



DIGITAL FACTSHEET DECEMBER 2019

DIGITAL SKILLS AND ONLINE LEARNING IN MOLDOVA



DIGITAL SKILLS FOR VET STUDENTS

Policies, strategies, initiatives, practices

Moldova's Education Code, adopted in 2014, includes digital competence as one of the key competences in the national curricula¹. VET students currently acquire digital skills and competence (DSC) through compulsory informatics lessons – 34 hours per year under the general education programme of the Ministry of Education, Culture and Research.

Digital Moldova 2020, which was implemented in 2013, is a national strategy built on three pillars: access, digital content and digital skills². In line with this, the action plan of the National Strategy for the Development of the VET System 2013–2020³ sets out the actions required for the ongoing promotion of modern teaching technologies using information and communication technologies (ICT). The strategy stipulates that by 2017, the following indicators will be achieved:

- at least 20% of the curriculum for general subjects being taught using educational software;
- 100% of vocational/technical education institutions offering information technology (IT) courses.

So far, these targets have not been reached.

Challenges arise because strategies and plans on digitalisation do not always complement each other. There is a scarcity of committed and ICT-competent staff in the education and training system. In addition, ICT equipment in VET is often obsolete and does not meet institutions' needs. The existing digital competence standards for students and teachers are intended for general education subjects while the legal framework does not require VET students to use ICT in their professional fields. Formal DSC programmes such as DigComp, the European Skills/Competences, Qualifications and Occupations (ESCO) classification and the European Computer Driving Licence (ECDL) are not yet in place.

Impact of VET system reform on digital skills development

Under the reform of the VET system in 2016/17, with EU support, occupational standards and modular curricula began to be developed and computers were procured for VET institutions. The ICT Centre of Excellence was also created under the reform. This VET institution is responsible for the harmonisation of curricula and qualification exams, and for provision of continuing education for VET teachers who teach ICT careers.

The Austrian Development Agency and USAID have supported the ICT Centre of Excellence in the development of occupational standards and curricula for ICT jobs acquired in the VET system:

- web application administration;
- programming and programme product analysis;
- database administration;
- computer networks;
- accounting.

Qualification standards for IT jobs

In 2018 the National Qualifications Framework Department of the Ministry of Education, Culture and Research developed qualification standards for all ICT professions at International Standard Classification of Education (ISCED) levels 4, 6 and 7.

¹ <http://lex.justice.md/md/355156/>

² <http://lex.justice.md/md/350246/>

³ <http://lex.justice.md/md/346695/>



Facts and trends

Moldova has made significant progress in the ICT sector. According to the Development Strategy for the Information Technology and Digital Ecosystems Industry for 2018–2023, the main indicators for the ICT industry have improved substantially during recent years and the demand for ICT specialists is high.

Evolution of the ICT sector in Moldova

Indicators	2011	2012	2013	2014	2015
Turnover (MDL million)	1 287	1 287	1 601	2 115	2 596
Number of employees	6 289	7 678	8 093	8 384	9 301
Number of companies	483	572	618	703	779

Source: Development Strategy for the Information Technology and Digital Ecosystems Industry for 2018–2023

On the supply side, 4 VET colleges, 3 VET centres of excellence and 17 VET institutions are offering the following ICT qualifications: web application administration, programming and programme product analysis, computer networks, and database administration. Seventeen VET institutions are offering qualifications that require DSC, including administrative and secretarial services, computer technical support, and accounting. The ICT Centre of Excellence plays a coordinating role in IT professional education.

The number of students in post-secondary VET increased from 2 482 in 2016 to 2 789 in 2019. VET students studying for ICT-related jobs in 2017/18 represent 8.75% (2 594 persons) of post-secondary VET students, of which 24.72% are computer operators, 43.75% are database administrators and 31.53% are programming and programme product analysts⁴.

According to a recent study by ProDidactica and the Austrian Development Agency on ICT use in VET:

- 98.6% of VET students have personal accounts in at least one of the social networks and at least one personal email address;
- 77.6% of VET students own a desktop or laptop computer;
- 15.9% of VET students have high-level digital skills;
- 23% of VET students failed the digital test;
- the development of digital learning environments in Moldova is just beginning.

⁴ http://statbank.statistica.md/pxweb/pxweb/en/30%20Statistica%20sociala/30%20Statistica%20sociala__07%20INV__INV050/INV050030.px/table/tableViewLayout1/?rxid=9a62a0d7-86c4-45da-b7e4-fecc26003802



DIGITAL SKILLS FOR VET TEACHERS AND TRAINERS

Policies, strategies, initiatives, practices

DSC formal requirements for teachers in general education, set out in 2015, do not explicitly refer to VET teachers and trainers. The standards contain the following components: digital communication, managing information, creating digital educational content, implementing school management applications, implementing educational content management systems, use of digital equipment in education, and compliance with ethical and legal norms in digital space. There is no action plan for implementation of these standards in the VET system. Digital competence is not included as one of the main competences in initial training for teachers in Moldova.

There are 15 continuous education providers for teachers in Moldova, most offering courses on the development of digital skills for digital and online learning (DOL). The majority of courses offer 10 European Credit Transfer and Accumulation System (ECTS) credits. One of the most important providers is the ICT Centre in Education⁵, which focuses on the training of informatics teachers. In general, the curriculum for pedagogical training in ICT does not contribute substantially to the development of teachers' digital competences. This is linked to the fact that the legal framework does not provide incentivising mechanisms⁶.

The reform of the VET system in 2016 placed the responsibility for teacher training on VET centres of excellence. The ICT Centre of Excellence⁷ has the mandate to provide training for VET teachers who specialise in teaching ICT jobs, as well as other teachers from the network of VET institutions affiliated to the ICT Centre of Excellence. According to a recent ETF survey⁸, VET teachers use informal DOL to find, read and use information online and for professional development.

A number of challenges exist. There are no formal frameworks in place for developing DSC for VET teachers and trainers, such as the EU digital competence framework for educators (DigCompEdu)⁹. The digital standards for general education teachers should also explicitly cover VET teachers and trainers, and be used to support the development of a monitoring system. Teachers face constraints in incorporating DOL methods into the teaching process because of their modest levels of

Online courses for teachers

Only one continuous education provider for teachers – the Institute for Continuous Education <https://ic.md/ro/webinare/> – offers online courses based on webinars. The courses are adjusted to the requirements of teachers' certification (attestation) procedures, offering the opportunity to acquire 10 or 20 ECTS credits. Courses are offered during weekend mornings. So far, this type of learning has not been very popular.

Continuing training for VET teachers in IT

From 2016 the ICT Centre of Excellence offers ICT courses via the Continuous Education Department established within the centre. This activity is supported by the Austrian Development Agency. The ICT Centre of Excellence is taking the lead on ICT curriculum development both for teachers and for students. During 2018 in the ICT Centre of Excellence:

- 20 VET teachers were trained in Cisco Networking Academy IT Essentials;
- 23 VET teachers were trained in Java fundamentals;
- VET institutions affiliated to the ICT Centre of Excellence were trained in the use of Web 2.0 tools for teaching.

Under this initiative, the ICT Centre of Excellence aims to become a resource hub for the development of digital proficiency among VET teachers.

⁵ www.ctice.md

⁶ ShiftEdu, Baseline Study on ICT Use in VET, 2019

⁷ <https://ceiti.md/>

⁸ International survey on continuing professional development of vocational teachers in Moldova, 2018

⁹ <https://ec.europa.eu/jrc/en/digcompedu>



DSC. There is a need to review the digital strategies and policies for schools and provide teachers with more access to continuing professional development (CPD) on how to integrate DOL into their classrooms activities. No statistics on teachers' ICT training in the VET system are collected, and there is no monitoring system in place on the level of ICT use in teaching.

Facts and trends

Around 11–12%¹⁰ of teachers in the entire education system take CPD courses annually. However, specific statistics at national level on ICT courses for teaching staff are not available. According to a study carried out by ProDidactica in 2019, 65% of VET teachers expressed a need for training in ICT teaching methods¹¹. Two thirds of VET teachers judged CPD in ICT to have had a moderate or high impact on their teaching. Among VET teachers:

- 97.8% have at least one email address;
- 97.4% have a social network account;
- 94.8% have a desktop or laptop computer;
- 52% use Word documents in their teaching;
- 50% use PowerPoint presentations;
- 59% use video sequences;
- 54% use digital images;
- 20% use tabular spread sheets.

¹⁰ http://statbank.statistica.md/pxweb/pxweb/ro/30%20Statistica%20sociala/30%20Statistica%20sociala__03%20FM__SAL060/SAL060105.px/table/tableViewLayout1/?rxid=2345d98a-890b-4459-bb1f-9b565f99b3b9

¹¹ Ibid.



DIGITAL AND ONLINE LEARNING IN INITIAL VET

Policies, strategies, initiatives, practices

There is no specific policy or strategy in Moldova on the delivery of DOL in initial VET. Practices such as bring-your-own-device (BYOD) are not widely accepted in VET schools, although VET institutions that prepare students for ICT qualifications are more keen.

There are legal requirements for the minimum number of computers in classrooms. Although these requirements are respected by all VET institutions, none have specialised software for professional training and only a small number have licensed general purpose software (operating systems, Microsoft Office, etc). Teachers often use unauthorised copies of specialist educational software.

Very few digital teaching resources have been developed so far. They relate mainly to theoretical aspects of professional education and are not shared with other teaching staff. The materials developed do not have a mechanism for quality assurance nor for verification that they correspond to curricular requirements.

The learning management system Moodle is mainly used for collecting teaching digital resources. However, this facility is not widely used by VET teachers: so far, only those from the ICT Centre of Excellence and the Light Industry Centre of Excellence are using it.

In relation to accreditation requirements for VET institutions, there is a standard for VET programme accreditation (No 3) that relates to teaching, learning and evaluation of students and a subcriterion (3.1.3) on the use of ICT tools in teaching, learning and assessment. At the same time, there are no stipulations on accreditation methodology relating specifically to DOL¹².

Among the challenges, the lack of policy on DOL in the VET system makes the process of development of digitally innovative teaching and learning practices sporadic and non-systemic. The concept of DOL has not been developed at system level and is unclear for many VET teachers. Tools for the self-assessment of schools' digital readiness, such as the EU's SELFIE¹³, are not in use. There are no ICT coordinators in VET institutions to support digitalisation in the VET system and teachers of informatics are usually asked for help with technical issues.

Online assessment of theoretical knowledge

The theoretical part of qualification exams for all ICT jobs provided by the VET system are conducted online. The pool of examination items were developed in 2016. Each year the set of items for the qualification exam is revised by National Board of the ICT Centre of Excellence.

Online education

In one case, a third-year student with a physical disability accesses training for an ICT job online in the VET system. This is in the programming and programme product analysis specialism. Contact with teachers is organised through Skype and the materials used are the textbooks and handouts developed by the teachers. So far, this is the only example of this kind.

Digitalisation of VET

At the end of 2018 a new project, ShiftEdu, which supports the digitalisation of the VET system, started with the support of the Austrian Development Agency. The project aims to:

- develop the digital competences of VET teaching staff from six institutions;
- develop digital content for three specialisms;
- equip classes and promote the idea of digital and online learning.

The results of this project may lead to the development of DOL for some VET qualifications.

¹² <http://lex.justice.md/md/364908/>

¹³ https://ec.europa.eu/education/schools-go-digital_en



Facts and trends

The use of ICT in the teaching and learning process is sporadic and not planned at national or VET school level. In this context, the following points are relevant¹⁴:

- 82% of VET institutions have internet access.
- 41% of classrooms are covered by Wi-Fi.
- The connection speed to the global network is 91MB/s.
- The ratio of VET students per computer is 8:1.
- Almost all VET institutions have a website with information about their education programmes, admission requirements, etc.
- All VET institution directors have an email address.
- Some VET institutions have a Facebook page and actively publish school news.
- Interactive white boards exist in almost all VET institutions in one or two classrooms.
- All VET institutions have at least one computer lab with a minimum of 25 computers.
- Smartphone applications such as Viber and WhatsApp are popular with VET students and teachers. Some teachers are using these applications for group communication with students and parents. Although this is not a widespread practice, it is becoming more common.

¹⁴ ShiftEdu, Baseline Study on ICT Use in VET, 2019.



DIGITAL AND ONLINE LEARNING IN CONTINUING VET

Policies, strategies, initiatives, practices

National education policies and strategies have no specific provisions for DOL in continuing VET (CVET) and adult learning. Although the Education Code covers lifelong learning and adult education, there are no specific aspects relating to DSC and DOL. The secondary legislation does not specify DOL as a means of obtaining professional education.

The demand for digital skills from the private sector in Moldova is not high. This is confirmed by the results of the Networked Readiness Index¹⁵, which ranks Moldova 71st out of 139 countries. The business usage of ICT is estimated at 3.2 out of 7 points, one of the lowest scored pillars within the indicator, however, similar to the progress of neighbouring countries. In 2016 Moldova registered a lower rank than Romania, Ukraine, Georgia, and Russia in the Networked Readiness Index.

There are no initiatives (national, EU, or from international donors) to support DOL in CVET and adult learning (e.g. development of massive open online courses (MOOCs)). Although MOOCs offer great potential, especially for those courses that are taught in the Romanian language, the population remains largely unaware of these learning opportunities.

The recent mapping of continuous education providers carried out by the World Bank shows that courses in software programming and design are offered by only 2% of training providers and basic DSC by only 1% of training providers, the majority of them in the country's capital¹⁶. There are very few initiatives on the use of DOL at the level of continuous education providers.

The challenges include the fact that there is no strategy for adult or lifelong learning in Moldova. The development of DSC and the use of DOL in relation to lifelong learning are not yet part of discussions within the Ministry of Education, Culture and Research. As a result, no specific guidelines and standards for DOL in CVET have been defined. There are no (self-assessment) tools in place to support the digital readiness of CVET.

Alternative IT courses

The Tekwill hub, part of the Technical University of Moldova, was established with the support of USAID (www.tekwill.md/). The Tekwill Academy, in partnership with Oracle and ISD, offers the Java fundamentals training programme. The online course allows people to gain knowledge of basic programming concepts and to learn the current practices used in the IT industry. Content is licensed by the Oracle Workforce Development Programme and includes theoretical and practical lessons with a mentor, video lectures, e-books, quizzes, and team projects. The study languages are Romanian and English.

Private company IT courses

The country's first free private IT school, Academy Plus Moldova, was launched in 2016. It was created by StarNet and IT Moldova Foundation in partnership with Academy Plus Cluj-Napoca and École 42 Paris (<http://careers.md/academy-plus/>). The programme focuses not on theory, but on practice, teamwork, and the development of entrepreneurial skills. The aim of Academy Plus Moldova is to create IT specialists who are ready to enter the labour market immediately and to contribute to the performance of the companies employing them. Since 2016, more than 4 000 participants have signed up.

¹⁵ <http://reports.weforum.org/global-information-technology-report-2016/economies/#indexId=NRI&economy=MDA>

¹⁶ <http://documents.worldbank.org/curated/en/898401551942094280/pdf/135111-WP-P161517-PUBLIC-6-3-2019-15-24-1-TrainingAssessmentProjectReport.pdf>



Facts and trends

Moldova has the following rankings in international indexes:

- 59 out of 175 countries in the ICT Development Index;
- 71 out of 139 countries in the Networked Readiness Index;
- 65 out of 193 countries in the e-Government Readiness Index;
- 46 out of 128 countries in the Global Innovation Index.

For young people and adults who want to gain IT skills and become ICT specialists, private training providers offer alternative opportunities.

- StarNet, the biggest internet provider in Moldova, is offering courses for young people and adults at Academy Plus¹⁷, for programming in C++, Java, PHP, game design and web design based on an accredited programme.
- Tekwill Academy, in collaboration with the Technical University of Moldova, is offering courses for young people and adults in game development, Java fundamentals, Java professionals, Android fundamentals, network and cyber-security programme, and SQL fundamentals¹⁸.
- IT Step Academy – the biggest authorised centre in Moldova for Microsoft, Cisco and Autodesk – provides training in software development, system administration, and network technologies¹⁹.
- Front-End Development School has courses on HTML, CSS basics, CSS advanced, Sass, JavaScript²⁰.

¹⁷ www.starnet.md/news/academyplus-moldova-locul-unde-se-nasc-adevaratii-specialisti-de-programare/

¹⁸ <http://academy.tekwill.md/>

¹⁹ <https://itstep.md/formele-de-studii/>

²⁰ https://cursuri-it.md/scoala-front-end-development/?gclid=Cj0KCQjwla7nBRDxARIsADlI0kDH3opkRhZAZD_A0PDxhb4P2yscqtWq5Wn9ugVWYBTKYth482BfR4aAklwEALw_wcB#