



► Policy Brief

May 2023

Changing demand for skills in digital economies and societies

This policy brief draws on recent findings and projects, including the report, *Changing Demand for Skills in Digital Economies and Societies: Literature Review and Case Studies from Low- and Middle-income Countries*.

Key points

Digital transformation affects various sectors and countries in a diverse and profound way. In order to facilitate successful transformation, the education and training should adopt the following **principles and policy measures**:

- **Developing right mix of core work and technical skills as a foundation for the further development of digital skills through lifelong learning:** A successful transition into the workforce depends on a combination of core work and technical skills.
- **Enhancing policy coherence between skills and other policies:** Multiple factors impacting the labour market necessitates an integrated approach to skills policies and employment, sectoral, environmental and industrial policies. Active involvement of governments, workers, and businesses is crucial to achieve policy coherence.
- **Reinforcing TVET and skills development systems to deliver digital skills:** Enhanced governance structures is required to incorporate skills required for the digital economies and societies in competency standards, curricula and assessment packages. Quality apprenticeships should be seen as a key pathway.
- **Supporting the professional development of teachers and trainers with the provision of the right tools:** Teachers and trainers require strong capabilities, knowledge, and pedagogical skills. Their professional development should be a top priority.
- **Activating skills responses at the enterprise and industry levels:** Skills responses can be driven by industry associations, sector skills councils, or chambers of commerce. Incentives can stimulate such responses at enterprise and industry levels.
- **Strengthening strategies for inclusive and effective lifelong learning:** Governments must create inclusive environments for continuous learning to keep pace with digitalization, with proper certification, credential validation, and effective career guidance to facilitate smooth career transitions.
- **Support for developing countries in overcoming barriers to digitalization:** Low-income countries encounter various obstacles to digitalization. Supporting necessary systems for digital transformation should be a primary concern for development partners.

► Introduction

This policy brief is intended for use by policymakers, social partners, and education and training providers, to foster a better understanding of the key skills implications of the digital transition and provide policy guidance on how to ensure that the current and future workforce are furnished with the required knowledge and skills to navigate the transition to the digital world of work.

In the globalized world, the rapid pace and penetration of technological advancements and digitalization, coupled with the impact of the coronavirus disease (COVID-19) outbreak, are causing disruptions in labour markets by altering the demand for skills and leading to job losses,

in particular those involving routine and manual tasks. Digital transformation has resulted, at the same time, in highly disruptive structural employment challenges and in great new opportunities. It is creating – and will continue to create – new direct, indirect and induced jobs, roles and tasks, but it is also destroying many others. The total employment effect of digital transformation is hard to foresee as it is non-deterministic. Transiting to a digital future in which more decent jobs will be created will not happen by default: it is a social and political choice, requiring a coherent and holistic policy approach.

► What is meant by digital skills?

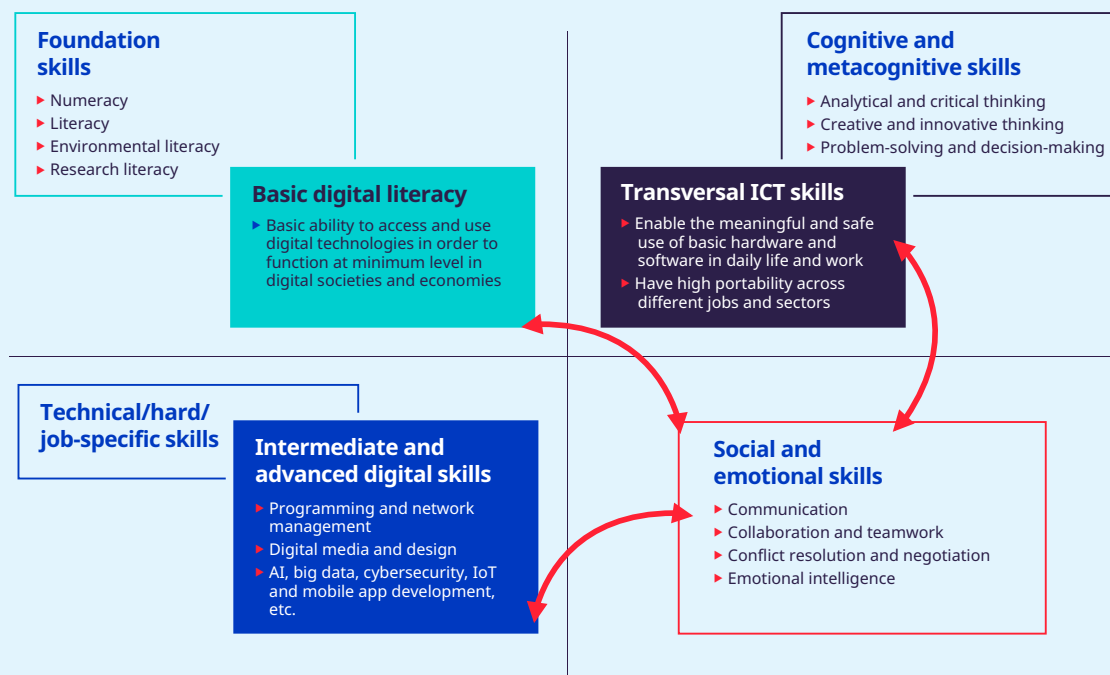
At the outset, a distinction must be made between digital skills and skills for the digital economy. Skills for the digital economy would include a full range of skills, including digital skills specifically, but also skills that are a precondition for the successful deployment of digital skills (namely, the foundational skills that are required to use any technology, such as literacy); and skills that complement digital skills and augment their effect, such as certain higher-order skills that are not necessarily specific to technologies: analytical thinking, research skills, synthesizing and extracting the most important information, creativity, communication, problem-solving and others.

Digital skills have several categories, from the basic digital literacy skills needed to access technologies sometimes referred to as “button knowledge”), to transversal information and communications technologies (ICT) skills which facilitate the meaningful use of technology in daily life and work and, further, to intermediate and

advanced digital skills, imparting specialized knowledge on how to transform existing digital technologies and create new ones. Each of these categories, in turn, represents a continuum of skills (see the figure below). Basic digital literacy and transversal ICT skills are easily transferable across different jobs. For their part, however, intermediate, and advanced digital skills may be less transferable and more sector- and occupation-specific.

Digital skills tend to overlap with other skills such as those of a foundational, cognitive and technical skills, and are closely linked with social and emotional skills (known as “soft skills”). Sometimes the existence of those soft skills is a precondition for digital skills, and sometimes the reverse is true: soft skills condition digital skills. In other words, digital skills may be viewed as a subset of the broader set of skills required for the digital transition, adding to the skills that were recognized as essential for economies even before the digital era.

Figure. Conceptualizing digital skills as a subset of skills for digital economies: overlaps and linkages with the other types of skills and their components



Source: ILO, 2021. Changing demand for skills in digital economies and societies: Literature review and case studies from low- and middle-income countries.

► What are the key trends of digital transformation?

The rapid pace of technological and structural change brought about by digitalization, digital penetration and the COVID-19 pandemic in all economic activities are processes that affect the entire world. According to the International Telecommunication Union, there is a continuing, general upward trend both in access to ICTs and in their use. Businesses are increasingly leveraging technology to improve their productivity and competitiveness, with COVID-19 having accelerated the development of digital infrastructure to allow for remote interactions and sustained operation.

Digitalization is tightly linked to the rate of adoption of advanced technologies, namely artificial intelligence (AI), cognitive technologies, blockchain, distributed ledger

technologies, extended reality technologies, internet of things, cloud computing and big data. Such technologies, being disruptive in nature, have been the driving force of innovation and transformation, opening up immense prospects for restructuring the economy.

While the disruptive impact of technology adoption on jobs is widely recognized, technological advancement also plays an important role in terms of increased productivity, in that workers' skills are augmented by technology, freeing up time to concentrate on less mundane tasks. AI-related innovations affect the way in which businesses operate; they are also rapidly transforming jobs and tasks, and related skills needs.

► Will jobs disappear as a result of automation?

Many predictions have been made of the possible effects of automation on employment. Some researchers estimate these effects as modest, arguing that few occupations can actually be fully automated. Others indicate that the broader adoption of technology, whether digital or digitally induced robotics and automation, is more likely to lead to net job losses or to exert downward pressures on wages. Yet others, however, point to the difference between jobs and tasks that can be automated, and those that actually will be automated, mitigating such alarmist concerns. These different estimates show that the total employment effect of digital transformation is very difficult to forecast. Recent thinking has been that AI would mostly replace routine tasks, and that jobs with a high proportion of such tasks would therefore be more susceptible to automation. While that might still be true, as AI is now increasingly entering the creative arts and analytics, such as ChatGPT, it means that virtually any job may be susceptible to its effects. Learning how to use these new opportunities to augment the workforce's tasks and skills, therefore, and maximizing the benefits for all, are the key concerns.

Digitalization and automation are also leading to the polarization of employment and wages in developed countries. There is evidence that the share of employment in both high-skilled and low-skilled occupations has been growing, while that in middle-skilled occupations is declining. Moreover, if they do not receive retraining, many of the displaced middle-skilled workers may be forced to accept lower-skilled and lower-paying jobs, thus putting further downward pressure on wages in

the low-wage sector. With the global trend of increasing levels of educational attainment, however, the low-skilled workers who are not able to adapt to new technologies and working practices also face the risk of losing their jobs owing to increased competition for jobs from better educated workers. This job polarization will be all the more accentuated in the absence of effective transition policies and well-implemented active labour market policies, including adequate opportunities to acquire new, relevant skills.



► What are the expected changes in occupations, tasks and skills requirements in the context of the digital transition?

Digital transformation means not only that some jobs will disappear, but also that most of the existing work tasks within traditional jobs will be modified. The exact modification depends on the type of tasks within each job, and the extent to which technology can either complement, or replace, workers in these tasks, or to which it can modify existing tasks.

Many of today's tasks will be complemented by technology. This means that businesses will increasingly demand that workers possess skills allowing them to perform non-routine tasks which technology augments rather than replaces. For example, with important investment in assistive technology, many care jobs in some countries are already heavily affected by automation. This affects the content of care jobs in which digital skills are becoming more important and tempers the rapidly growing demand for care workers that is being created by the ageing of populations and enhancement of healthcare.

There will also be demand for new tasks, including in new occupations, which will increasingly require conceptually new forms of vocational training and tertiary education and the updating of curriculums to cover the emerging skills. Occupations such as specialists in AI and machine learning, process automation experts, information security analysts, user experience and human-machine interaction designers, software engineers, data scientists and robotics engineers will be increasingly sought after as the technologies on which they work mature and become more mainstream.

Yet, given the rapid spread of digitalization into various domains and the speed of technological change, existing formal training programmes may be unable to keep pace with the changing demand for skills. As a result, digital skills gaps are likely to emerge, and these could hinder effective innovation and the adoption of new technologies.

► How would digital transformation affect the way in which we work and do business?

Digital transformation brings sizeable economic and social dividends and improves efficiency and productivity. Yet it is also disruptive: it brings about changes not only to products and services, but also to modes of work, processes and organizational arrangements.

Proliferation of alternative forms of employment

New information technology, the expansion of telecommunications and broadband connectivity, and the higher quality and lower costs of digital infrastructure have created environments conducive to the proliferation of alternative forms of employment, including temporary work, part-time work, temporary agency work, dependent self-employment, and disguised employment. Some technological developments, such as new software that predicts peaks in demand, have enabled businesses to manage their labour demand in a minute-by-minute manner, increasing the need for short-term, part-time and on-call work. However, these trends also have a negative impact on working conditions. As it becomes so difficult to attract workers, companies need to give more attention to retention by improving human resources management strategies and investing in training and lifelong learning opportunities, including in digital skills, and career development. Where needed, such measures could be combined with flexible work arrangements to face challenges such as the post-pandemic trend for large numbers of workers voluntarily quitting their jobs, referred to as the “great resignation”.

Growth of the gig economy

Another recent technological development is the growth of the so-called “gig” economy, also called the “on-demand” or “sharing” economy. Forms of work in the gig economy are very heterogeneous, but principally include jobs obtained through online labour platforms (also known as crowdwork platforms) and through work-on-demand applications. Platform work and work through such applications have been gaining prominence in all parts of the world and spreading to numerous sectors and occupations. The development of the gig economy has extensive implications for digital skills.

While many of the tasks are easy and require only basic skills, workers must possess relatively good transversal ICT skills in order to understand how these digital applications and platforms work, as in the case of private-hire drivers who might need to navigate various platforms to maximize profits. In addition, the proliferation of online work is contributing to the polarization of skills. For example, the changes brought by algorithmic management introduced in the organization of work may have detrimental effects on job quality. Workers often have little possibility to override or even discuss these instructions with supervisors, because the data and the algorithms have already defined these instructions and the distribution of tasks in a – supposedly – optimal manner. In addition, a prolonged loss of autonomy, due to the continuous repetition of discrete tasks under strict instructions, can prevent workers from using, practising and developing competences and knowledge in their job, which leads to the deskilling of the workforce.



Expansion of remote and hybrid working options

A clear trend that has emerged from the COVID-19 pandemic, coupled with accelerated digitalization, is the rise of teleworking possibilities and opportunities. The number of people working remotely increased significantly during the pandemic and is likely to continue well beyond the pandemic. For example, 20 per cent of clerical support workers are estimated to be able to work from home in low- and lower-middle-income countries while 42 per cent are estimated to be able to work from home in high-income countries. Workers entering remote working arrangements would require at least basic digital skills and strong soft skills such as communication and collaboration to carry out tasks effectively in a remote environment. Furthermore, employers considering the adoption of remote work as a more permanent option beyond the pandemic would need to craft skills and training strategies that are also adapted to working remotely.

► How does digitalization impact skills within and across countries and sectors?

Agricultural sector

Although the agricultural sector remains among the least digitalized, even in developed countries, agriculture everywhere is becoming increasingly digitalized and digital knowledge intensive. Farmers can access weather forecasts and real-time market prices thanks to mobile phone texting, videos, simple applications and internet kiosks (see example in box 1). Digital technologies have also made a difference to the livelihoods of farmers during the pandemic. Yet, many enterprises are still facing skills shortages owing to the generally poor foundation skills of workers and high degree of informality. The agricultural sector includes many occupations, ranging from crop, livestock and tree farmers, to precision agricultural workers, agronomists,

agro-engineers, aqua-ecologists, irrigation specialists and agro-meteorologists. An increasing number of these occupations require greater digital skills competence. For example, precision agricultural workers rely on data to manage and optimize the production of crops. New digital skills required include the ability to apply remote sensing; the use of digital soil maps, satellite imagery, geographic information systems (GIS) and global positioning systems (GPS). New occupations such as agro-meteorologists, brought into existence by climate change and increasing weather variability, require skills that include applying meteorological information to enhance crop yields and reduce crop losses caused by adverse weather. For some occupations in the sector, higher skills levels and their lifetime upgrading will be continuously required.

Box 1. Examples of technological penetrations into the Ethiopian smallholder agricultural sector

- The Agricultural Transformation Agency developed a mobile phone hotline to connect more than 3 million farmers to extension services in Amhara, Oromia, Tigray and the Southern Nations, Nationalities and Peoples regions.
- Farm Radio International, through partner local radio stations in Ethiopia, reaches a total of about 32 million potential listeners, primarily through the use of community radio listening groups. Topics include the production of teff and consumption of high-protein maize.
- M-Birr mobile money service reaches millions of smallholder farmers, connecting them with the largest microfinance institutions in the country and enabling them to conduct financial transactions over mobile phones.
- Using mobile technology, analytics and the Internet of things, AI is used to track as many as 5 million bags of coffee through all stages of the supply chain.
- Digital Green provides advisory messaging and produces localized videos (using a participatory approach with fellow farmers) on critical sustainable practices, improving farm-level conservation measures and livelihoods among the rural communities.

Source: ILO, 2021. Changing demand for skills in digital economies and societies: Literature review and case studies from low- and middle-income countries.

Manufacturing sector

Manufacturing has been undergoing an unprecedented transformation induced by the fourth industrial revolution. This transformation is underpinned not simply by the wide adoption of technologies but also by the convergence of the technologies and the amplification of their effects facilitated by big data analytics, 3D printing, additive manufacturing and the Internet of things. The disruption brought by the pandemic is likely to accelerate this transformation. Yet the digital technologies are being adopted to varying degrees within the manufacturing sector and the effect on employment and skills is mixed.

Automation is already highly present in most of the production process of the manufacturing of chemicals and pharmaceuticals. Digitalization and other innovative technologies will come on top of the automation of plants; they will mainly concern additional gains in productivity, while employment destruction effects are expected to be relatively low. By contrast, the textile and garment industry is one that relies heavily on the physical workforce and the transformative effect of digital technologies is more likely to manifest itself in the automation of mass production, introduced by laser cutting, robotic sewing systems and other related technology.

Furthermore, the effects of digitalization also differ depending on how global value chains of different manufacturing industries are organized. For instance, high-skilled workers in design and engineering segments of value chain are likely to benefit from new information technology. By contrast, low-cost and low-skilled labour, employed in such value chain segments as packaging, processing and logistics, regardless of the industry, is strongly threatened by automation and its replacement by robots more generally. In addition, various value chain segments and worker skills are unequally distributed

across countries. Lower value work in consumer electronics, textiles and garments is outsourced partly or almost entirely to China, India and South-Asian countries. By contrast, research and development, design, innovation and product development jobs are centred in North America, Western Europe and East Asia. In addition, the ongoing reconfiguration of regional and global supply chains has some important implications for skills related to digitalization.

Services sector

The services sector relies heavily on ICT and is being swept ever more extensively into the tide of digital transformation by the upsurge of digital consumption resulting from the pandemic. This is driving the expansion of e-commerce, e-health, digital media, online entertainment and digital financial services through the hastened adoption of digital solutions within the logistics and transportation, tourism and hospitality, and education industries. Internet platforms, applications, cloud computing and on-demand digital services are also disrupting traditional services provision, modifying interaction between companies and customers, and profoundly affecting business models and work practices. In turn, this is leading the changes in the sector's occupation and skills needs, requiring more skills to meet the growing needs created by the digitalization process in the service industries (see case study in box 2).

The rapid adoption of technology and digitalization by businesses and individuals is increasing dependence on data, software and networks, and this trend will obviously drive a stronger demand for skilled workers, particularly in the professional information technology (IT) services sector. The most sought-after occupations in this field include ICT operators, data analysts and scientists, AI and machine learning specialists, software

and applications developers and analysts, and user experience and human machine interaction designers. In addition to specialized IT skills, core skills of effective communication, organizational adaptability and creativity are particularly valued in this field. For example, in order

to develop successful digital solutions, businesses seek application and software developers who are able to work in partnership with professionals in other fields, so that the proposed IT solutions can adequately reflect the realities of those fields and help to boost them.

Box 2. Major technological changes, effects and challenges in the services sector in Mexico

Firms are increasingly reliant on the use of social networks for marketing and advertising as it is more cost-effective than traditional means (such as flyers). This allows firms to reach larger audiences and target consumers with a higher likelihood of conversion. A firm's propensity to adopt new technologies in Mexico is, however, conditional on its size. The case study also suggests the possibility of further adoption of technology in the Latin American region, which could bring about productivity gains. There has been an increase in demand for collaborative and multidisciplinary work, along with greater work autonomy and an ability to use

digital technology such as digital applications, specialized software, and big data. Significant skills upgrading is needed to bring skills profiles into line with the current needs of the labour market.

The assessment reveals that the education systems have not responded promptly to the changes in skills demanded by firms as a result of technological changes. The education sector requires a longer-term vision for educational policy and adaptation to the challenges of the twenty-first century with the inclusion of digital skills and competences in curricula.

Source: ILO, 2021. Changing demand for skills in digital economies and societies: Literature review and case studies from low- and middle-income countries.

► What kind of skills do we need to navigate the digital world of work?

In this rapidly evolving technological landscape, both generic and specialized digital skills have become even more important than before in a wide range of occupations. Yet specialized digital skills alone will not make it possible to reap the full benefits of digitalization. Businesses are increasingly seeking a combination of such skills and subject matter skills. As a result, there will be a growing number of cross-professional, so-called "hybrid jobs" and "hybrid specializations", which will see more elements of technology being integrated into traditionally non-technical positions. Examples of hybrid occupations include pharmaceutical marketing specialists, who are required to be proficient in medical concepts and research methodology regarding drug trials, but also in data analysis and digital marketing; or business and economic journalists, who need to have a specialized background in economics and statistics, but also to possess writing, interviewing and data visualization skills, and to be at ease with social media.

There can be no doubt that job and occupation-specific technical skills are important for people to keep their jobs during and beyond the pandemic, and possession of generic transversal digital skills is now a requisite for many jobs. At the same time, core work and soft skills have become more essential than ever to successfully navigate the transition to the digital world of work, especially in turbulent times like those of today. It is the appropriate combination of digital, hard technical and core employability skills that will be rewarded at a premium and will provide workers with sound future employment prospects, as they will be able to move easily between jobs, occupations and sectors.



► What are the key principles and policy measures to tap into the full potential of digital transformation?

Digital transformation affects various sectors and countries at different levels of development in a diverse but profound way. The manufacturing sector, and the services sector in particular, are affected more than the agricultural and construction sectors. Low-income countries experience major barriers in digitalization due to infrastructure and digital connectivity issues, unlike middle-income countries where digitalization is occurring at the same pace as in more advanced economies. Even though digitalization does not occur to the same degree across economies and regions, the effects that it has on skills demand are experienced everywhere. The COVID-19 pandemic, with its new role for digital teleworking and online learning, has further accelerated the digital transformation and revealed associated skills shortages and mismatches.

In order to meet the challenge of translating the demand for digital skills into the skills required for a current and future workforce, the educational and training systems should adhere to the following baseline principles and policy measures.

Right mix of core work and technical skills as a foundation for the further development of digital skills throughout lifelong learning

Possessing foundational skills, such as reading, writing and numeracy skills, is one of the necessary conditions for acquiring digital skills and embracing changing technological opportunities. In addition, the proliferation of digital technologies will generally continue to feed the demand for skills related to analytical thinking, problem-solving and innovation and the educational needs that will cultivate lasting human qualities such as adaptability, curiosity, a learning mindset and social intelligence are being increasingly emphasized. An effective combination of basic, core work and hard technical skills is the prerequisite for a successful transition from school to productive decent work and transitions between jobs.

Enhancing policy coherence between skills and other policies

The disruptive effects of digitalization set high stakes for skills, education and training provision systems. Yet, digitalization and technological advancement are not the only factors affecting the labour market: there are other interlinked factors, such as the impact of global demographic imbalances, climate change and globalization which are together reshaping the world of work. The development of skills, including digital skills, therefore needs to be articulated with different policies such as employment, sectoral, environmental and industrial policies designed to face those challenges. It is particularly important to integrate skills policies with other labour market policies in order to manage the different transitions that workers experience during their work life, so that they can successfully enter the labour market and take breaks to reskill and re-engage in employment throughout their careers. This life-cycle approach necessitates the active engagement of governments, workers and enterprises in making choices about when and how to reskill and upskill. It requires very sound conceptualization, and yet also needs to be sufficiently agile to respond to short-term needs, including through active labour market policies.

Reinforcing TVET and skills development systems to deliver digital skills

Digitalizing the technical and vocational education and training (TVET) and skills development systems can help to facilitate digital transition by furnishing the current and future workforce with the relevant knowledge and skills. It is therefore essential to strengthen the governance and management structures required to mainstream digitalization in TVET and skills development systems and to incorporate skills required for the digital economies and societies in the development and upgrading of competency standards, curricula and assessment packages in both initial and continuing TVET. In addition, quality apprenticeship should be seen as a key pathway to enabling learners to develop the practical skills and attitudes enabling them to thrive in the digital societies and economies.

Supporting the professional development of teachers and trainers with the provision of the right tools

Teachers and trainers are the backbone of the delivery of learning. It is their digital capabilities that are the key enablers of transmitting knowledge and skills online or in a blended way. Teachers and trainers should be equipped with adequate tools and materials, knowledge, pedagogical approaches and skills for effective education and training in digital skills. The initial and continuous professional development of such teachers and trainers, reflecting the fast-evolving technology and its increased adoption, should therefore be a top priority in any skills response strategy.

Activating skill response at the enterprise and industry levels

Technology brings disruption to the existing business models. Training solutions provided by the enterprises remain an important option for many employers. To provide relevant training to the employees, it is crucial to predict and understand the skills that are most needed in the context of the digital transition and to mobilize the financial resources required to provide high-quality and relevant training. Skill needs can be identified at the level of an entire industry. Industry associations, sector skills councils, or chambers of commerce can all act as drivers of joint skills responses. Where resources are concerned, offering financial incentives can stimulate skill responses at the enterprise and industry levels, such as levy-grant systems, tax incentives, training vouchers and individual training accounts.

Strengthening strategies for inclusive and effective lifelong learning

Lifelong learning strategies and educational development plans are important in providing adult learners with opportunities to improve core skills for employability, including digital skills. There are many inequalities in access to lifelong learning, however, and governments have a vital role to play in creating enabling environments for inclusive and active learning over the life cycle so that people keep pace with digitalization. Together with social partners and the broader engagement of communities, governments can reach out to disadvantaged groups through workplaces, dedicated lifelong learning centres and comprehensive one-stop shops offering guidance on lifelong learning. Technological change has revolutionized the approach to lifelong learning in general, and to non-formal lifelong learning in particular, such as open learning through massive online open courses, sometimes referred to as MOOCs. To take full advantage of such learning opportunities, the training should be accompanied by proper certification and validation of credentials. In addition, effective career guidance for adults can help individuals to make smooth career transitions and access lifelong learning.

Support for developing countries in overcoming barriers to digitalization

Low-income countries face many barriers on their path to digital transformation. Poor infrastructure, including uncertain electricity supply, and connectivity issues are major obstacles to digitalization, in particular in low-income countries. Support for infrastructure, connectivity, and the systems necessary for digital transformation in developing countries should therefore be a primary concern for development partners and international organizations.

► How can the ILO provide support?

The ILO works with its constituents for a better future of work through skills development and lifelong learning, and to ensure that education and training systems become more flexible and diversified in the context of digital transition (see examples in box 3). The ILO conducts various comparative research activities, and it provides policy guidelines and technical assistance to help constituents integrate skills development into

national and sectoral development strategies, with a view to equipping current and future workforce with the right skills for digital transition. It also provides technical support in building systems and institutions to anticipate digital skills needs and minimize skills mismatch and supports TVET institutes and skills systems agencies in digitalizing their programmes, activities, and processes.

Box 3. How the ILO supports countries in preparing for the digital future of work

Skills for trade and economic diversification (STED) project in Senegal

The digital sector is among the target sectors in Senegal identified in the national development plan, the Plan Sénégal Émergent, and following adoption of that plan, the Government developed the Digital Senegal 2025 strategy, which aims to develop the sector in support of inclusive growth in the country. In 2019, the Ministry of Employment, Vocational Training, Learning and Integration, in collaboration with employers' and trade union organizations, developed and adopted a digital TVET strategy to support the implementation of the Digital Senegal 2025 strategy. This was done with the support of the ILO (through the SKILL-UP programme), following the ILO STED approach in understanding the strategic needs of the sector and identifying key areas of training that the TVET system should prioritize to meet labour market needs for digital skills. The ILO provided technical support and guidance to the Government of Senegal for the development of new curricula that are responsive to the needs of the labour market. This rapid STED skills anticipation exercise has been used to guide the development and delivery of five new training programmes (automation technician; mobile application developer; digital marketing and communication; digital business; infographics and multimedia) in the ICT sector, among other interventions.

Digital transformation of TVET project in Cambodia

The Government of Cambodia identified the digital transformation of TVET as a priority to contribute to the country's socioeconomic recovery and development. In line with the priority identified by the Government, the ILO provided a coaching programme on digital transformation of TVET to deliver support at both the policy and the operational levels. A national digital TVET core team has been created, including 36 staff members from 15 national institutions, including the Directorate General of TVET, the National Committee for Tourism Professionals, the Ministry of Tourism, social partners, and managers from major public and private TVET schools, and received coaching sessions on how to blend TVET at the policy and operational levels. The

team prepared national guidelines for the blending of TVET and are benefiting from additional technical assistance from ILO experts and working as training multipliers to support TVET schools in blending their learning and assessment programmes. In addition, the ILO provided a one-year coaching programme on digital transformation for 20 TVET practitioners, including teachers and trainers, assessors, and curriculum developers from six TVET schools, who took part in an e-learning laboratory on digital TVET. Currently, in close collaboration with the Government, the ILO is also planning to scale up support for the harmonization of the digital TVET learning management system.

Assessment of skills supply and demand in the digital economy in South Africa

South Africa's National Digital and Future Skills Strategy (2021-2025) prepared by the Department of Communications and Digital Technologies aims to equip young people with the skills necessary to prepare them for the future of work in the Fourth Industrial Revolution (4IR) and digital economy. To support this goal, the joint initiative by the ILO, ITU and UNDP, with the support of the African Union developed, conducted, and analysed the results gathered from focus group discussions, surveys and interviews of young people and businesses in South Africa. The objectives were: understanding the role young people can play in the South African digital economy and the readiness of business and TVET to enhance the employability of young people not in employment, education or training; Assessing current and emerging skills supply and demand in the digital economy in South Africa; Identifying gaps, opportunities and detect specific skills needs. The study also included: 1. a literature and labour market policy review of key policies and national promotion strategies to assess their potential to boost youth employment in the digital economy and the readiness of South Africa for the 4IR, 2. a review of curriculum and infrastructure of public and private TVET relevant for the digital economy. It also provided key recommendations and identified key success factors for specific programmes and interventions that support young people to access skills and opportunities in the digital economy.

► Key resources

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ILO. 2020. *The Feasibility of Using Big Data in Anticipating and Matching Skills Needs*.

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Contact details

International Labour Organization
Employment Policy Department
Skills and Employability Branch

Route des Morillons 4
CH-1211 Geneva 22,
Switzerland

Tel : +41 22 799 7512
Fax : +41 22 799 6310
Email : skills@ilo.org

Website : www.ilo.org/skills