DIGITAL SKILLS AND ONLINE LEARNING IN AZERBAIJAN

DIGITAL SKILLS FOR VET STUDENTS

Policies, strategies, initiatives, practices

Digital skills and competences (DSC) in the Republic of Azerbaijan (hereafter 'Azerbaijan') are usually reflected in policies and strategies that relate to all levels of education (primary, secondary and tertiary) including vocational education and training (VET). The Law of the Republic of Azerbaijan on Education regulates the roles of the state and education institutions in delivering DSC. The state takes responsibility for delivering information and communication technologies (ICT) to public education institutions. The latter develop skills for living and working in an information society.

The 'Azerbaijan 2020: The Vision of the Future' development concept envisages the computerisation of education and the enhancement of computer-based knowledge for human capital development. The concept is a starting point for the relevant strategies and state programmes and for various actions in the respective fields, including the provision of computers to VET centres.

The Law on VET has been prepared with a view to ensuring modern approaches to VET. It was adopted in 2018. According to Article 3.1.2, one of the main principles of public policy in the field of VET is to organise vocational education by integrating scientific and technological developments. The state is responsible for creating the basis for application of innovation in education by using new educational techniques (Article 4.0.14).

The statutes of the State Agency on Vocational Education (VET Agency), which operates under the auspices of the Ministry of Education, provide for the development of a digital resource framework for VET. The policy basis for the development of electronic textbooks, video lessons and other materials can be found in this document and other relevant regulatory acts.

Digital skills are embedded in the existing legislation (national qualifications framework (NQF), general education legislation, State Standards for VET) as one of the key competences for VET and lifelong learning. Azerbaijan's NQF for Lifelong Learning, approved by the Cabinet of Ministers in 2018, outlines digital skills in all level descriptors. Students at primary school level are expected to use computers; at general secondary level, they are expected to use modern technologies properly and with minimal risk; and at upper secondary (full secondary) and initial

Azerbaijan 2020: The Vision of the Future

This development concept, approved on 29 December 2012, specifies the main targets for development policy in all spheres of life in Azerbaijan, including education and an information society. It envisages a complete restructuring of the education system, the creation of additional education and lifelong education components, the expansion of the use of ICT and virtual education and the enhancement of computer-based knowledge for human capital development. The main ideas for national strategies relevant for VET learners – the National Strategy on Development of Education in the Republic of Azerbaijan and the National Strategy for Development of an Information Society in the Republic of Azerbaijan for 2014–20 approved in subsequent years (2013 and 2014, respectively) – stem from the objectives set out in the development concept.

A national action group involving representatives of all concerned public institutions is coordinating implementation of the concept. The group, led by the Minister of Economy, drafts strategies, state programmes, other documents and actions for implementation of the development concept and submits them to the President of Azerbaijan. The group also organises and coordinates works of public authorities, organisations and companies for implementation of the concept.

https://president.az/files/future_en.pdf

VET (IVET) levels, they are expected to be familiar with technologies in their field (occupation) and be able to assess the impact of technology on daily life.

According to the Law on General Education, adopted in 2019, one of the aims of general secondary education is to ensure the development of modern ICT skills among learners. The state undertakes the responsibility to supply ICT, digital training resources and other technical means to general education institutions (Article 4.0.13). It creates opportunities for the application of modern educational techniques and innovations and the professional development of teachers (Article 4.0.18). Teachers in general education have a duty to learn and to use modern interactive training methods and innovation (Article 23.3.4).

The State Standards for VET identify eight key competences for lifelong learning, i.e. for IVET and continuing VET (CVET). Information technology (IT, or digital competence) is one of these. Furthermore, the Rules for the Development, Revision, Approval, Registration and Extension of Occupational and Qualification Standards identify ICT as one of the compulsory competences for IVET qualifications. VET curricula and training materials in Azerbaijan are developed in line with the relevant documents.

The Education System Digitalisation Department was established in 2008 to (i) create a single education information platform encompassing all levels of education; (ii) apply ICT at all levels of education; and (iii) manage and use public funds and other resources allocated to this field (https://ict.edu.az).

The EU project 'Support to Implementation of National Qualification Framework in Azerbaijan' is being implemented by GOPA Consultants (www.nqf.az). It has developed key competence standards for ICT skills by NQF levels. Other donors, including the UNDP, World Bank, GIZ, British Council and Swiss Cooperation, are also active in the field and follow the framework of key competences for lifelong learning, one of which is digital competence, endorsed by the education authorities.

The Ministry of Education and the international educational company Algoritmika launched a digital skills project in general education in 2017. The main goal of the project is to develop students' algorithmic thinking, logic, project development skills, coding and programming fundamentals. The project aims at increasing the level of computer literacy of students, drawing their attention to high-tech professions, and training qualified personnel in the field of programming. The ICT subject is taught using a new method, students use interactive tools, tele- and video-lessons. In the 2019/20 academic year, the project involved about 700 teachers and more than 70 000 students in 123 general schools in 6 cities (https://edu.gov.az/az/page/9/18555).

Another Ministry of Education project, called 'STEAM Azerbaijan' started at the beginning of the 2019/20 academic year with the support of the Heydar Aliyev Foundation. The main goal of the project is to increase cognitive abilities by enabling secondary school students to use modern

National Strategy on Development of Education in the Republic of Azerbaijan

The strategy, approved on 24 October 2013, provides for the creation of an education infrastructure that is compatible with ICT-based training methodology and distance education to meet modern requirements and ensure lifelong education. The strategy aims at reforming the whole education system. Curricula for all levels of education, including ICT curricula for VET, are being developed in line with the strategic objectives of the Education Strategy.
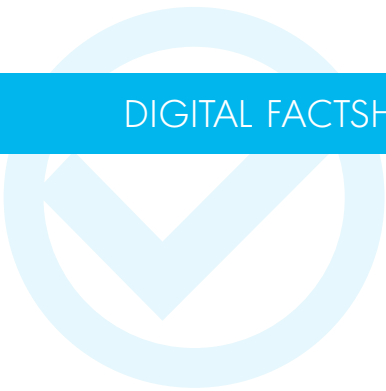
The strategy also provides for expanding access to digital education resources and ensuring the development of media and internet resources related to education. Open online VET resources (textbooks and other materials) are continuously being developed in line with this requirement.

https://president.az/articles/9779

https://vet.edu.gov.az/az/resurs

www.e-derslik.edu.az/portal/index.php?book_type_id=4

https://video.edu.az/vocational-school

ICT equipment and develop 21st century skills – creativity, critical thinking, cooperation and various programming languages. The STEAM project integrates project-based learning of five subjects – science, technology, engineering, arts and mathematics – in grade 6 and above (www.steam. edu.az/content/10).

Facts and trends

In 2019, 39 out of 770 IVET qualifications were for ICT occupations (5% of all IVET qualifications)[1]. Some of these qualifications are similar in nature. They belong to 19 qualification groups (accounting for 9% of 219 existing qualification groups).

A total of 2 240 students were admitted to ICT courses in IVET in 2019, accounting for 12% of all admissions. For comparison, the figure was 2 610 students (15% of all admissions) in 2015. The fall in numbers was mainly associated with the change in admission plans[2] by VET authorities. A certain proportion of places for free VET education (subsidised by the government) were replaced by paid courses, which led to a reduction in the number of applications. The number of ICT courses accepting students increased in this period from 13 to 17.

Despite the slight decrease in admissions to ICT courses, the attractiveness of these courses was higher compared to others. Thus, the share of admissions to paid ICT courses tended to increase – from 35% to 59% between 2015 and 2019. The share of students admitted to paid courses for other VET qualifications were 22% and 29%, respectively.

Admission to VET
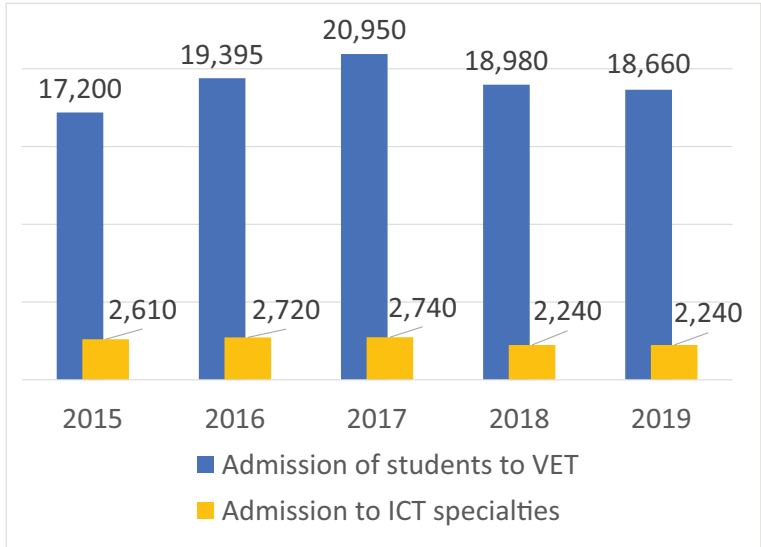
Source: State Agency for Vocational Education

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[1] The list of qualifications is approved by the Cabinet of Ministers. VET institutions may have education and/or training on the approved list, but this does not mean that training is conducted by all the fields in the approved list.
[2] Admission plans are approved by the government each academic year. These plans include numbers of places by qualification for each VET institution operating under the Ministry of Education (VET Agency) and accepting students.

Digital skills are mainly delivered within a separate subject called ICT. It is taught transversally in all VET qualifications. A total of 40 academic hours are allocated to ICT in one-year courses; up to 140 hours are allocated in two- and three-year courses. Short-term curricula (3 to 6 months) include 30 hours of ICT classes. ICT skills are assessed in all types of courses; students are required to sit a compulsory exam in the subject (even on short-term courses). Digital competence is assessed by the following learning outcomes outlined in the State Standards for VET whereby students are able to:

- use ICT;

- design and present electronic presentations;

- create electronic spreadsheets and diagrams;

- collect, analyse and systematise data using the internet.

According to the national action group for the implementation of the Azerbaijan 2020 development concept, the E-Government Training Centre was established in 2015. It was renamed the ICT Application and Training Centre in 2018. The Innovations Agency was established under the auspices of the Ministry of Transport, Communications and High Technologies in 2018.

DIGITAL SKILLS FOR VET TEACHERS AND TRAINERS

Policies, strategies, initiatives, practices

Digital skills are embedded in the existing legislation (NQF, general education legislation, State Standards for VET) as one of the key skills for VET and lifelong learning. Therefore, it is assessed in line with pedagogical and subject competences via centralised tests (competitions) conducted by the Ministry of Education when hiring teachers who specialise in general education subjects. Specialty subject teachers and trainers are hired on the basis of an interview conducted by the VET Agency/VET provider. Interviews cover knowledge of the curriculum, specialty and logic. DSC are therefore prerequisites for general education teachers working in VET institutions but not for specialty teachers and trainers.

According to changes made to the Law on Education in 2018, VET teachers and trainers are to be certified every five years (three times). Digital skills will be included in the certification requirements as key skills. Due to the fact that diagnostic assessment of VET teachers and trainers was conducted in 2018 as a preparatory measure for certification, the first test for certification is expected to be conducted in 2023.

According to the Law on VET, teachers and trainers need to be innovation-oriented and have the right to be provided with modern training instruments. They also have the right to participate in traineeships, be able to upskill and retrain to improve their knowledge and skills in the subjects they teach and continuously improve their professionalism (Article 19). According to Article 9.7, VET institutions must organise upskilling and retraining courses.

According to the Typical Statute of Upskilling and Retraining Institutions adopted by the Cabinet of Ministers in 1997, these institutions have a duty to ensure the efficient use of computers and modern scientific and technological information in their activity. One of the forms of training in such institutions is distant training.

'Use of ICT in education' is one of the continuing professional development subjects for general education and VET teachers. The National Strategy on Development of Education envisages the establishment of education providers that have mastered innovative training methods and technologies and the establishment of an education infrastructure that provides modern lifelong education. The Law on VET gives VET institutions the right to conduct innovative activities. It gives their employees the right to make innovative proposals and engage in innovative activities in order to improve the performance of the institution, to apply new training technologies and to create new internal structures. For these reasons, teachers at all levels of education, including VET, are continuously involved by the Ministry of Education

VET training at SOCAR

The State Oil Company of the Azerbaijan Republic (SOCAR) conducts training on 484 different VET specialties. The theoretical part is conducted either in a classroom or online via Skype for Business, depending on requirements. Digital resources have been made available since 2015 for most specialties. Training courses are conducted using a wide range of simulators, ranging from drilling to the operation of machinery. They are conducted on the basis of need and vary in duration from a few days to six months in CVET training and to one year in IVET training for those starting a job. DSC are part of the curriculum in IVET courses. They are included in CVET courses whenever needed.

SOCAR has trained 120 000 people so far. The company provides certificates to graduates. Its training centres and programmes are not accredited by the Ministry of Education, but its certificates are accredited by internationally recognised qualifications institutes (e.g. City & Guilds Group).

http://ttsi.socar.az/az/pages/home

in ICT training organised by the Institute of Education's Professional Development Centre.

DSC training for VET teachers and trainers is conducted annually by the Ministry of Education in the following areas:

- upskilling in the use of interactive technologies and electronic content in teaching;

- upskilling in the development of electronic training resources by subjects;

- internships on the use of ICT in training for those who have finished an upskilling course;

- methodology for the development of integrative tasks through the use of electronic resources;

- training on the use of interactive boards;

- upskilling in the use of ICT, modern training strategies and projects in education.

Teachers and trainers learn how to use electronic boards and computers, work in MS Word, Excel, PowerPoint, Publisher, Google tools, email and the internet in training courses on the use of ICT in education. There is a separate qualification for teaching mathematics and informatics. In addition, continuing professional development is organised for teachers on the use of particular equipment supplied to their schools (e.g. e-labs, simulators).

The Innovative Technologies in Education Continuing Education Centre and other public and private institutions and projects also deliver training courses for VET teachers.

The DSC of VET teachers and trainers are assessed upon completion of a study programme and certified in line with programme requirements (courses with a duration of less than one working day are not certified). A one-off diagnostic assessment conducted in 2018 as preparation for certification also had a DSC component. The diagnostic assessment did not lead to certification.

The Education Strategy also provides for expanding access to digital education resources and allocating additional resources to the establishment of an education infrastructure based on ICT, including electronic education. Platforms for sharing e-textbooks, video lessons and other electronic resources that support, among other things, self-learning for VET teachers and trainers, are created in line with the priorities identified in the strategy and other relevant documents.

Strategic documents (e.g. strategic roadmaps for various sectors in the economy) have a monitoring and evaluation element, including benchmarks and monitoring indicators. However, indicators relating to DSC and digital and online learning (DOL) for VET teachers and trainers have not been identified.

Facts and trends

Every year, around 200 teachers and trainers in VET institutions – some 6% of all VET teaching and training staff – undergo further training in their specialist area, pedagogy and ICT. This figure increased significantly in 2020, when around 2 000 VET teachers and trainers received intensive ICT training in, among other subjects, MS Office, MS Teams and Cisco cyber security solutions. The goal is to train 4 000 VET teachers and trainers in ICT by the end of the year.

DIGITAL AND ONLINE LEARNING IN INITIAL VET

Policies, strategies, initiatives, practices

The 2016–20 action plan for the implementation of the National Strategy for Development of an Information Society in Azerbaijan for the period 2014–20 sets an objective of enhancing the application of multimedia technology and distant education in VET. However, a policy action has not been identified for this area.

According to Article 23 of the Law on VET (Item 23.9), employees of vocational education institutions have the right to offer innovative proposals and engage in innovative activities in order to improve the performance of the institution, to use new training technologies and to create new internal structures. The law provides for the motivation of innovation activities.

While the law provides for the application of new innovative technologies, including digital learning (although not directly mentioned), it does not include an option for distance and online learning. According to the Law on VET, education in VET institutions is conducted on an intramural basis (i.e. in a classroom, face-to-face). Rules for the Organisation of Formal Education adopted in 2010 also specify this provision. Changes need to be made to the existing legislation for covering distance digital schooling. The extensive experience of DOL gained in general education can then be channelled to IVET.

The Strategic Roadmap for VET requires that students have access to study materials and have an opportunity to attend online seminars and experiment with different production methodologies in e-labs. Vocational schools will be supported by mobile applications and other types of software.

The Strategic Roadmap for Development of Telecommunication and Information Technologies acknowledges the importance of digital skills for the economy. It envisages converting schools into 'e-schools' (e.g. with electronic books, electronic seminars, open-access educational materials, distance learning and website-based exams), creating ongoing ICT courses for teachers to stay abreast of the rapid evolution of digital technologies and improving the evaluation of ICT skills of graduates and teachers.

With the aim of achieving targets set out in the roadmaps and in the Education Strategy, simulators have been installed in several VET institutions (in Baku, Ganja, Gabala, Jalilabad, Lankaran and other regions), which are used for digital learning, e.g. driving, construction and welding skills.

Recorded video lessons

The existing legislation does not provide for distance or online learning in IVET. However, the Ministry of Education, together with its VET Agency and donor organisations (EU, UNDP), started to broadcast recorded video lessons on 12 specialties on a national TV channel (www.medeniyyettv.az), YouTube and social media on 30 March 2020 as an alternative measure while the schools were closed. The video lessons are conducted by selected highly qualified professionals and provide good material for both students and teachers.

Distance and online learning in VET started in March 2020 as an emergency measure in response to the closure of schools due to Covid-19. It took the form of video lessons that were open to all (https://video.edu.az/vocational-school) and online lessons organised by teachers via Microsoft Teams, Zoom and social networks (mainly WhatsApp, Skype and Facebook) for their students.

The Education System Digitalisation Department of the Ministry of Education supports digital education in four areas at all levels of education: infrastructure, e-content, e-governance and professional development (https://ict.edu.az). The role of digital education in IVET began to grow after March 2020.

In each IVET institution, an ICT school coordinator is assigned by order of the director. One of the ICT teachers is usually assigned to this role.

Online learning in IVET started recently (at the end of March 2020) as an emergency measure and its effectiveness has not yet been measured.

Facts and trends

E-textbooks developed by the EU, UN, GIZ, the British Council and other international donors have been made available in PDF format on the VET Agency's website (https://vet.edu.gov.az/az/resurs) and the e-textbooks porta (www.e-derslik.edu.az). Currently, there are 193 e-textbooks available on the VET Agency's website and the e-textbooks portal[3].

All 84 vocational education institutions are connected to the internet; 8 of them (10%) are connected via fibre optic cables.

Baku State Industry and Innovation VET Centre

The establishment of the Baku State Industry and Innovation Centre was initiated in October 2016 by an agreement concluded between the Azerbaijani and Korean governments. The centre opened in September 2019. Its teachers and trainers were trained in Korea. Some 740 students study Korean curricula that have been adapted to the national education system. An electronics laboratory equipped with simulators and other hi-tech equipment are available to students. A Cisco Networking Academy also operates in the centre. Two out of eight specialties taught in the centre are in the field of ICT – electronics and information technologies. Work is under way to include cybersecurity in the curricula.

Currently, the centre, together with partner organisations, is providing online webinars for learners. Those using online simulation tools study both their specialist subject and digital competence in parallel.

Video lessons broadcast to the whole country are often recorded with teachers from the centre. From 1 April 2020, online lessons have also been conducted.

https://bii.edu.az

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[3] www.e-derslik.edu.az/portal/index.php?book_type_id=4

DIGITAL AND ONLINE LEARNING IN CONTINUING VET

Policies, strategies, initiatives, practices

IVET institutions also provide short-term courses (up to six months in duration) for adult learners. Trainees have access to simulators, e-textbooks and other digital resources available on the premises of a provider.

Regulations on the Content, Organisation and Awarding of Relevant Documents to People who Receive Education in one of the Fields of Further Education approved by Decree No 163 of the Cabinet of Ministers dated 6 September 2010 provide for informal, non-formal and distant forms of education in CVET. The relevant mechanisms and standards do not exist[4].

One of the objectives of the Law on VET was to fill the gap in the field of lifelong learning. According to Article 3.2.6, one of the aims of public VET policy is to establish a vocational education infrastructure that meets modern requirements and provides lifelong learning, ensuring sustainable and systematic development of the network of vocational education institutions. The law establishes the legal basis for the enhanced role of VET in the provision of CVET by allowing VET institutions to provide short-term courses for up to six months to adult learners. These courses can be organised upon the request of companies or individuals and at their expense.

As the Typical Statute on the Upgrading and Retraining of Institutions provides for the use of distant training, computers and modern technologies in their activity and the Law on VET deals with two forms of lifelong learning – upskilling and retraining – VET institutions have the right to use DOL in CVET.

The national initiative on developing and broadcasting video lessons for various occupations also support DOL in CVET. The lessons are available for all on YouTube, social networks and TV channels.

Due to the fact that digital skills are embedded in the existing legislation (NQF, State Standards for VET) as one of the key competences, all national and international (e.g. EU, UNDP, GIZ, World Bank) initiatives dealing with CVET address digital competence within their scope. Education authorities (the VET Agency and the Institute of Education) do not approve any training programme (CVET) that does not contain components on key competences, including digital skills.

The National Observatory on Labour Market and Social Protection Affairs, operating under the auspices of the Ministry of Labour and Social Protection of Population, began work in March 2020 (the President of

IKT LAB

IKT LAB, the Centre for Application and Training of ICT, conducts distant and online training in its online education portal. The centre is a limited liability company operating under the auspices of the Ministry of Transport, Communication and High Technologies. It provides training on ICT, e-governance and other fields, and implements projects for the digital education of the population. The centre awards internationally recognised certificates. A Pearson VUE international computer-based testing centre operates here. Learners can earn certificates awarded by Microsoft, CompTIA, Cisco and other international companies at the centre.

www.e-training.az

https://iktlab.az

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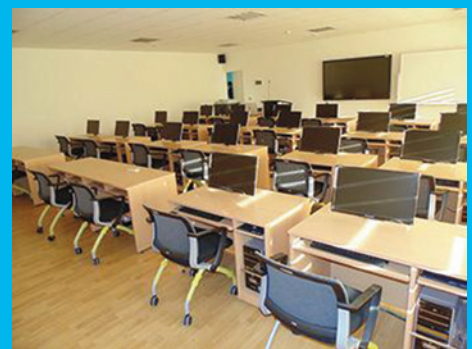
[4] DOL has not been among education priorities so far. For example, the Ministry of Education does not recognise (nostrify) diplomas in distant education received abroad.

Azerbaijan authorised the Cabinet of Ministers to take action in this regard in July 2019 and the latter issued the relevant decree in March 2020). The observatory will identify needs in terms of occupations, specialisms, skills and competences to help build a competitive and relevant workforce for the economy; monitor and conduct surveys to determine supply and demand, then develop recommendations based on their results, with a view to eliminating mismatches between supply and demand in the labour market as a whole, as well as in specific segments of it; prepare short-, medium- and long-term forecasts of demand for the occupations, specialisms, skills and competences that look likely to be sought after, taking into account the quantitative and qualitative parameters of the labour market; and regularly analyse how well adapted graduates of educational institutions are to the labour market and make appropriate recommendations for improvements in this regard (http://sosial.gov.az/observatoriya).

A number of ad hoc initiatives focus on digital skills for adults. Together with British Petroleum and the British Council, the Ministry of Labour and Social Protection of Population conducted ECDL courses for people with disabilities in 2018/19 as part of a programme entitled 'Enhancing Employability Skills of People with Disabilities'. About 100 people with disabilities participated in the programme.

One of the initiatives aimed at improving the digital literacy of citizens is the MastersLab (NGO) online platform (https://masterslab.org), which offers paid online and offline courses. These courses include various VET specialties (e.g. cook, make-up artist, fashion designer, graphical design, painter), foreign languages, personal development, job search, CV and interview preparation. Webinars on various vocational subjects are organised. The platform also provides scholarships to people aged 18 to 40 from various regions in the country.

Online courses are offered on platforms created by private initiatives (individuals) as well; see https://eduonline.az, http://onlinekurs.az, http://innab.org, for example. They are largely focused on IT solutions and some other vocational fields like driving and accounting.

According to the Accreditation Regulations approved by Decree No 167 of the Cabinet of Ministers of the Republic of Azerbaijan dated 26 September 2010, accreditation looks at content and structure (education programmes and materials, connecting to the internet), management (personnel, work-based learning contracts, admission practices for students) and training organisation (existence of new methods and technologies, application of new information technologies and computers). DOL is not clearly specified among the criteria for accreditation. As DOL has not been a priority for education and training so far, ICT requirements have not been interpreted in this context.

Facts and trends

According to Cisco's Digital Readiness Index 2019, Azerbaijan ranks 61st out of 141 countries with a score of 12.77 out of a total of 25[5]. The country is ranked in the middle stage of digital readiness (Accelerate). According to the World Economic Forum's Global Competitiveness Index, Azerbaijan ranked 34th among 137 countries in the world on number of

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[5] Cisco Global Digital Readiness Index 2019: www.cisco.com/c/m/en_us/about/corporate-social-responsibility/research-resources/digital-readiness-index.html#/country/AZE
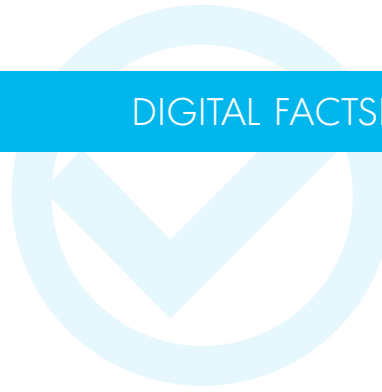
internet users in 2017/18, ahead of other CIS[6] countries[7]. The indicator went down to 43 in 2019, putting the country in second place after Russia (39) in CIS[8]. These facts suggest the expansion of DOL in lifelong learning in Azerbaijan. However, due to a lack of data, such development is hard to monitor.

According to the Ministry of Labour and Social Protection of Population, 732 people (registered jobseekers and unemployed individuals) were involved in vocational training in ICT-related fields in 2019. They studied for occupations as computer operators, computer user-accountants, computer user-designers and computer repair staff at training centres run by the State Employment Service and vocational education institutions operating under the auspices of the VET Agency. This figure accounts for 23% of all trained jobseekers (3 168 people).

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[6] CIS = Commonwealth of Independent States
[7] See: www3.weforum.org/docs/GCR2017-2018/05FullReport/
   TheGlobalCompetitivenessReport2017%E2%80%932018.pdf
[8] See: www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf