding of business training needs and strategies is critically important for building effective public-private partnerships and putting in place the right incentive structure to optimize adult reskilling opportunities. Businesses can support this process by clearly articulating their skill needs and training plans. In addition, companies can also use job rotation programs to bolster adult skills, and governments can help co-finance certain positions to provide additional opportunities. Furthermore, businesses can provide opportunities for adult apprenticeships and benefit from experienced labour at reduced costs. Vocational training and apprenticeship models, such as those in Germany and Switzerland, have demonstrated strong outcomes in procuring adult technical skills and could be adapted and expanded to greater scale in new contexts. The strategies that businesses employ in meeting their skills development needs varies, driven by industry needs, characteristics and business models. Table 1 shows various industry preferences for internally focused strategies.

In line with the applied dynamics of adult learning, the greatest share of adult learning takes place on the job or outside of work through informal learning opportunities. In many cases, adults learn from interacting with colleagues, and through individual agency and effort in applying problem-solving strategies to business challenges. Thus, a working culture within the firm that encourages innovation and learning is essential for facilitating opportunities for growth. This type of learning is especially relevant in SMEs that are less likely to participate in more formal training courses (See the example of the CME Consortia in Manitoba, on page 8). In addition to peer-learning programs across diverse companies, instilling a learning culture within an organization or company relies providing workers with high levels of autonomy in work are combined with problem-solving and task complexity.[9] Connecting employees to resources and knowledge networks, as well as empowering employees with considerable autonomy and agency, are at the heart of institutional characteristics that foster continuous informal learning.

Reach those that need it most—SMEs, lower-skilled workers and older workers

The bulk share of global employment in the formal and informal sector works for SMEs. SMEs employ 60 to 70% of workers in OECD countries and exceed 80% of job creation in some emerging economies.[10] Nevertheless, SMEs are constrained in their access to training due to their small size and resource limitations that impact their participating in training activities. In OECD countries, workers in SMEs engage in half of the training activities as those workers employed by larger firms.[11] Effectively engaging SMEs in reskilling programs is critical for

Table 1. Balance of Strategies for Meeting Human Capital needs

Industry	Ratio of Internal to External Strategies
Professional Services	5.1
Mobility	5.0
Healthcare	4.8
Financial Services & Investors	4.3
Industry Average	4.0
Basic & Infrastructure	3.7
Consumer	3.6
Energy	3.6
ICT	3.4

Source: World Economic Forum, Future of Jobs Survey, 2016.

ensuring the success of broad based reskilling, and reaching informal SMEs is crucial in emerging markets and developing economies. Furthermore, the growing share of workers pursuing independent contracting as part of the platform-based gig economy may also have limited opportunities to benefit from work-based training initiatives, and may need training related to entrepreneurship, resilience, small business management and development. Small Business Councils and SME consortia can play an important role in identifying and pooling SME training needs, as well as organizing programs that cater to these needs. These consortia can also create opportunities for informal learning exchanges to help small businesses improve their practices through peer learning (See the example of the CME Consortia, on page 8).

A dynamic training and upskilling ecosystem should also meet the diverse and context-specific learning needs of people at all education levels and digital literacy levels, and within different age groups.[12] Recent research estimating the impact of automation on labour markets across OECD countries highlights the disproportionate share of workers with at most secondary educational attainment and those with below median income per capita levels who are likely to be most impacted by technology-driven labour market disruptions.[13] However, in the EU lower-skilled workers have been shown to be half as likely to participate in learning activities as the general EU population, and this gap further increased between 2012 and 2015.[14] Lower-skilled learners tend to participate to a greater degree in blended courses that combine in-person and digital formats, are supported by union stakeholders, are appropriately contextualized in their field of work, and provide skills that can be applied in future employment.[15] Thus, it is imperative that adult education programs for lower-skilled workers take into account motivation, financial and time resources, and digital literacy, as well as provide career guidance and support.

In countries with ageing populations, it is important to consider the motivation and dynamics of training the silver workforce. Studies have shown that there is a significant drop in the rates of participation in training activities in the 54-and-older age group relative to younger working cohorts.[16] This dynamic seems to be driven by both declining employee perception regarding the benefits of training, as well as greater employer motivation to invest in training younger workers in whom they feel their investment may see a greater return over a longer period of time. Helping older workers understand the range of training opportunities available to them (and encouraging their

participation) is crucial. Recent research in Italy highlights that silver workforce members tend to underestimate the benefits of participating in training.[17] Career counselling and motivational campaigns can be particularly useful tools in helping older workers maintain and improve their skills and continue their professional development into the final stages of their careers (See the example of Mid-Life Career Review, on page 10). Employers should also consider dedicating more resources to training older workers, who tend to be more loyal employees and have a considerable experience from which to draw upon in their upskilling efforts. Furthermore, the government can also help play a role in aligning these incentives. For instance, special funds and subsidies allocated to mid-career individuals above the age of 40, such as those in Singapore, can also help support the training efforts of older workers. As demographic shifts in many countries may result in a higher share of relatively older workers, employers and managers will need to better manage the needs of senior workers, work to cohesively integrate their intergenerational workforce and maximize opportunities for intergenerational learning and exchange (See the example of Beyond Age, on page 8).

Customized teaching for adults

Adult education activities will only be as transformative and insightful as their teachers and the curricula these teachers employ. Policies vary across countries, but successful examples of developing highly qualified teachers include paying competitive salaries, instituting rigorous training and testing to get teaching certification, incentivizing reskilling programs as criteria for further career progression, and facilitating teacher externships in the workforce to raise greater awareness of the skills that are needed in the workplace.[18] Furthermore, adult education requires adapted curricula and formats. Malcolm Knowles, an American educator and expert in andragogy, has outlined four principles that he felt were specific to adult learning. He emphasized that 1) adults need to be involved in the planning and evaluation of their instruction, 2) experiential learning was the basis for learning, 3) learning is problem focused, and 4) learning should have a direct application in the adult learner's job or personal life.[19] To cater to the specific needs of adult learners, countries such as Singapore have created specific institutions to train teachers for adult reskilling to maximize impact and the appropriate contextualization (See the example of the Institute for Adult Learning, on page 8).

Harness the power and scalability of blended offline and online learning, enhanced with virtual and augmented reality when relevant

The power of online courses in reaching learners at no or low costs has created breakthroughs in access to digital learning content and fostering digital citizenship, information management skills and self-directed learning skills. MOOCs have improved the scalability and reach of adult learning courses through the advent of dedicated learning platforms such as Coursera, Udacity, edX, among others. In 2015, over 4,200 MOOCs were operating on major platforms around the world, representing courses from over 500 universities from around the globe, with over 35 million learners enrolling in these courses.[20]

However, uptake of these types of learning opportunities is not evenly distributed in the adult population. Adult learners who are accessing MOOCs are disproportionately people who already have college and graduate degrees.[21] In addition to the self-selection challenges, completion rates for some of these courses also tend to be lower than for traditional education formats. According to a University of Pennsylvania study, the completion rate across the institution's MOCC courses averaged only 4%, indicating the limited reach of some of these courses despite the considerable increase in access to learning that they could provide.[22] In response, several platforms are now working to offer more blended courses, which incorporate in-person study groups and tutoring sessions into online learning to provide more personalized attention and a human touch to the MOOC experience. Furthermore, blended formats can create the optimal mix of in-person, dynamic interactions and intellectual activity facilitated by technology (See the University of Central Florida Blended Toolkit example, on page 11).[23]

As technological advances continue to expand adult learning opportunities, new frontiers are emerging in technology-enhanced hands-on learning. For instance, virtual reality may be a useful educational medium for professionals who use physical skills in order to solve problems, such as surgeons, nurses, electricians, and firefighters.[24] Virtual reality removes mediating factors from the educational experience, creating new opportunities for new types of on-the-job cyber training activities. Gamification is another tool being implemented in some training environments. It allows for simulation of diverse circumstances, interactive learning with other participants, and practicing decision-making in a risk free setting. The combination of virtual reality and gamification is also being applied to various types of skills. For instance, Virtual Reality House by Train4TradeSkills allows plumbers to practice their skills in a full immersion virtual reality setting.[25] Other examples include the inclusion of gamification principles in corporate online training platforms, such as that of the Deloitte Leadership Academy. Deloitte found that by embedding missions, badges and leaderboards into a user-friendly platform alongside video lectures, courses, tests and quizzes, users have become engaged and more likely to complete online training programs. In fact, there has been a 37% increase in the number of users returning to the site each week.[26]

Examples of Successful Implementation

Business-led examples

AT&T: Linking learning and professional development to work performance assessments

In 2013, AT&T recognized the evolution of needs within its company in the areas of cloud-based computing and data science and decided to meet these changing needs by reskilling its existing workforce and revamping the organizational and incentive structures to enhance collaborative performance. To do so, AT&T adopted the WF2020 program, which put in place strong incentives and linked learning to performance reviews for its work force of 280,000 people.[27] The WF2020 program restructured roles in the company to simplify and standardize role structures for increasing job mobility and interchangeability of skills, overhauled performance metrics to directly align them with the goals of the business, and created a platform for evaluating skills as well as financial support for acquiring new skills. The initiative realigned compensation to better reflect market value, and de-emphasized seniority to motivate high performers and give weight to high demand skills such as cybersecurity, computer science, data science, IT networking and software-defined networking.

The company also adopted a learner-centred focus, and placed the responsibility of engaging in retraining activities squarely with the employees, while also allotting 10 hours per week for training time and seeking out partnerships with Udacity and Georgia Tech University to provide accessible learning opportunities. Since the inception of the WF2020 initiative in 2013, AT&T has invested $250 million on employee education and professional development programs, and more than $30 million on tuition assistance annually. The company offered up to $8,000 in annual tuition aid per employee for degrees and nanodegrees, with a lifetime cap of $25,000 for undergrad degrees and $30,000 for graduate degrees. As a result of this investment, 140,000 employees have been actively engaged in acquiring skills for newly created roles. Training outcomes were also a strong consideration for advancement. From January to May 2016 employees who had participated in retraining had moved into half of all technology management jobs at the company and received 47% of promotions.

The early results of the initiative appear positive both at the individual learner level, as well as for the company's performance as a whole. At the beginning of 2016, 323 employees had enrolled in the online master's program, and another 1,101 were in the process of earning nanodegrees in addition to several thousand more who have pursued individual courses. At the company level, AT&T had reduced its product-development cycle time by 40% and accelerated time to revenue by 32% within the first three years of the adoption of the program.

Saudi Aramco: Investing in its employees for greater employee job satisfaction and increased company performance

Since its inception, Saudi Aramco has considered learning and development as a key element of its value proposition for its employees. About three-quarters of the company's hires are recruited directly after their high school or college education—and then actively develop their skills and abilities through formal and non-formal learning opportunities within in the company as well as in company financed opportunities in other institutions. In 2016, the company reported more than 5.4 million learning hours logged by employees for their professional development. Among the company's proudest and most impactful accomplishments in learning and development is its Self-Development Program. This highly regarded program is designed to make employees partners, and give them an active role in their own learning and development. The company promotes continuing education for job related courses by reimbursing up to $7,000 per year in tuition and course fees while employees attend classes and also receiving their regular compensation. Over 6,000 employees have earned vocational, bachelor and master degrees through this program since 2003. This has led to improved employee engagement, job satisfaction and workforce productivity, and afforded many with new knowledge and skills to advance in their careers.

Nike/YOUNGONE Adult Literacy Workplace Training in Bangladesh: Building adult literacy skills through supply chain networks[28]

YOUNGONE, a South Korean export manufacturing company and key supplier to Nike, is the largest single foreign investor in Bangladesh, operating seven factories employing approximately 20,000 workers. YOUNGONE discovered that more than 20% of its total workforce in Bangladesh was illiterate. In response, company authorities identified illiterate workers and invited Concern (an international NGO working in Bangladesh on health, education and community development) to design and facilitate a literacy course. Concern designed a six-month literacy course for 3,600 workers in factories in both Dhaka and Chittagong. The curriculum of the workplace literacy course was especially designed for the adult workers, using the Language Experience Approach (LEA). No printed materials were used in this literacy approach. Instead, teachers encouraged participants to identify words, phrases and numerical terms widely used in YOUNGONE factories that are specific to the participants' own literacy needs. The terminology taught in the course thus reflected issues from the daily lives of the students, their employment context, and the code of conduct of the factory premises, including notices, instructions, directions, labels and packets of products, and the language widely used inside the factories. The program showed that, by working through supply chains, companies can also substantially improve adult reskilling opportunities, creating win-win outcomes of higher skilled workers with improved potential and living conditions.

ManpowerGroup: Multiple examples of skilling, upskilling and reskilling

Developing in-demand skills in France. In France, ManpowerGroup is helping redundant workers through their career transitions by developing their skills for in-demand sectors like IT and call centres. Through FuturSkill, ManpowerGroup delivers four month-long programmes comprised of skills assessments, training and access to an online learning management system in both hard and soft skills for more than 60,700 people across France. Following completion of the programme, the company's Bridge To Work program works as a matching platform for redeploying unemployed people to fill in-demand positions. Thus far, the program has enjoyed a placement rate of 90% of candidates into diverse roles such as IT help desk technicians, developers, customer service representatives and production workers. This represents double the placement rate of publicly funded programs in France that do not link training to direct employment opportunities.

Assessing skills for platform economy entrepreneurial talent in China. When start-ups and small- and medium-size businesses are responsible for creating up to two out of three new jobs, it's perhaps no surprise that governments are trying to figure out how to support and develop the skills of entrepreneurs. In Shanghai, investment in training and access to capital and tax benefits is substantial, so the government wanted a tool to maximize its return on investment. Building on its candidate selection expertise, ManpowerGroup has created a unique New Business Starters (NBS) assessment for entrepreneurial skills and aptitudes—to identify relevant cognitive skills, personality traits and life experiences that accurately select individuals with the highest potential to succeed. To date, over 225,000 candidates have been assessed, some fresh to the labour market and others taking a new career direction, all benefitting from upskilling advice and training. Early results indicate that high scorers are two to three times more likely to succeed as new business starters—and will be well placed to be the job creators of tomorrow.

Training IT skills in India. When 40% of employers globally report talent shortages, the rapid development of in-demand skills is critical. Last year in India, ManpowerGroup trained 1,000 graduates in testing, Java and mainframe skills for a Hire-Train-Deploy model, and developed a tailored curriculum and intensive boot-camp training in 30-40 day programmes. Participants were diverse, sourced from across India and from all stages of their career. Some were new graduates and others experienced professionals looking to reskill and make lateral moves. Impressively, in this underrepresented sector 60% were female. By focusing on graduate ability and desire to learn, the chosen candidates who completed the boot camp training were motivated and well placed for applying their new skills. Thus, 90% of participants were placed directly into jobs in large Fortune 500 companies.

Supporting local partnerships for adult reskilling in Italy's motorsport industry. In 2013, in response to skills shortages from Italy's key motorsport manufacturing companies—Ferrari, Maserati, Lamborghini and Dallara—ManpowerGroup's Experis business (specializing in professional resourcing for IT, engineering and finance) partnered with these companies, local governments and universities to retrain adults from declining sectors - including the textiles industry -with the skills needed for integration into the motor sports car industry. The program trained these displaced workers for diverse roles as carbon fiber laminators and fitters, CAD designers, aerodynamics engineers, vehicle performance and data analysts, engine builders, chassis developers, programmers, race track engineers, as well as interns, project managers, HR and IT specialists. The programme trained 243 graduates in seven cities resulting in average wage increases of 30%, with placement rates ranging from 55%-70%. ManpowerGroup plans to expand this model across Europe and to the US in partnership with local universities, technical schools and government stakeholders.

Canadian Manufacturers and Exporters (CME) Consortia Programme in Manitoba: Organizing new collective peer learning opportunities for SMEs[29]

This programme combines formal and informal learning methods for small groups of non-competing SMEs in the region. Each consortium consists of 10 to 12 companies that meet monthly for a 14-month cycle in a rotating fashion at one another's businesses to engage in peer learning. The process is designed to help share applied problem-solving techniques and to allow sharing of innovative techniques across participating companies. CME Manitoba provides the facilitator for these meetings, and tracks progress and lessons learned over the consortia's involvement. These consortia formed around themes such as lean production, sustainability and operational excellence to provide hands-on problem-solving experience that is shared among firms, as well as providing access to and organizing external ad hoc training when relevant. Participating companies have noted the benefits associated with learning from other company practices, while being able to adapt them to their specific contexts and needs.

Beyond Age: Working to empower, educate and equip managers with the tools to thrive with senior workers

Beyond Age is a Singapore-based consulting company whose mission is to shift perceptions about chronological age and to promote focusing on and honing the strengths and potential of older persons. To do so, this consultancy service offers training and counselling to managers and professionals in the areas of coaching mature adult learners, counselling mature adult employees, managing mature employees and seniors, as well as a mentors programme. These courses are designed to equip managers, professionals, staff and volunteers with the requisite knowledge and competencies to work effectively with mature adults who will increasingly form a greater share of employees in ageing economies.

Public Sector Examples

Institute for Adult Learning Singapore (IAL): Innovating adult learning pedagogy

IAL, an institute of SkillsFuture Singapore Agency (SSG), supports the professionalization of Continuing Education and Training (CET) adult educators, and the co-creation of an effective, innovative and responsive CET system. For instance, as part of the Innovative Learning 2020 (iN.LEARN 2020)

national plan to promote the adoption of learning innovation in CET, IAL has set up iN.LAB, which supports exchange of ideas, innovation and cross-sharing of ideas for adult educators.

At the same time, IAL is also helping to encourage workplace learning to create accessible and authentic settings for learning at and through work. For instance, IAL has developed an online Learning@Work portal that provides employees and organizations with resources and tools to facilitate skills acquisition at the workplace which will lead to improved individual and organizational performance. IAL's mission is to address the following key areas:

Inspire professional excellence in the CET community. IAL began its journey of broadening and deepening the capabilities and professionalism of adult educators by establishing clear, professional standards for CET design and delivery and in pioneering the Singapore Workforce Skills Qualifications programmes for the Training and Adult Education sector. Today, it is the sole institute to deliver the entry-level Advanced Certificate in Training and Assessment (ACTA) on top of other certifiable and post-graduate programmes. Its role has also expanded its role to support SkillsFuture through a wide range of IAL-certified professional development programmes. It also nurtures and engages a CET community, for example, through the Adult Education Network (AEN).

Advocate new paradigms in learning. IAL leads innovation and experimentation in pedagogical learning design and practice. It has set up iN.LAB, a collaborative space that supports a wide range of learning innovations in CET, from design and development to delivery. Various events are held in iN.LAB that aim to solve CET-related issues, where SSG would offer grants to develop prototypes. To allow CET providers greater access to the use of online learning to facilitate learning, a Total Online Learning Solution platform called LearningSpace.sg was created to foster innovation and experimentation among CET providers. IAL has also developed an online Learning@ Work portal that provides employees and organizations with resources and tools to boost learning at workplaces.

Leading through research. IAL currently has three research centres that focus research efforts within specific areas of national interest:

— Centre for Skills, Performance, and Productivity, which focuses on the impact of skills at work, and the implications for policy and practice in CET.

— Centre for Innovation and Development, which advocates a new holistic approach to enhance the effectiveness of CET by strengthening the links between skills, productivity and performance. The Centre also undertakes experimentation and builds resources on blended learning and technology based learning design.

— Centre for Work and Learning, which undertakes research that seeks to better understand the processes and practices of learning design, teaching, learning and assessment in and across different settings, and their implications for practice and policy.

As IAL plays a pivotal role in developing adult educators for a wide range of industries in Singapore, it has to model adult learning pedagogies for the adult educators so that

they experience and go on to design and deliver similar learning experiences for their own learners. Hence, IAL adopts a blended learning approach in the design and delivering of all its own programmes. Based on a blended learning framework that IAL has adapted and created from various literature, IAL proposes that effective adult learning requires a blend of different learning modes: classroom learning (face-to-face learning that takes place in a protected space and time), work-based learning (learning that is driven by an educational institution, e.g. internship, towards the attainment of a qualification), workplace learning (learning that is driven by an organization, e.g. workplace supervisors, or individuals that is embedded in daily work practices) and technology-enabled learning (learning that taps on the use of technology to support the learning process).

Denmark national skills anticipation system: Providing information for 850 occupations[30]

The Danish skills anticipation system integrates diverse approaches and a cohort of relevant actors for compiling accessible and detailed information on labour market trends and skills demand for 850 occupations. These activities are based on collaboration and dialogue among ministries, public authorities and stakeholders. The main skills anticipation activities include: skills forecasting (e.g. statistical forecasting of education status and the demand and supply of labour in the public sector), skills assessments (e.g. quantitative sectoral assessments on imbalances in the labour market), skills foresights (e.g. sectoral assessments on future needs in the labour market) and employer surveys.

The methodologies and time perspectives of these activities vary to provide a wide range of perspectives on the labour market and skills dynamics. Skills anticipation in Denmark utilizes a range of methods and tools, including: quantitative forecasting, sector studies, qualitative methods, employer surveys and surveys of workers and graduates. Quantitative skills forecasting is well established and uses macro-econometric models to produce economic forecasts and policy assessments. The overall aim of skills anticipation activities is to provide individuals with better opportunities to obtain employment and employability over time. The skills anticipation outputs are targeted at young people transitioning from school to employment, jobseekers, training providers and employers, and, increasingly, people in employment with a view to having a better understanding of labour market dynamics as a basis for upskilling.

Social partners—key to the development of Danish skills anticipation activities—are involved in funding and direct research collaboration, mostly undertaken at trade and regional levels. There is a sense of cooperation among these partners, with a shared aim of ensuring not only that young people and jobseekers base their decisions on empirical evidence, but also that the education and training system is effective. Skills needs analysis is performed during the development of occupational standards and sectoral and regional analyses.

The governance of skills anticipation activities is a highly developed and decentralized operation. Responsibility for the day-to-day implementation of employment policies in Denmark is largely decentralized to the municipal level. The eight Regional Employment Offices undertake skills analysis

and disseminate trends at a regional level. Three Labour Market Offices work to ensure continuity in skills anticipation activities and support policy implementation at the local level.

Data are readily available, with dedicated tools to inform the wider public of career opportunities, the availability of training courses and content. Developed in 2006 as a part of a national monitoring strategy (national overvågningsstrategi) to support systematic monitoring of the labour market, the Danish Labour Market Balance provides data on job opportunities for approximately 850 occupations by region covering the entire labour market. The Labour Market Balance online interface provides public employment service staff with quantitative data for prioritizing employment measures, and frontline caseworkers with a tool to support jobseekers in finding employment. The current regional Labour Market Balance is the most used tool providing data and intelligence from skills anticipation activities.

NIACE/Unionlearn Mid-Life Career Review: Empowering older workers to seek out new opportunities for growth
Launched in the United Kingdom in 2013 and funded by the Department of Business, Innovation and Skills and managed by the NIACE, this project offered older workers between the ages of 45-64 information on areas of employment, training, financial planning and health issues. The project brought together 17 partner agencies, including the Government's National Careers Service Prime Contractors, voluntary organizations, teaching providers, Unionlearn, Workplace Learning Advocates (WLA) and Community Learning Champions (CLC). The program worked with nearly 3,000 individuals who were out of work, facing redundancy or looking to make some sort of transition through group sessions in peer groups followed by individual one-on-one counselling sessions. During the initial two-year pilot, 80% of participants reported a boost in self-confidence and skills associated with participation in the program. Furthermore, one in three participants reported taking direct action as a result of the review program. One in five unemployed participants was able to find new employment opportunities and one in three reported increased motivation for finding new work or pursuing a new training program.[31] As a result of this successful pilot study, the model is being developed to partner with local institutions and pension services to mainstream the mechanism.

Brazilian Fund for the Protection of Workers: Engaging trade unions in governance and provision of vocational training
The Brazilian Fund for the Protection of Workers (FAT) allocates resources towards unemployment benefits and vocational training. The fund is overseen by an equally distributed tripartite Council. Three of the main union federations are responsible for providing vocational training courses at the national level as well as through regional affiliates. Examples include the School of Tourism and Hospitality in Florianopolis, which coordinates with the Ministry of Tourism.[32] These programmes cater to both employed and unemployed workers looking to work in diverse segments of the tourism and hospitality supply chain. Coursework includes hygiene and food handling, information technology, hospitality management and motorboat maintenance, among others.

CEDEFOP: Developing EU-wide, real-time skills demand information
CEDEFOP, the European Centre for Development of Vocational Training, is undertaking the creation of an EU-wide tool that will consolidate information from various national sources and vacancy portals in order to provide more complete and detailed information on skills demanded at the regional, national and local levels. While online vacancies may not accurately reflect relative demand across all occupations, it will be an unprecedented centralization of information about real-time vacancies and skills demanded at the EU level. This information will be used to inform career and vocational education and training decisions by individuals as well as businesses. The project began development in 2017 and aims to have a completed and fully functional database by 2020.

UNESCO Global Network of Learning Cities: Encouraging cities to provide lifelong learning for all
Lifelong learning works best when it is embedded in the local ecosystem and actively engages the local community. By empowering the local community to create networks of community-based learning spaces, centres and organizations that are adapted to the local context and learning needs, people are more motivated to make use of these learning opportunities. Cities can offer just the right mix of resources, institutional structures, modern technology and cosmopolitan values that allow them to serve as incubators and drivers for the knowledge-based societies of the 21st century. Learning Cities take a proactive approach to ensuring inclusive access to all levels of education, empowering individual learning and strengthening learning in families and within the community at large. In Japan, for instance, Learning Cities resulted in the creation of Citizens' Universities, which are community-based peer-learning centres that function on a voluntary basis and offer courses to community members of all ages on various subjects. The UNESCO Institute for Lifelong Learning tracks and recognizes annually the achievements of cities across the world in their efforts to create lifelong learning opportunities and improve standards of living. In 2017, the UIL is recognizing Bristol (United Kingdom), Câmara de Lobos (Portugal), Contagem (Brazil), Gelsenkirchen (Germany), Giza (Egypt), Hangzhou (China), Larissa (Greece), Limerick (Ireland), Mayo-Baléo (Cameroon), N'Zérékoré (Guinea), Okayama (Japan), Pécs (Hungary), Surabaya (Indonesia), Suwon (Republic of Korea), Tunis (Tunisia) and Villa María (Argentina).[33]

Civil Society and Academia Examples

Bob Emploi: Using big data for the common good
Bob Emploi is a new free-of-charge platform operating in France launched by an NGO called Bayes Impact that works closely with the French unemployment service (Pole Emploi). The platform employs algorithms to help individual job seekers find the resources that best match their specific profiles. The platform brings together employment listings, training opportunities and the expertise of head-hunters and HR professionals to assist jobseekers with relevant information and personalized development plans.

University of Central Florida Blended Toolkit: Designing and implanting blended coursework

This free resource put together by the University of Central Florida provides best practices and examples for designing and implementing blended coursework. It draws primarily on university-based courses at the University of Central Florida as well as others, offering step-by-step guidance and a variety of checklists and resources to empower educators to pursue the development of blended courses. These materials provide guidance on how to conceptualize blended learning courses, designing interaction within these courses, structuring assignments and developing content, as well as strategies for quality assurance and evaluation.

Action Framework

In the table below are illustrative examples of how different stakeholders can contribute to building a robust and inclusive ecosystem for adult reskilling.

Table 2: Building an Inclusive Ecosystem for Workforce Reskilling

Key Pathways	Key Public Sector Actions	Key Private Sector Actions	Other Stakeholder Actions
Take stock of and recognize existing skills	Develop qualification frameworks to recognize formal and informal skills	Move towards skills-based recruitment and work to develop relevant skills assessments for their companies	Unions and professional associations can conduct skills assessments International organizations can assist with skill measurement and international benchmarking
Understand skills demand	Lead the governance of skills anticipation systems, and organize skills councils and inter-ministerial working groups and industry-specific strategic foresight groups for evaluating skills demand Conduct employer surveys, put in place labour demand forecasting models based on previous economic performance and needs, coordinate industry specific strategic foresight groups, and gather real-time information through big data analysis	Actively participate in skills councils, data sharing, industry strategic foresight groups and business councils	Unions and professional associations can be active players in skills assessment, setting up learning committees, and feeding this information into skills anticipation systems
Adopt the right mix of financing instruments	Allocate sufficient funds towards adult learning, including through longer term instruments Co-fund adult learning opportunities and create financial incentives for burden-sharing on the part of businesses and individuals through diverse instruments Regulate the minimum provision of training funds and time allocation for training Allocate additional resources to SMEs, lower-skilled learners, older learners and other vulnerable groups less likely to benefit from professional training opportunities	Invest in human capital development both through in-house training and in coordination with universities and other educators Give employees a stake in their learning by deducting training levies from their payroll or matching contributions towards training and professional development courses	Involve learners in the investment towards their learning opportunities through co-funded activities and financial matching schemes International organizations are well placed to study the impacts of diverse financing models and instruments and share good practices
Build and sustain motivation for adult learning through active labour market policies and accessible resources	Build cohesive strategies that incorporate training offerings, labour market information as well as career guidance services Ensure that government actions are coordinated through working groups or intermediary institutions to effectively link all relevant resources to empower citizens and provide one-stop shops for their employment and professional development needs	Build learning into work performance assessment of employees Incorporate career guidance and advancement incentives for reskilling and upskilling efforts Link training opportunities to new roles that will directly apply newly acquired skills Use gamification to enhance motivation and participation in self-paced modular courses	Unions, professional associations and other community groups can be a strong motivating factor for participating in adult education programs

(Continued)

Table 2: Building an Inclusive Ecosystem for Workforce Reskilling *(continued)*

Key Pathways	Key Public Sector Actions	Key Private Sector Actions	Other Stakeholder Actions
Create shorter learning modules that foster continued learning	Redesign education courses to offer more short-term and highly specific courses aligned with specific employment opportunities	Create modular learning programs that allow for rapid reskilling as skill demand evolves Partner with universities and other institutions to create the relevant programs and nanodegrees	Create targeted training opportunities and coordinate the provision of basic education with public institutions
Determine the role of different stakeholders	Governments, policymakers and public intermediary institutions can: lead the governance of the lifelong learning system; set curricula and standards and create frameworks for skills recognition; ensure the quality of adult education programs; secure access to learning technologies; promote equal access to learning opportunities for all; find collaborative funding solutions and governing incentives; coordinate social safety nets; and lead skills anticipation activities	Create opportunities for reskilling and upskilling within companies, across sector alliances and business councils, and throughout supply chains Co-finance professional development opportunities for employees and allot adequate resources for creating a culture of continuous learning Partner with universities and other education actors to ensure access to a suitable talent pipeline with the right blend of skills Support skills anticipation systems by providing data to employer surveys and actively participating in industry foresight groups	Unions can work in coordination with other stakeholders to identify skill needs, inform workers about training opportunities, support apprenticeships, and provide targeted trainings when needed
Recognize and promote on-the-job training opportunities and maximize informal learning opportunities	Create financial incentives and programmes for facilitating adult apprenticeships Build training infrastructure that brings together educators and companies in innovation labs and joint research facilities	Put in place job rotation programs, adult apprenticeships and other opportunities to acquire new skills in the workplace Work to create a learning enabling corporate culture that rewards individual innovation and learning	Help inform workers about training opportunities and support learning activities through peer support networks
Reach those who need it most–SMEs, lower-skilled workers and older workers	Launch motivational campaigns, provide financing and resources to vulnerable groups within the workforce, and provide targeted programs for low skilled and older workers, gig economy contract workers and SMEs	Put in place mid-career review and other mechanisms for actively engaging the development of older workers Create direct opportunities for knowledge-sharing and intergenerational learning within the workplace Build consortia of SMEs to cater to their training needs and build peer support networks	Unions can actively support firms and governments in the provision of inclusive programs for basic skills training Civil society can also create peer networks and administer programs for silver workforce participants Community learning centers, universities, and other education providers at local and regional levels can work with businesses and governments to coordinate courses to best meet the needs of diverse learners
Customized teaching for adults	Set high standards and work to professionalize adult education by putting in place rigorous training and certification processes for adult educators Invest in further research about effective adult learning strategies and ensure this research is applied in government programmes	Design training to be practical, hands-on and directly applicable in the workplace Adapt the format to the skill levels of diverse learners	Unions can adapt their training formats to best suit adult learning styles with direct applications in professional settings

(Continued)

Table 2: Building an Inclusive Ecosystem for Workforce Reskilling *(continued)*

Key Pathways	Key Public Sector Actions	Key Private Sector Actions	Other Stakeholder Actions
Harness the power and scalability of blended online courses, enhanced with virtual and augmented reality when relevant	Promote the continued adoption of blended format courses for diverse adult learners at universities, community centres, vocational training centres and other public education institutions to increase opportunities while maximizing resource efficiency Work to monitor quality and support the development of blended coursework by creating more instructional resources, evaluation of courses and certification programs	Maximize opportunities for training and development for all employees and through supply chains by adopting scalable blended learning adapted to digital literacy levels Incorporate virtual and augmented reality for scalable transfer of tacit knowledge	Universities and diverse adult educators can actively work to increase the offer of these flexible and scalable learning opportunities

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