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Foreword

The rapidly changing technological landscape - including digital public services, ICT-enabled education, digitized communication and media tools as well as automation in the home and workplace where digital skills play a significant role - requires the development of a digital skills framework adapted to a country's specific situation.

The Digital Skills Assessment, initiated in 2023 by the Ministry of Digital Development and Transport of Azerbaijan in collaboration with the ITU Telecommunication Development Bureau, identifies the current level of digital literacy in the country.

The accelerated speed of Azerbaijan's digital transformation journey goes hand in hand with a growing demand for employees with specialized digital skills.

This assessment will serve as a valuable resource to inform the data-driven and targeted interventions needed to enhance digital literacy. The publication can also serve as a model for a more regular assessment of the digital literacy level of the citizens of Azerbaijan.

The recommendations contained in this report will serve as a basis for designing and planning relevant future interventions, policies and strategies, including industry-specific activities, awareness-raising campaigns and advocacy.

I trust that this publication will contribute to the important ongoing discussions and steps taken among stakeholders involved in the digital skills ecosystem of Azerbaijan.

Dr Cosmas Luckyson Zavazava
Director of the Telecommunication Development Bureau
International Telecommunication Union

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Executive summary

In 2023, the Ministry of Digital Development and Transport of Azerbaijan initiated a collaborative effort, under the supervision of the International Telecommunication Union (ITU) Telecommunication Development Bureau (BDT) to assess the level of digital skills and identify digital skills gaps in Azerbaijan. The data gathering was conducted on four different target groups. The State Statistics Committee of Azerbaijan surveyed nearly 35 000 people using a randomized sample of households in 13 economic regions of Azerbaijan. Additionally, separate online surveys with convenience sampling were conducted among target groups such as staff of private enterprises (n=1 116) and public agencies (n= 679); and students (n=6 372) and teaching staff (n=886) of higher education institutions. Expert support was provided by the ICT Data Statistics and Analytics Division of the BDT working closely with the Regional Office for the Commonwealth Independent States (CIS).

The assessment aimed to inform the data-driven and targeted interventions for enhancing digital literacy in accordance with the needs of the Azerbaijan Government. The survey can also serve as a model for a more regular assessment of the digital literacy levels in Azerbaijan and could be replicated elsewhere.

The survey findings reveal that 25 per cent of those aged between 15 and 74 have at least basic digital skills, with 7.8 per cent having above basic digital skills and 17.3 per cent having basic digital skills. The study also found that over a quarter (26.5%) of respondents below the basic level of digital skills conduct digital activities in four out of five skill areas. This group, already equipped with devices and Internet access, and familiar with a range of online activities, presents an opportunity for targeted training, particularly in the skills area of safety, to elevate them to the basic level of digital skills.

Moreover, 45 per cent of Azerbaijanis aged between 15 and 74 only possess activities in zero to three skill areas out of five. Even if this group of people is active online, without basic digital skills and rudimentary knowledge of digital technologies, they not only lack the skills to benefit from digitalization but they may face online risks as a consequence. For this group, upskilling will reduce and mitigate any negative impact.

The most important skill areas include safety, digital content creation and problem-solving, and major upskilling interventions and training programmes should be built around these three areas, preferably with targeted upskilling activities for different segments of the population. Moreover, getting a better understanding of why 3.4 per cent of people aged from 15 to 74 have not used the Internet in the past three months will be an important step in getting them online.

The survey recommendations will serve as the basis for designing and planning relevant future government interventions, policies or strategies for digital upskilling at national and regional levels. A number of recommendations, both short and long-term, are outlined by age group. Connections with education institutions are made as formal education offers a structured context to implement digital upskilling strategies to guarantee at least basic digital skills as part of learners' exit profile from education and training.

In conclusion, inclusive digital policy programmes hold the potential to empower people, both inside and outside the labour force and education. By ensuring that digitalization and digital transformation do not deprive individuals of opportunities, these policies can foster social inclusion and participation in society. Therefore, it is crucial that digital inclusion policies offer opportunities for lifelong learning and upskilling for all ages.

1 Introduction

The digitally skilled can contribute to society in many ways, from driving the economy to enhancing their own employability and career prospects. Increasingly today, digital skills become indispensable for participating in society, as many public services are digitalized and much of public debate takes place through digital media.

Acquiring the right set of digital skills is essential for people of all ages who can then take advantage of the benefits of digitalization. The capacity to use digital technologies safely mitigates risks of cyber threats and disinformation, and avoids exacerbating existing inequalities. There are two main categories of digital skills, everyday use and work use, and professional use by ICT experts.

This study focuses on the digital skills needed to thrive in society such as to communicate, access public services online, find trustworthy information, or use digital technologies for study or work. In 2023, a high number of Azerbaijanis of all ages go online to make telephone calls (88%) and participate in social networks (77%). However, far fewer use the Internet for financial transactions (33%) or to purchase goods or services online (24%). Moreover, there is much less uptake for digital activities related to work-based tasks or studying. For example, one in ten people said they create digital presentations including text, images or charts or use basic formulas in spreadsheets, and fewer still do online courses or programming (7% respectively). See Figure 1 and Annex 1.

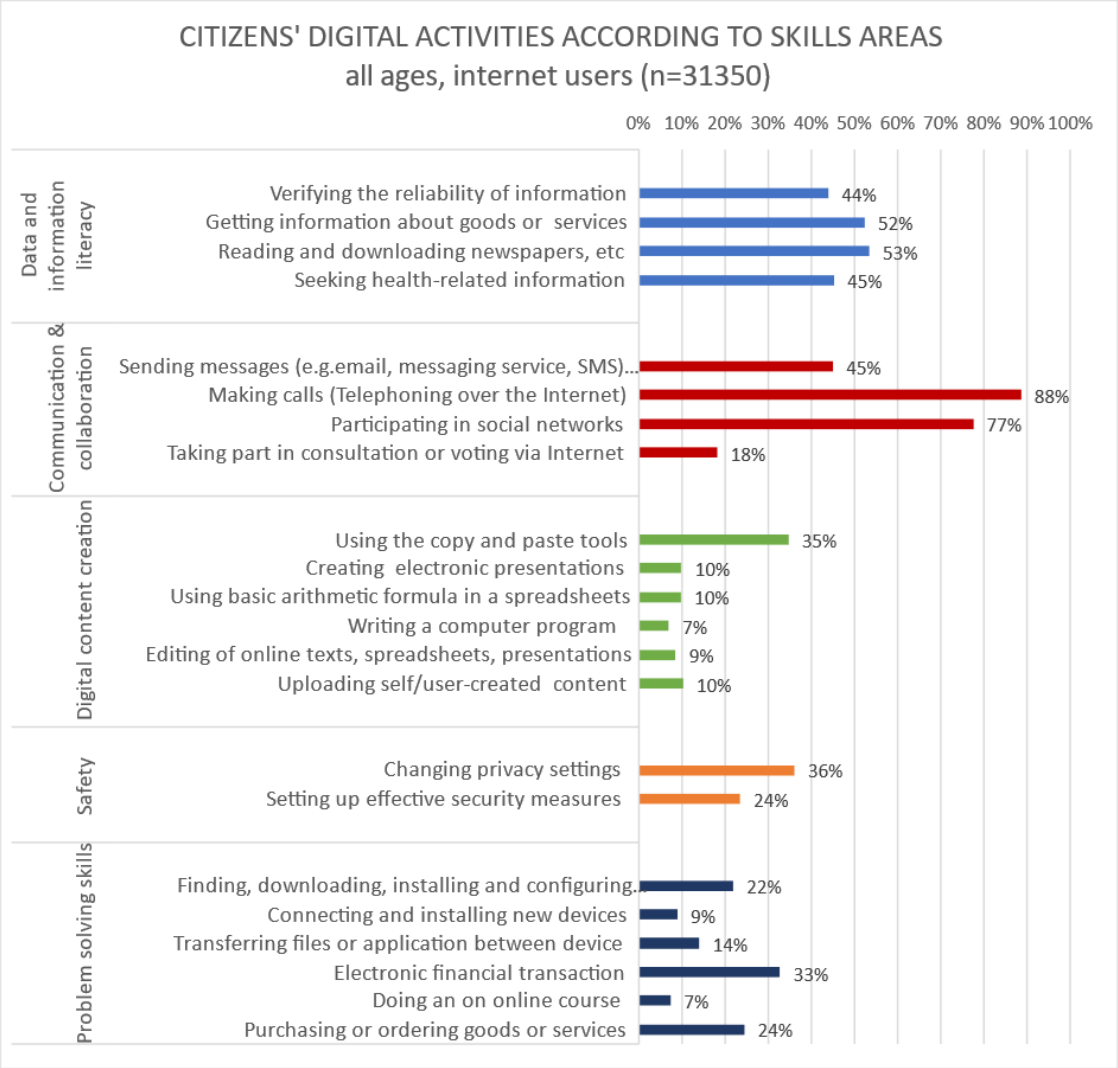
The activities mentioned above reflect the extent of the digital transformation of society, the social context and where people live, as well as the changing nature of work and study due to digitalization and the skills people have mastered. However, a recent report noted that "high Internet penetration is not translating into impactful use" and that "one reason for limited impact is the low level of digital literacy among the public and small and medium-sized enterprises (SMEs). Instead, top consumer uses of the Internet are viewing videos, e-mail, searches, and social media".[1]

The assessment framework used for this report highlights the need for people to acquire a broad set of digital skills to thrive in society, ranging from information and media literacy to communication and content creation skills, as well as simple problem-solving tasks. These skill areas stem from the Digital Competence Framework for Citizens (DigComp), which further defines digital competence as a combination of 21 indices (EU, 2022a).

A low level of digital literacy, for example if an individual only uses the Internet for social media and to make phone calls, can lead to vulnerability to online fraud and scams, and reflect a lack strategies to mitigate harm when an incident takes place. Such a low level of digital skills stops people from taking full advantage of digitalization, and might even increase existing inequalities in society.

[1] Asian Development Bank. (2019). Azerbaijan: Country Digital Development Overview

Figure 1: Digital activities tracked by digital skills indicators*



* Data displayed for all ages of Internet users in Azerbaijan (denominator = all individuals)

Source: ITUTo define *basic digital skills*, the assessment method in this study builds on a common approach to the collection and measurement of digital skills recently recommended by the ITU Expert Group on ICT Households surveys (ITU, 2023). The composite indicator used for the study aggregates a broad number of individuals' digital activities into five skill areas (Figure 1), the outcome of which is then used to define whether the individual has reached *at least basic digital skills*. If an individual has not reached the level of basic digital skills, the indicator gives more precise information on digital competence gaps. The indicators are derived from the European Union (EU) Digital Skills Indicator (DSI), used for the EU Digital Economy and Society Index (DESI), and adapted to international contexts.

Monitoring digital skills at the individual level marks a step forward in the way that policy-makers at national and international levels can monitor human capital and especially the development of digital skills. Allowing policy-makers and other stakeholders to take advantage of the digital skills data can support building better digital skills strategies, setting concrete policy-targets and continuously monitoring their success.

This study on Azerbaijan is the first of the kind at the international level to apply the ITU revised Digital Skills Indicator, therefore marking the first step towards better comparable data at the international level; targeted skills data were gathered from 34 584 people living in Azerbaijan.

After a short review of most recent digital skills initiatives in the section on country background, the methodological section describes how the assessment was conducted detailing data collection and sampling, and introduces the main target groups of this study. The results are presented first for the in-scope population aged between 15 and 74 years old, then for students and staff in higher education, and finally for employees in the private and public sectors, in addition to relevant insights for policy recommendations.

2 Country background

One of the priorities of "Azerbaijan 2030: National Priorities for Socio-Economic Development[2]", a strategic policy document approved in February 2021, concerns competitive human capital and innovations. The policy emphasizes "lifelong learning" based on the harmonious development of competencies, social skills, and abilities. It also focuses on "instilling digital competencies in new generations from school age onward, in order to prepare them for the up-and-coming era of digital technologies".

In Azerbaijan, connectivity of households with mobile-cellular network is high (91.5%), as is Internet penetration (87.8%) of households[3]. The groundwork for these achievements was laid a decade ago with the inception of the Azerbaijan ICT Roadmap (2016-2020). This strategic plan identified three key targets and policy priorities that aimed at improving governance, supporting productivity growth, and digitizing government services, setting the stage for the current state of digital skills in the country (Table 1).

Table 1: Azerbaijan ICT Roadmap (2016-2020)

Strategic target	Policy priority
1. Improve governance structures, and strengthen ICT	1.1. Establish an independent regulatory body
	1.2. Liberalise the telecommunication market
	1.3. Increase mobile infrastructure investments
2. Increase productivity and operational efficiency of the business environment	2.1. Extend digital payments and apply ICT in education system
	2.2 Extend technology-based operations in business environment
	2.3. Upgrade technology education with the involvement of businesses
	2.4. Improve the electronic systems of government institutions
	2.5. Increase knowledge and skills in the ICT sector
3. Digitise government and social environment	3. 1. Improve the information systems of government institutions
	3. 2 Create an end-to-end integrated e-health infrastructure

Source: OECD, 2022, p.23.

Human capital and digital skills development is at the focus of a number of key sectors in Azerbaijan, such as vocational education training and general education (European Training Foundation (ETF) 2020, 2022), and small and medium-size enterprises (OECD, 2022). The Asian Development Bank (2019) and EU4Digital (2023) have also contributed to this collective effort with recent reports on digitalization and digital skills in Azerbaijan, offering relevant policy recommendations. The latter report specifically focuses on implementing the EU Digital Economy and Society Index (DESI) in the Eastern Partnership countries, further highlighting the collaborative nature of digital skills development in the region. Other targeted reports have looked at the ICT penetration, also focusing on groups such as children, youth and women in the ICT sector (e.g. Akhvlediani, 2021).

In this report, the focus is on four key target groups for digital skills development in Azerbaijan: the general public, students and teaching staff in higher education, and employees in the public and private sectors. New data were gathered for all these groups through separate surveys over the summer of 2023This report presents levels of digital skills using the ITU method derived from the EU's DESI, and provides a brief review of key target group achievements based on desk research, an outline of the methodology and data, in addition to a detailed analysis of the results.

[2] https://president.az/en/articles/view/50474https://president.az/en/articles/view/50474
[3] https://mincom.gov.az/en/media-en/statistical-data/azerbaijan-digital-development

Citizens

A society with a digitally competent population is not only formed of those active in the labour market (42 per cent of the population in Azerbaijan in 2022) or in formal education and training. A large proportion of the population are not in the education system nor are they working (for example people who carry out domestic tasks, senior citizens, persons with disabilities, and people in precarious situations such as single-parent families). They are, however, active online and need to access the Internet for essential tasks such as using e-government services (e.g. renewing licences or declaring taxes), for public transport, or social and leisure use, such as staying in touch with family and friends. Inclusive digital policy programmes consider all people, both inside and outside the labour force and education, to ensure that digitalization and digital transformation do not deprive individuals of opportunities for empowerment, social inclusion and participation in society. Therefore, it is crucial that digital inclusion policies offer opportunities for lifelong learning and upskilling for all ages.

Some current and previous initiatives to highlight in this area include the "Towards Digital Azerbaijan[4]" project, which aims to improve digital literacy in all regions of the country. As part of the project, the Innovation and Digital Development Agency was established in 2022 to hold educational and informative training in more than 60 cities and regions of Azerbaijan. Some public events are also organized to inform the public, for example, International Cyber Security Week has been organized by the Ministry of Digital Development and Transport[5]. To promote lifelong learning, initial vocational education and training institutions also provide short-term courses (up to six months) for adult learners. Trainees can access simulators, e-textbooks, and other digital resources on the provider's premises. On the other hand, there is the ICT Application and Training Centre, established in 2015.

Since 2018, the State Statistical Committee of Azerbaijan has gathered household ICT indicators focusing, among other things, on people's e-skills[6]. In 2019, a third of respondents (33%) reported teaching themselves ICT skills, whereas formal education accounted for just over a quarter (27%). Additionally, 12 per cent said they acquired digital skills through training courses, and 5.5 per cent gained digital skills through vocational training. In 2022, however, 27 per cent still reported that the lack of digital skills prevented them from accessing the Internet[7].

Education and training

In Azerbaijan, the ministry of education is responsible for embedding digitalization in the curriculum (OECD, 2022). One of the aims of secondary school education is to ensure the development of modern ICT skills among learners (the Law on General Education, adopted in 2019). The State, therefore, supplies ICT and digital training resources to general education institutions (Article 4.0.13) and the professional development of teachers (Article 4.0.18) (ETF, 2020).

4 https://mincom.gov.az/en/projects/towards-digital-azerbaijan
5 https://azintelecom.az/en/2020/02/21/2nd-international-cyber-security-week-to-be-held-in-azerbaijan/
6 https://mincom.gov.az/en/media-en/statistical-data, last data published in the Statistical Yearbook in 2023.
7 https://mincom.gov.az/storage/Statistika-kitab-ENG.pdf, p. 52.

Table 2: Various educational initiatives on digital upskilling

Initiative	Responsible Institution	Description
Digital Skills Project	Ministry of Education	Skills project for students in secondary schools involved 6 500 students in 45 schools in Baku in the 2017-2018 academic year. In 2019, 26 000 5th and 6th grade students from 71 schools were involved in the project in Baku and Ganja. Also under this project, 23 500 students from 65 different schools in Baku and 2 500 students from 6 schools in Ganja are studying computer science in an updated format, which gives students a solid foundation of algorithmic thinking and logic, design skills and programming.
Information-Communication Technologies Application and Training Centre	Ministry of Digital Development and Transport	Provides training and ICT application services to the population, as well as to public and private enterprises. In 2017, the Centre established the "E-Government" project for young people, and in 2019 the number of students studying at the Centre exceeded 1 000. The Centre provides four types of training programmes: certified trainings (Microsoft, Cisco, Oracle, CompTIA); professional trainings (MS Office, Project Management, ICT Network/System; Programming); corporate trainings (digital skills and other programmes); and ICT lab organised corporate training programmes.
Innovation and Digitalisation Agency Azerbaijan	Ministry of Digital Development and Transport	Offers STEM courses to children and students. Courses provide participants with fundamental skills in robotics, science, technology, engineering, chemistry, mathematics, programming and digital art. The Agency has been operating since 2012, having been established by the decree of the President of Azerbaijan with the purpose of ensuring sustainable development and competitiveness of the economy, and the expansion of Azerbaijan's ICT sector. The Agency was established through the reorganization and in the form of a merger of the National Nuclear Research Center CJSC, public legal entity Innovation Agency and High Technologies Research Center under the Ministry.
Public-private initiatives	n.a.	BP, Alqoritmika and leading banks operating in Azerbaijan play an important role in digital skills development through supporting ICT training programs and establishment of their own IT academies.

Source: OECD, 2022.

Table 2 presents several recent initiatives by various ministries as well as public-private initiatives. The private sector offers various courses, especially on coding and more advanced ICT skills, through academies such as Code Academy, Tech Academy, and Step-it Academy[8]. Recently, a MOOC collaboration[9] offers some courses with AI-based translations into Azerbaijani, making it easier to learn. Private sector initiatives aiming to build awareness and foster implementation of digital security measures have been reported (OECD, 2022, p. 34), whereas ETF (2020) lists initiatives such as 'Enhancing Employability Skills of People with Disabilities' where about 100 people with disabilities participated in the programme to take the European Computer Driving Licence (ECDL) in 2018/19, a qualification that enables people to certify their computer skills.

Educators at all levels of education, including vocational education and training (VET), are continuously involved through the ministry of education in ICT training organized by the Institute of Education Professional Development Centre. The ETF Factsheet (2020) reports that 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. Since 2018, Azerbaijan's National Qualification Framework for Lifelong Learning outlines digital skills in all level descriptors. For example, it is expected that students at the upper-secondary school level are familiar with technologies in their field (occupation) and be able to assess the impact of technology on daily life.

However, high penetration of Internet connectivity and access to the Internet does not necessarily guarantee the positive outcomes that digitalization and digital transformation promise. The lack of digital skills means that people cannot fully contribute to the digital transformation as there is little or no skilled workforce to drive innovation in industry and society. On a positive note, in Azerbaijan, among the graduates from the ICT sector, nearly half (46%) were females (EU4Digital, 2021).

[8] https://code.edu.az/; https://www.tech.edu.az/; https://itstep.az/

[9] An open online course aimed at unlimited participation and open access via the Web: https://4sim.gov.az/en/news/267/4si-akademiyasi-istifadecilerinin-sayi-5000-oldu

3 Methodology

This section presents the aggregated indicator of ICT skills, followed by the data collection process. The assessment of digital skills in Azerbaijan incorporated self-reporting surveys covering four target groups:

- the general public (n = 34 584);
- public sector employees (n = 679);
- private sector employees (n =1 116);
- students (n = 6 372) and teaching staff (n = 886) from higher education institutions.

The work on assessment was discussed, organized and coordinated using the ITU Digital Skills Assessment Guidebook (ITU, 2020).

3.1 ICT skills indicator

To aggregate individual overall levels of ICT skills, the core set of survey questions covered 22 ICT activities outlined in the ITU Manual for measuring ICT access and use (Table 3). Following this method, a person reports whether they performed activities within the last three months by giving a binary answer (yes or no). Having carried out digital activities is considered a proxy for digital skills.

Table 3: The ITU ICT skills data model 2022 is divided into five skill areas

Information/ data literacy	Communication/ collaboration	Digital content creation	Safety	Problem solving
1. Verifying the reliability of information 2. Getting information about goods or services 3. Reading or downloading newspapers, etc 4. Seeking health-related information	1. Sending messages (e.g. email, messaging service, SMS) with attached files 2. Making calls (telephoning over the Internet) 3. Participating in social networks 4. Taking part in consultation or voting via Internet	1. Using copy and paste tools 2. Creating electronic presentations 3. Using basic arithmetic formula in a spreadsheet 4. Writing a computer program 5. Editing online text, spreadsheets, presentations 6. Uploading self/user-created content	1. Changing privacy settings 2. Setting up effective security measures	1. Finding, downloading, installing and configuring software 2. Connecting and installing new devices 3. Transferring files or applications between devices 4. Electronic financial transactions 5. Doing an online course 6. Purchasing or ordering goods or services

According to this method, questions cover the following five skill areas:

- information skills area;
- communication skills area;
- digital content creation skills area;
- safety skills area;
- problem-solving skills area.

A criterion-based approach is used to calculate the level of ICT skills:

- **basic digital skills –** individuals should have at least one activity in all five skill areas;
- **above basic digital skills –** individuals should have two or more activities in all five skill areas.

For example, **having basic digital skills** could refer to an individual who reads news online; uses their computer or smartphone to make phone calls over the Internet; carries out an electronic transaction such as transferring money; changes their privacy settings on the device or app to limit sharing personal information; and moves some files or other content, for example between devices or onto cloud storage. These activities represent the five skill areas outlined in Table 3.

In summary, individuals are assessed on several activities within each skill area and **at least one** activity in each area is required during the last three months. This approach builds on the idea that having a basic level of digital skills requires a broad skill set, which, at this basic level, can also be shallow (only 1 activity per area).

An advantage of this approach is that it is flexible concerning individuals and their preferred activities, but it also considers the specificities of a country's context. All activities within the area are equally weighted. For example, in skill area of information literacy, having carried out one activity in one of the following is enough for the basic level:

- reading or downloading newspapers, magazines or electronic books in a digital format;
- getting information about goods or services;
- seeking health-related information;
- verifying the reliability of the information.

At the conceptual level, the assessment is pinned to the Digital Competence Framework for Citizens (EU, 2022a), originally stemming from the EU but has recently been adopted and endorsed by international organizations (e.g., UNESCO, 2018; UNICEF, 2020).

Importantly, this approach not only focuses on those who already have acquired a basic level of digital skills but also allows a detailed assessment of digital skills when they are **below the basic level.** This has a clear advantage for policy-makers in terms of planning strategies for upskilling. Basic levels for individuals can be calculated based on their activities:

- four skill areas (four out of 5 five skill areas);
- three skill areas (three out of five skill areas);
- two skill areas (two out of five skill areas);
- one or less skill areas (zero to one out of five skill areas).

Having no activities is possible as the individual might have claimed to have used the Internet in the last three months but fails to have carried out any activities in any of the skill areas outlined in Table 3 (e.g. user has only watched videos online). Finally, the approach also includes **non-users**. This refers to people who have not used the Internet in the last three months.

Background of the ITU ICT indicator

The method used for the Azerbaijan ICT skills assessment is based on the recommendations of the Expert Group on ICT Household Indicators (EGH) subgroup on measuring ICT skills using household surveys. The recommendation is derived from empirical work carried out in the EU since 2015, when Eurostat first calculated the Digital Skills Indicator (DSI) using the 2015 survey

results on the use of ICT by Households and Individuals. The ICT skills indicator is currently used by the European Commission as part of the Digital Economy and Society Index (DESI[10]). The methodology was last updated in 2022, a revision that also showed that the DSI 2.0 item set has high psychometric quality at the scale level (EU, 2022b).

3.2 Target groups and data gathering

Statistical survey to general population

The data gathering was conducted by the State Statistics Committee in the form of a survey of individuals in a random sample of households in all economic regions of Azerbaijan in August 2023. The data included 34 584 individuals living in households, aged between 7 and 99 (Table 4), Annex 2 contains the questionnaire and more details for the process. The main analysis is conducted for the category of individuals aged 15-74, allowing for better comparability with other countries, such as data from Eurostat on the Digital Skills Indicator and ITU.

Table 4: The total number of individuals living in households

The upper part shows the in-scope individuals (15-74) by age group. The lower part shows individuals outside the in-scope age, their results are available in section 4.2.

In-scope age	Male	Female	Total	%
15-24	2 807	2 502	5 309	18
25-74	12 385	12 378	24 763	82
Total	***15 192***	***14 880***	***30 072***	***100***
7-14	1 910	1 544	3 454	
75 +	484	574	1 058	

Additionally, some analyses of digital skills of the older and younger populations are conducted to increase the availability of analysis on these target groups (e.g. for school-age children and retired population).

Data gathering survey: Higher education institutions

The State Statistics Committee of Azerbaijan conducted an online survey using a convenience sampling in September 2023. Many respondents (7 258) answered the online questionnaire (see Annex 2 for the questionnaire and more details) and 30 different education institutions were indicated; 6 372 identified themselves as students and 886 as teaching staff. Individuals were aged between 15 to 87.

Most of all respondents were from the Baku economic region (79%) from 22 different educational institutions. Other economic regions represented were Nakhchivan, Absheron – Khizi, Ganja - Dashkasan and Central Aran each involving 1 to 3 education institutions (Table 5). In the data sample used for this study, it is not possible to connect individuals to institutions.

[10] https://digital-strategy.ec.europa.eu/en/policies/desi

Table 5: Total number of respondents in higher education, by region and status

Economic region	Teachers	Students	Grand Total
Baku city	690	5 049	5 739
Nakhchivan	39	853	892
Absheron – Khizi	87	370	457
Ganja – Dashkasan	52	99	151
Central Aran	18	1	19
Total	**8 86**	**6 372**	**7 258**

Table 6: Total number of respondents in higher education, by gender

	Male	Female	Total
Students	2 436	3 936	6 372
Total	38%	62%	100%
Teaching staff	315	571	886
Total	36%	64%	100%

Table 6 shows that in both target groups, students and the teaching staff, there are more females than males (62% vs. 38% for students and 64% vs. 36% for teaching staff). For teachers, the age range is between 17 and 87 (13 individuals were aged below 22 and 6 were aged 75 or older).

Data gathering survey: Public and private sector employees

Two different online surveys were conducted for data gathering by the State Statistics Committee of Azerbaijan in August 2023 based on a convenience sample (Table 7), Annex 2 contains the questionnaire and more details on the process:

- Staff working in **public agencies**, the data included 679 people aged between 15 and 74, with 69 per cent male and 31 per cent female.
- The data included staff working in **enterprises**; 1 116 individuals aged between 15 and 79, from 13 regions.

Table 7: Number of respondents from the public and private sectors, by gender

Target	Male	Female	Total
Public agencies staff	468	211	679
total	69%	31%	100%
Staff of Enterprises	824	292	1 116
Total	74%	26%	100%

The number of public employees who responded to the survey per region is presented in Table 8. The economic regions of Baku city and Nakhchivan were both represented by five public

entities, whereas the participation from other regions was between one and three entities. In the dataset used for the study, it is not possible to connect individuals to institutions or regions.

Table 8: Number of respondents from public agencies by region

Economic regions	Number of respondents working in public agencies
Baku city	280
Nakhchivan	65
Absheron – Khizi	67
Mountainous Shirvan	46
Ganja – Dashkasan	76
Karabakh	14
Kazakh – Tovuz	1
Guba – Khachmaz	10
Lankaran – Astara	5
Central Aran	28
Mil-Mugan	4
Shek – Zagatala	66
Shirvan – Salyan	17
Grand Total	679

The respondents to the survey on private enterprises represented 138 enterprises. The largest number of respondents, 25 per cent, were based in the economic region of Absheron – Khizi, 15 per cent in Nakhchivan and 10 per cent in Baku city. Table 9 shows the size of enterprises from which the respondents came; 58 per cent of the respondents were from SMEs (less than 50 employees).

Table 9: Number of respondents in the private sector by size of enterprise

Size of the enterprise	Number of respondents
1 person	11
2 – 10 persons	128
50 and fewer	508
51 and more	413
250 and more	56
	1 116

The private sector respondents represent staff working in various sectors which were placed in all economic regions participating in the survey (Table 10). Most private sector enterprises were in the sector of "processing industry" and "wholesale and retail trade; repair of cars and motorcycles". In the dataset used for the study, it is not possible to connect individuals to companies or regions.

Table 10: Private sector respondents by type of enterprise

Sector	Number of regions where enterprises are represented
Accommodation and public catering	4
Agriculture, forestry and fishing	7
Construction	7
Education	1
Financial and insurance activities	5
Information and communication	1
Processing industry	11
Professional, scientific and technical activity	4
Provision of administrative and support services	4
Provision of health and social services to the population	4
Provision of services in other areas	2
Researches and works in the field of social sciences and humanities	1
Transactions related to real estate	1
Transport and warehousing	2
Water supply; wastewater and waste treatment	1
Wholesale and retail trade; repair of cars and motorcycles	12

4 Findings from surveys

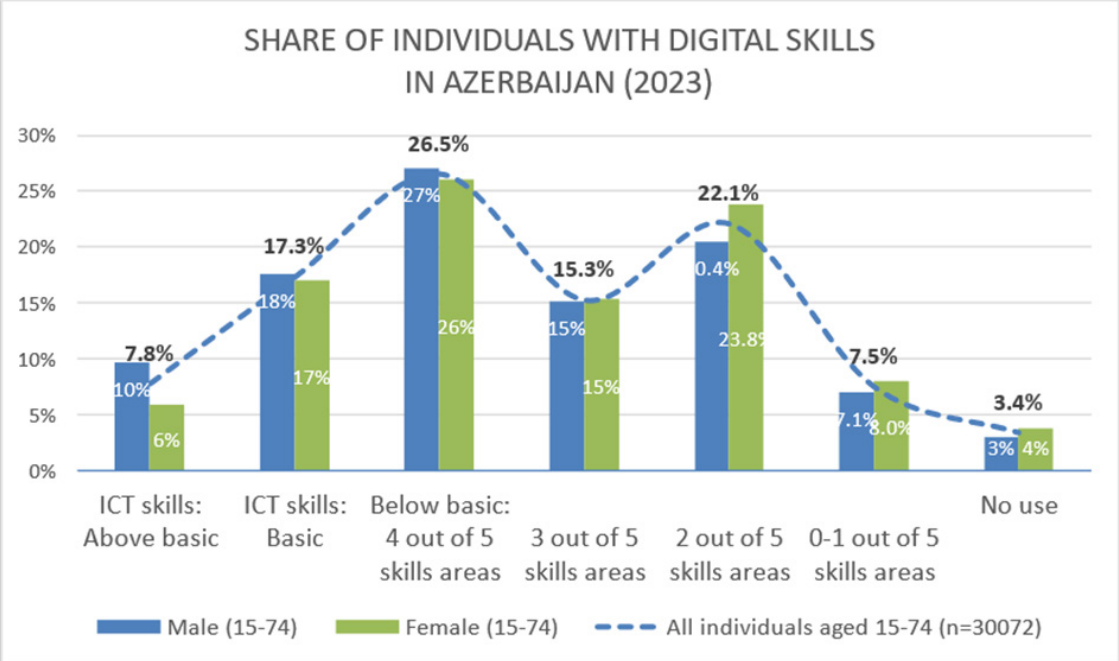
In this section, an overview of digital skills is given, focusing on individuals aged between 15 and 74 across surveyed regions in Azerbaijan including socio-democratic factors such as education and income, and an overview of digital activities of very young (7 to -14 year-olds) and older adults (aged 75 and older). For this part, the State Statistics Committee surveyed a random sample of 34 584 individuals living in Azerbaijan.

In addition, levels of basic and advanced digital skills among other target groups are considered, such as educators, students, and employees in both private and public sectors. The data for these groups were gathered by the State Statistics Committee through online surveys in 2023 (without sampling, thus giving a snapshot of a self-selected group of individuals).

4.1 Digital skills in Azerbaijan

A quarter of the population in Azerbaijan aged between 15 and 74 have *at least basic digital skills*. Having *at least basic digital skills* is deemed adequate for active participation in society, education, the digital economy, and the labour market. Two levels of digital skills were noted: 7.8 per cent have *above basic digital skills* and 17.3 per cent have *basic digital skills*. More men have *above basic digital skills* (10%) compared to women (6%), and 18 per cent of men have *basic digital* skills compared to 17 per cent of women (Figure 2, see also Table 15). The results are based on a representative sample of 30 072 people.

Figure 2: Digital skills of people aged between 15 and 74



Source: ITU

In Azerbaijan, 71.4 per cent of those who use the Internet have *below basic level* digital skills. Additionally, 3.4 per cent of people aged between 15 and 74 have not used the Internet in the past three months (for criteria, see Box 1).

For those who have *below the basic level* of digital skills, more than a quarter (26,5%) conduct digital activities in four out of five skill areas. In other words, although some people have quite

a broad set of skill areas, they lack the range of skills to bring them out of the *below the basic level*. This group could be characterized as the "low-hanging fruit" for policy-makers and decision-makers for digital upskilling. They already have devices and access to the Internet, and are familiar with a range of online activities, so targeted training can be planned. In most cases, safety is the missing skill set. The gender parity in this group is very even.

If having *at least basic digital skills* is deemed adequate for active participation in education, society and the labour market, 45 per cent of Azerbaijanis aged between 15 and 74 only possess skills in zero to three out of five skill areas(Figure 2). Even if this group of people is active online, without basic digital skills and rudimentary knowledge of the use of digital technologies, these individuals can rarely reap the potential benefits of digitalization in society. For this group, upskilling is a necessity to help reduce the risks they face online (e.g. financial scams and online fraud, identity theft, malware attacks) and mitigate their possible negative impact. Adequate digital skills can also be a stepping stone to employment. In a digitalized society, digital skills are also an enabler of digital services offered by the public and private sectors.

Five skill areas: information and data literacy, communication and collaboration, digital content creation, safety and problem-solving skills

Five skill areas indicate four skill levels:

- four out of five skill areas;
- three out of five skill areas;
- two out of five skill areas;
- zero to one out of five skill areas.

1) Basic digital skills: having at least one activity in each skill area.
2) Above basic digital skills: having two or more activities in each skill area.
3) Below basic digital skills: having less than one activity in each skill area is considered as having less than a basic level of digital skills. skill areasskill areas
4) Zero or one skill area refers to individuals who have not used the Internet in the last 3 months.

Box 1: The criteria for at least basic digital skills and below

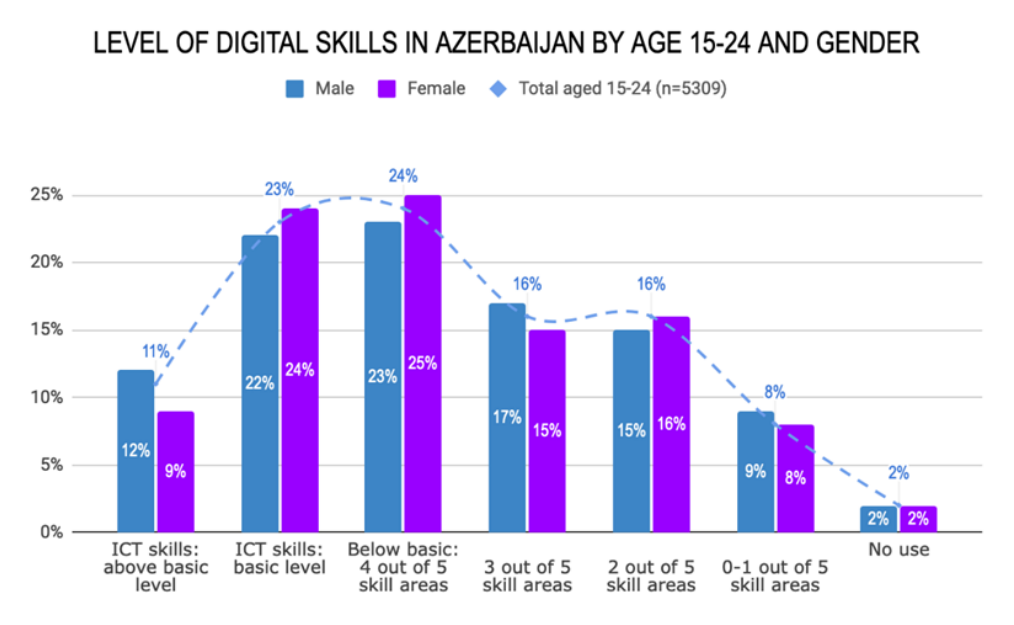
Within this group, 22 per cent of respondents only possess activities in two skill areas. There is a 3.3 percentage point gender disparity between females and males, which also persists in the last group of 0-1 skill areas, although it is less (8.0%to 7.1% respectively). In the latter group, having 0 activities is possible as the individual has used the Internet in the last 3 months but fails to have activities in any of the activities outlined in Table 3. These individuals are counted as active users and are separated from **non-users,** who say that they have not used the Internet in the last 3 months.

Box 1: The criteria for at least basic digital skills and below (continued)

A deeper look can be taken at the young population of Azerbaijanis aged between 15 and 24 (Figure 3, see also Table 16). They can be considered a group who have just graduated from and educational institution or training and entering the labour market. Within this age group, 33.6 per cent have *at least basic digital skills*. When looking at those *above basic digital skills,* a small gender disparity of 2 percentage points is shown (males: 11,5%, females: 9,4%), whereas slightly more women have *basic digital skills* than males (females: 24,1%, males: 22,1%). Only about 2 per cent are non-users in this age group.

Almost two-thirds (64,6%) of young people are below *the basic level*. Many (24,3%) carry out online activities in four skill areas out of five, and only one skill area to move into the basic level. This group is "*almost there*" regarding basic digital skills but needs upskilling interventions to reach the basic level. Another large group is more worrisome; 40,3 per cent of this group reported having online activities in 0-3 skill areas. This sub-group, representing 6.2 per cent of the entire population in Azerbaijan (males: 3.3%, females: 2.9%), needs immediate upskilling interventions to actively contribute to the labour market and digital society in the future.

Figure 3: The share of individuals aged 15-24 with digital skills



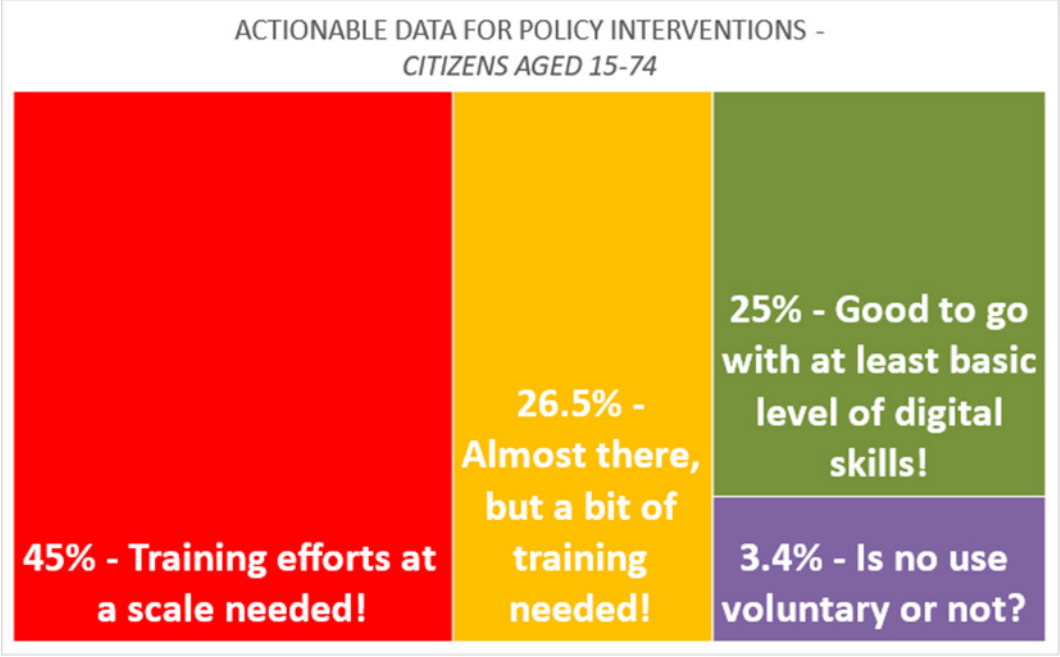
Why does this data matter, and what does it mean for policy actions?

Having a digitally skilled population ensures that everyone has access to the same opportunities and positive outcomes that digital transformation promises. The digital skills data reflects the potential for policy intervention and the need for further monitoring.

The following big picture emerges from the 15 to 74 age group (Figure 4, for the whole population, Figure 44 in Annex 1):

- 25 per cent of the population with *at least basic digital skills* have an adequate skill level for active participation in the digital society (green light using the three colours of traffic signals);
- just over a quarter (26.5%) of the population is "*almost there*", needing to add only one skill area to move into the basic level, and therefore potential candidates for upskilling and training (yellow signal) ;
- almost half of the population (45%), although they already use the Internet, own devices and access online services, they do not have the basic level of digital skills, to fully benefit from the opportunities of digitalization nor remain safe online. They need digital upskilling and training at different levels (red signal);
- a small portion of 3.4 per cent are "non-users" who have not accessed the Internet in the last three months. Understanding why these individuals are not using the Internet will be important to ensure that all those who have the motivation to be online have a possibility to go online.

Figure 4: Different segments of target groups for digital upskilling in Azerbaijan (all individuals of all ages, representative sampling n=34584)



Source: ITU

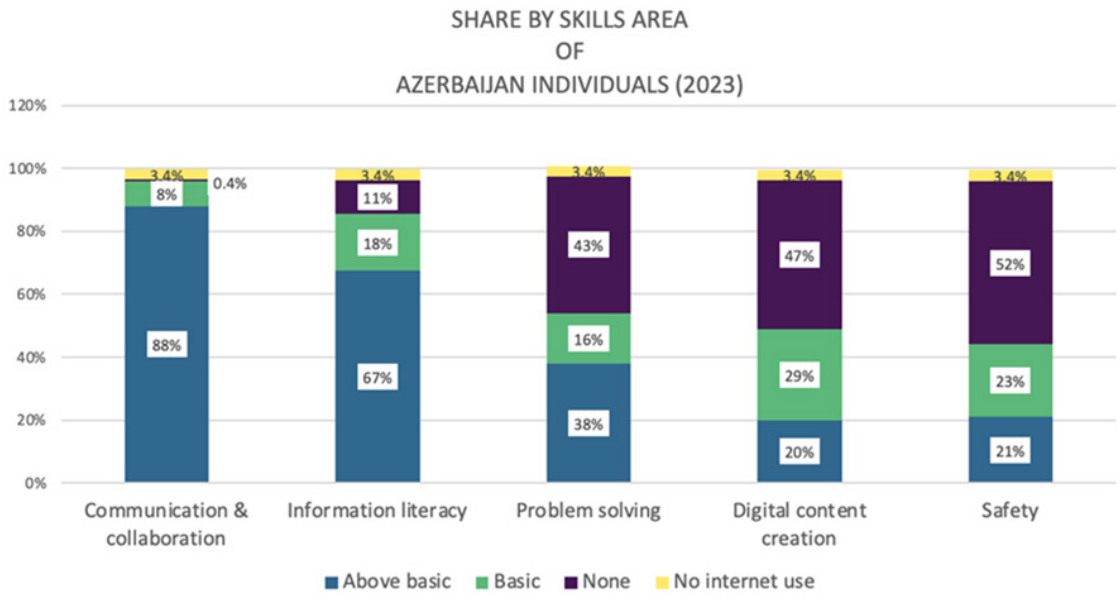
Digital skill areas lagging: Where to focus the training efforts and upskilling?

To better understand where people are lagging behind, some insights can be gained from the digital activities that individuals have carried out in the last three months within the five digital skill areas: information literacy, communication and collaboration, digital content creation, safety and problem-solving.

For Azerbaijanis aged between 15 and 74, the most important areas include safety, digital content creation, and problem-solving. Figure 5 shows the percentage of respondents who have not been exposed to any activity in the given skills area in the last 3 months (purple). Major upskilling interventions and training programmes should be built around these three areas,

preferably with targeted training activities for different segments of the population, that are motivating and pertinent to their everyday life.

Figure 5: Share of in-scope individuals by skill areas



Source: ITU

Most importantly, in the area of **safety** (such as changing the privacy settings of devices or apps, or setting up effective security measures such as strong passwords), more than half of the respondents (52%) declared having carried out no safety-related activities in the last three months (54 per cent of females (Figure 6) and 50 per cent of males (Figure 7)).

Another area where individuals lack digital skills is **digital content creation**; 47 per cent of respondents said they had not carried out any activities in this skills area. Such activities include simple tasks such as using software for editing text, spreadsheets and presentations, creating electronic presentations, or uploading self/user-created content to more complex activities such as using basic spreadsheet formulas or writing a computer program. In addition, 49 per cent of women (Figure 6) and 46 per cent of men (Figure 7) do not conduct activities in digital skills creation.

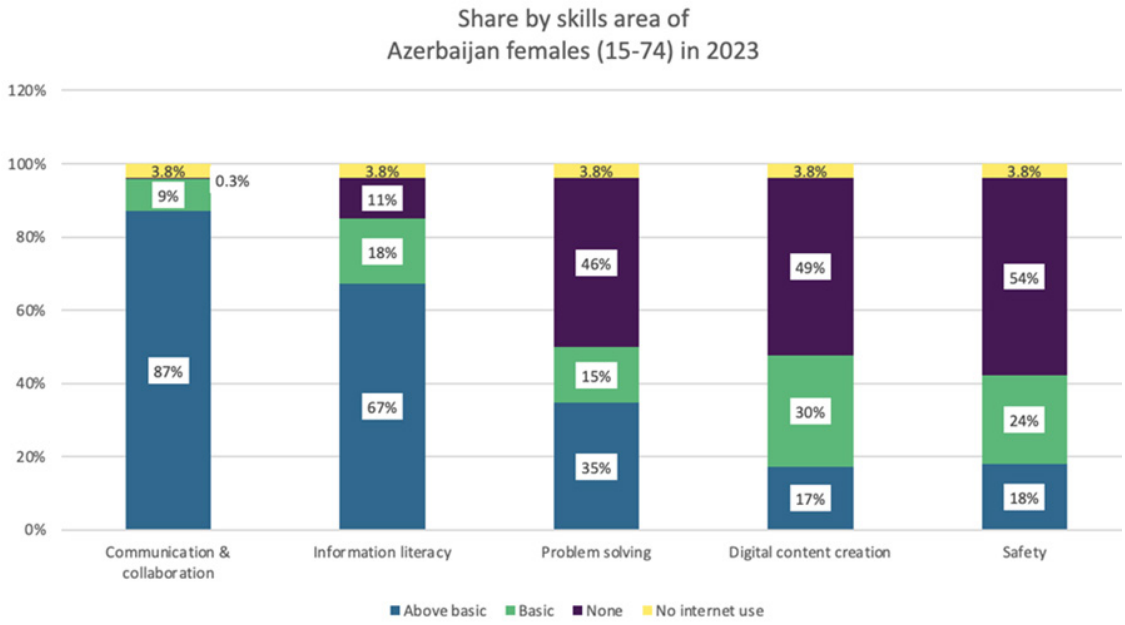
Problem-solving is another area lacking skills; 43 per cent do not use their skills in this area such as finding, downloading, installing and configuring software, connecting and installing new devices, transferring files or applications between devices, conducting electronic financial transactions, purchasing or ordering goods or services, or following an online course. In terms of gender, this group is composed of more females (46%), than males (40%) (Figures 6 and 7).

Figure 5 reveals that 11 per cent of respondents need to improve their skills in information literacy such as using the Internet to look for information about goods or services or health-related information, reading or downloading newspapers, or checking the reliability of information found online. This group is rather equally composed of females (11%) and males (11%), as shown in Figures 6 and 7.

Only a small percentage of respondents (0.4%) said they had used the Internet in the last three months but did not demonstrate skills in the area of communication and collaboration.

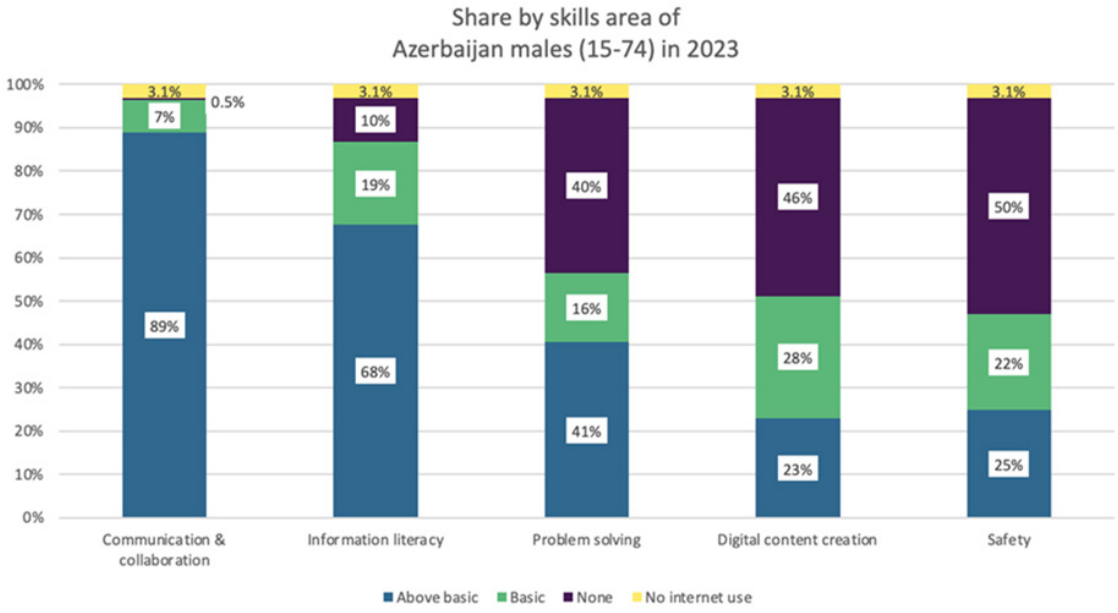
In other words, they did not carry out any of the following activities: sending messages (e.g. email, messaging service, SMS) with attached files, making calls over the Internet, participating in social networks or taking part in consultation or voting via the Internet. This group had fewer women (0.3%) than men (0,5%).

Figure 6: Share of skill areas in terms of activity by women



Source: ITU

Figure 7: Share of in-scope males by skill areas showing activity in terms of no activity (none), basic and above basic level



Source: ITU

A deeper understanding can be captured in Figures 5 to 7, revealing levels of digital skills. In this case, levels follow the same criteria as the overall indicator:

- 1 activity equals the *basic level*, and
- more than 1 activity puts individuals *above the basic level*.

Such information can further guide actionable policies and interventions in digital upskilling, for example, to help focus upskilling and training efforts on areas most in need, but also to create flexible training opportunities and pathways for individuals to go from *no level* to *basic level*, and from the *basic level* to *above basic level* would be important. For such purposes, diagnosing skills levels and offering suitable training will have a significant impact.

these findings suggest that the skills area of *communication and collaboration* is by far the most popular among Azerbaijanis; 96,2 per cent of those who used the Internet in the last three months carried out activities in this skills area. Moreover, 87 per cent of females have *above basic level* of skills in this area, whereas the figure is 89 per cent for males (see Figures 6 and 7). This can indicate that basic digital skills training in this area is not needed, but efforts should be allocated to the skill areas where usage has not attained such high saturation.

For example, in the area of information literacy, educational efforts can be allocated to bring the 18 per cent of the population who are currently at a *basic level* of skills (Figure 5) to an *above basic level* by focusing on identifying misinformation and other harmful content in online environments (e.g. misinformation on social media), as well as gaining skills to fact-check and learning how to counter such content without further amplifying it.

Digital skills by region

Where do the digitally skilled live in Azerbaijan? When looking at the share of individuals with *at least basic digital skills* (25%), the data suggests that the economic region of Baku has attracted 5.5 per cent of the digitally skilled (see Figure 8 and Table 17 in Annex 1). The urban concentration has also attracted a large percentage of those with digital skills in four out of five skill areas (9.4%).

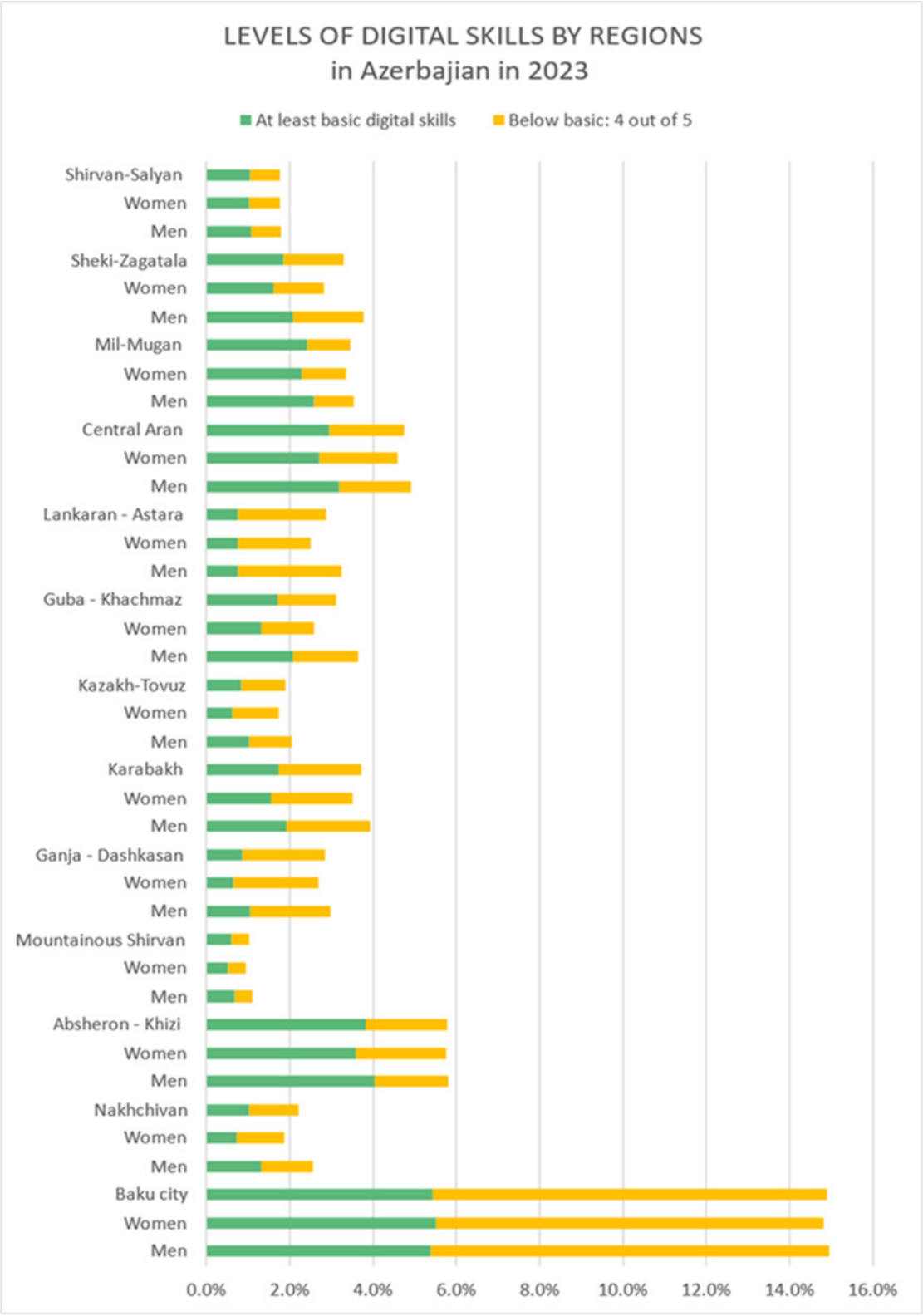
The second-largest concentration of respondents with *at least basic digital skills* live in Absheron – Khizi (3.8%) where 2 per cent have digital skills in four out of five skill areas. The third largest concentration of digitally skilled individuals live in Central Aran, where 3 per cent of the population have *at least basic digital skills*. Additionally, 1.8 per cent have digital skills in four out of five skill areas.

Figure 8 also shows the gender of the individuals with *at least basic digital skills*. In the economic region of Baku, there is one percentage point more women with *at least basic digital skills* than men. In contrast, in Absheron – Khizi and Central Aran, there is a 0.4 to 0.5 percentage point difference between males and females in favour of men. In all other economic regions, the gender gap was at a similar level but slightly larger in Nakhchivan (0,6%) and Guba – Khachmaz (0,8). Two of these digital skills hotspots also coincide with the largest population in economic regions, namely Baku and Absheron–Khizi.

Regarding *advanced digital skills* such as writing a computer program, 8.1 per cent of individuals aged between 15 and 74 have written a computer program in the last three months. Table 11 shows 9.2 per cent of males and 7 per cent of females have done so. Baku has attracted most of these individuals: 6.14 per cent (males: 6.7%, females: 5.5%), other economic regions that

attract people with advanced digital skills are Absheron – Khizi (0.8% – males: 1.1% and females 0.4%) and Mil – Mugan (0.21%).

Figure 8: Levels of digital skills by 13 economic regions that were sampled for the study



Note: Some territories of the Karabakh Economic Region were not included. The total in-scope population is used as the denominator to better reflect the high concentration of skills. See also Table 17 in Annex 1.

Source: ITU

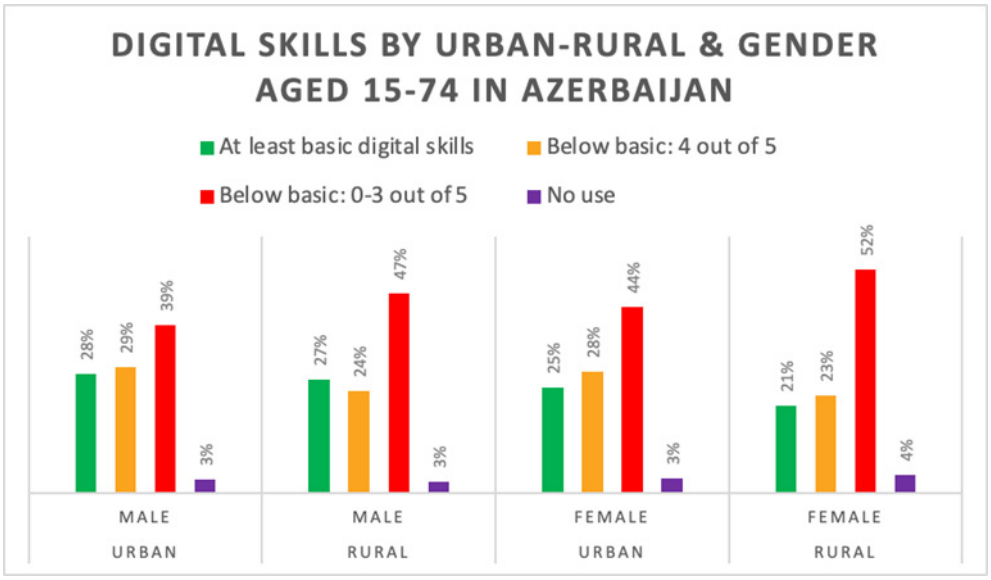
Table 11: Individuals aged between 15 and 74 who have written a computer program in the last 3 months

Regions with an asterisk have a borderline number of observations; thus, results should be interpreted carefully, and no gender ratio should be calculated. The remaining seven regions are left out because there needs to be more observations.

Writing a computer program (in-scope 15-74 n=30072)	Grand Total	Male	Female
Baku city	6.14%	6.71%	5.54%
Absheron – Khizi	0.78%	1.14%	0.41%
Mil – Mugan	0.21%*		
Guba – Khachmaz	0.19%*		
Ganja – Dashkasan	0.15%*		
Central Aran	0.14%*		
Total for the entire country	**8.1%**	**9.2%**	**7.0%**

Last, in 2023, 55 per cent of the total population in Azerbaijan lives in urban and 45 per cent in rural areas. Looking at the concentration of individuals with *at least basic digital skills* by urban-rural divide, 52 per cent live in urban areas and 47 per cent in rural areas. Figure 9 shows a more detailed picture of gender balance, and that among those with *at least basic digital skills*, there are more men than women, and that females living in rural areas represent the smallest group (21% vs. 28% of urban males).

Figure 9: The level of digital skills by urban and rural population and gender



Source: ITU

For the purpose of this study, data was gathered from 13 economic regions, however, some territories of the Karabakh Economic Region were not included. The in-scope population included 30 072 respondents.

4.2 A closer look at the population

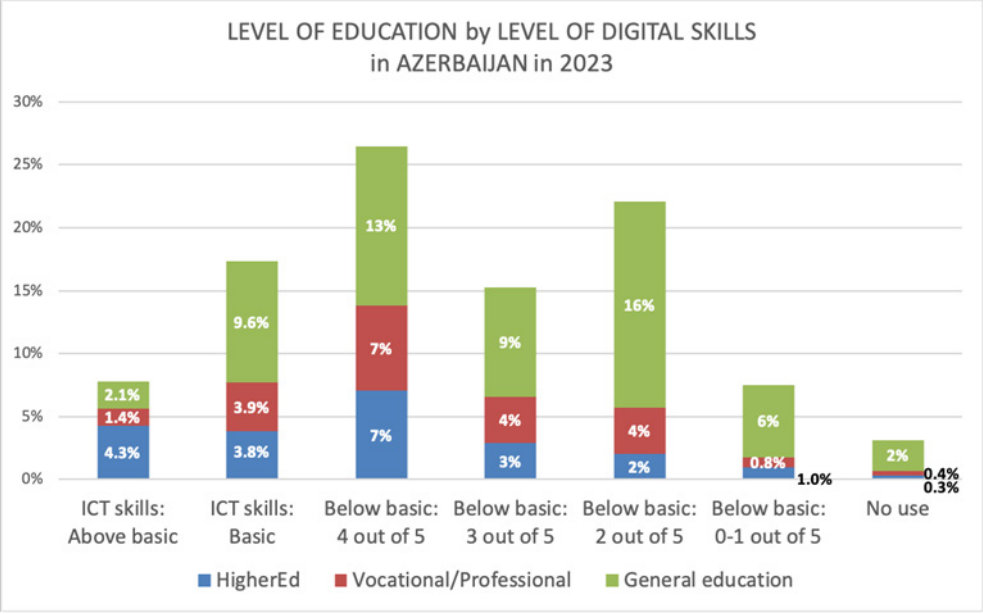
A number of additional analyses were conducted to better understand some of the demographic and social determinants of digital skills, such as the socio-economic conditions, which might influence the distribution of digital skills and how effectively digital technologies are used.

Education

Looking at Azerbaijanis aged from 15 to 74, a large majority (58%) of people have reached the level of secondary school education, 21 per cent in vocational/professional training, and 21 per cent have attended post-secondary school or higher education institutions where a degree, diploma or certificate is awarded (Table 18 in Annex 1).

Figure 10 shows the level of digital skills relative to educational background. For those with *above basic digital skills* (7.8%), more than half have a post-secondary school or higher education degree, diploma or certificate. On the other hand, more than half of all those with a level of *basic digital skills* (17.3%) have completed their general secondary school education.

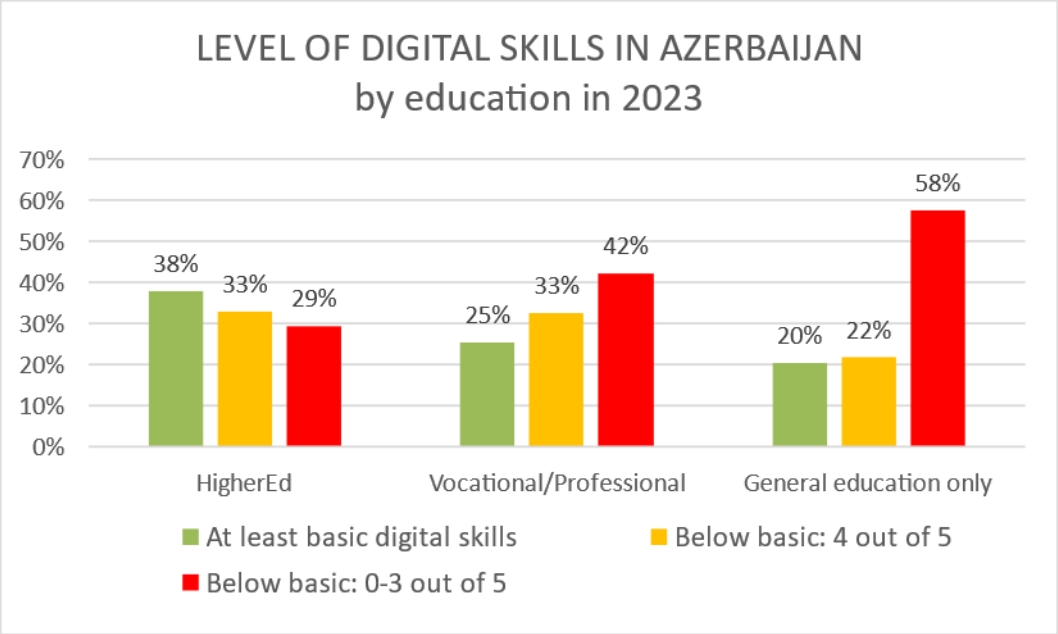
Figure 10: Level of digital skills by educational background



Source: ITU

The level of education does not directly determine the level of digital skills, although it can play a big role in how effectively a variety of digital technologies are used to draw more tangible outcomes. Figure 11 shows that among those with a background in higher education, 38 per cent have *at least basic digital skills* (green bars), 33 per cent have skills in four out of five skill areas (yellow bars), and 29 per cent are *below the basic level* of digital skills (red bars) and thus in need of digital upskilling.

Figure 11: Level of digital skills by educational background (Internet users)



Source: ITU

For respondents with vocational/professional or a general secondary school education, the trend is reversed (Figure 11); there are fewer individuals with *at least basic digital skills* (green) and clearly more of those with only with zero to three skill areas out of five (red bars). This latter group is populated with a greater proportion of those with a general secondary school education: 58 per cent of respondents need digital upskilling in a variety of skill areas.

To better understand in which skill areas the digital upskilling should take place, skill areas where resonpdents said they did not have any activities were considered (these are also presented in Figure 5). The skill areas most lacking were *safety* (52 per cent of individuals didn't have any activities); *digital content creation* (47%), *problem-solving* (42%) and, to a much smaller degree *information literacy* (11%).

Table 12: Lack of skill areas by educational

Educational background	Safety	Digital content	Problem solving	Information literacy
Higher education	51%	27%	23%	8%
Vocational/ professional	**57%**	41%	36%	7%
Secondary school education	54%	**60%**	**57%**	**14%**
Average	*54%*	*42%*	*38%*	*9%*

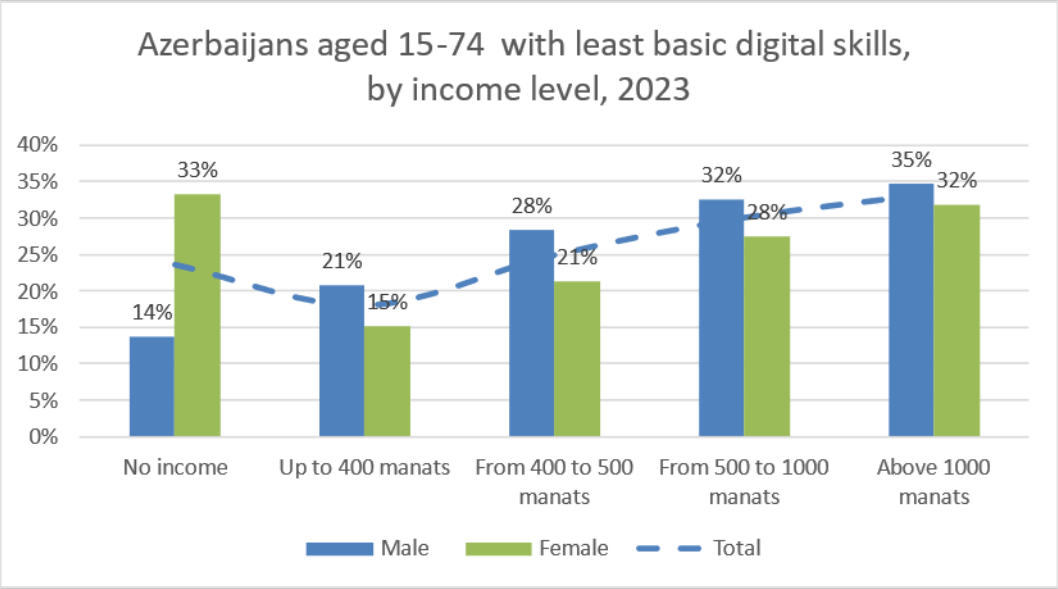
Table 12 shows the percentage of all respondents who did not report any activities in four skill areas grouped into levels of education. It shows that proportionally, people with a secondary school education lack skills in *digital content creation* and *problem solving* as well as in *information literacy* compared to those with vocational and professional training or higher-educational institutions.

For the segment of the population with a secondary school education, careful planning of relevant upskilling activities and programmes should be put in place. From an instructional point of view, formal training opportunities might not be the first choice for this group, whose initial educational experience is not extensive in the first place, and where other non-formal or informal training schemes might yield better outcomes. Additionally, the content and upskilling activities should be made conceptually relevant and motivating for this group of people. For example, in the skill area of digital content creation, some of the activities are more relevant for typical tasks in white-collar occupations, where for example spreadsheets and word processing is used.

Income

Income can influence the range of digital skills, the type of device, and access to the Internet that people might have. It seems that reaching *at least basic digital skills* is more common in higher income brackets (from AZN 500) (Figure 12, Table 19 in Annex). The difference is, however, more pronounced between the income of women and men within the same income category; fewer women seem to have *at least basic digital skills* in all income brackets (3 to 7 percentage points), however, in the category of "no income", the trend is reversed.

Figure 12: Data on income of individuals aged 15-74 (n=30072)



Note: 35 per cent of the population have an income higher than AZN 500, 29 per cent from AZN 400 to AZN 500, 31 per cent up to AZN 400 and 6 per cent have no income at all.

Source: ITU

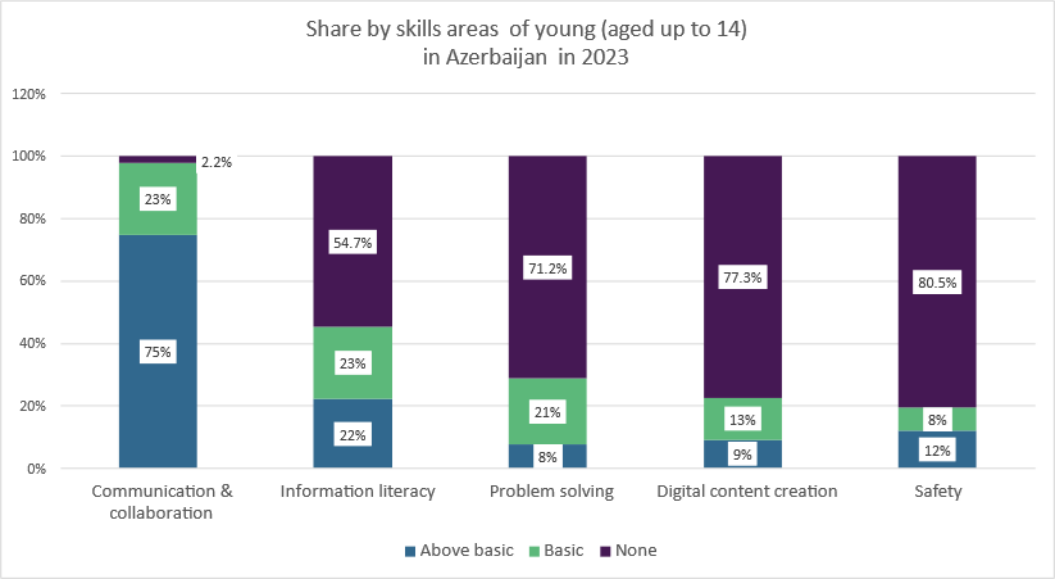
Digital skills of young people

A large portion of young people from the age of 7 to 14 (36%) had not used the Internet in the last three months. Of those who used the Internet, most young people carried out digital activities in the area of communication and collaboration; 75 per cent had *above basic level* and 23 per cent *basic level* of activity (i.e. one activity in this category). Only 2.2 per cent of those accessing the Internet had not skills in this area (Figure 13, see also Figure 44 in Annex 1).

Looking for information online was the second most popular activity, and 45 per cent said they had carried out such activities in the last three months. Fewer young people had skills in

problem-solving (29%), digital content creation (22%) and safety-related activities (20%). Less than 5 per cent have *at least basic digital skills;* most were 10 year-olds or older. The sample included 2 197 individuals, 78 per cent of whom were 10 year-olds anord older.

Figure 13: Activities of young people aged 7-14 by skill areas



Source: ITU

Starting early on activities in various skill areas can set the ground for developing digital skills in the future. From the equity point of view, it would be important that **education institutions take the role of providing young people with a broad set of basic digital skills**, as home usage often focuses only on a few skill areas (e.g. communication and collaboration and information literacy) and is often dependent on socio-economic factors.

Developing digital skills to create digital content (e.g. simple tasks of using software for creating text and presentations, editing pictures and other user-created content) can help build more advanced activities in the area (e.g. using spreadsheets, coding). On the other hand, focusing on safety-related issues, such as the importance of changing privacy settings of devices or apps, or setting-up effective security measures (e.g. strong passwords), can foster awareness of *cyber hygiene*. It also introduces issues such as cyber-bullying and possible cyberviolence by providing means of protection and safety. On the topic of child online protection, ITU offers dedicated policy guidelines and training materials for children, teachers, policy-makers as well as for parents.[11]

Schools can also play an important role in nurturing a critical attitude towards the content found in social-media and elsewhere on the Internet. Activities should focus on how to identify misinformation and harmful content, gaining skills in fact-checking and countering such content without further amplifying it.

Comprehensive guidelines on digital skills development focusing on safe and critical early onboarding could help education and training professionals. Adopting a national strategy with a reference framework for digital competence could also help educators, parents and

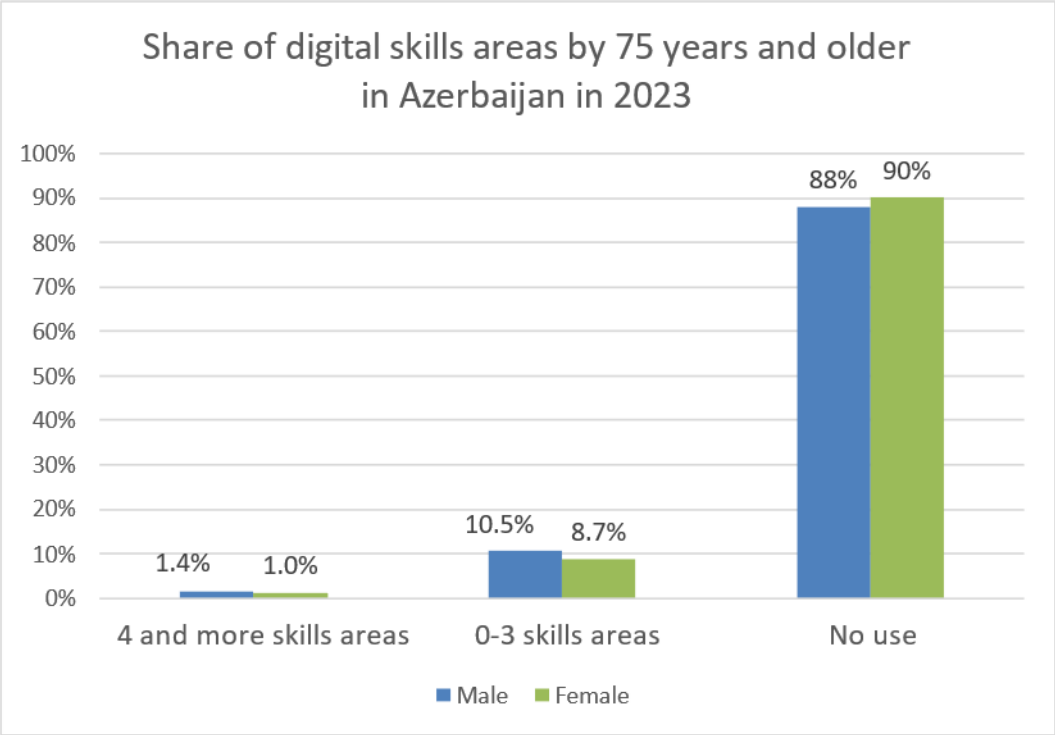
[11] https://www.itu.int/en/ITU-D/Cybersecurity/Pages/COP/COP.aspx, suggestions on data collection: https://www.itu.int/pub/D-IND-COP.01-11-2010/en

children. For policy-makers, this could be one of the starting points for developing coherent and relevant national policies.

Digital activities of individuals aged 75 and older

Around 10 per cent of people aged 75 and older in Azerbaijan have used the Internet in the last three months (n=1058), 70 per cent were aged between 75 and 80. However, some reported going online even at the age of 90.

Figure 14: Individuals aged 75 and older (all individuals n=1058)



Source: ITU

Of those who used the Internet, 95 per cent used it for communication and collaboration, and 68 per cent to access information such as reading news or looking for health information. Figure 14 shows that 1.2 per cent of Internet users in this age category had activities in four to five skill areas, 9.6 per cent in zero to three skill areas and 89,1 per cent had no use.

4.3 Students and teaching staff in higher education

Further insights into digital skills in higher education are provided through a survey with a convenience sample of 6 160 students and 886 teaching staff. Therefore, as opposed to the data presented above from the ICT Household survey, the outcomes based on this dataset cannot be considered representative of all higher education students and staff. They can, however, give insights into the current situation and be used to guide further policy-making in the area.

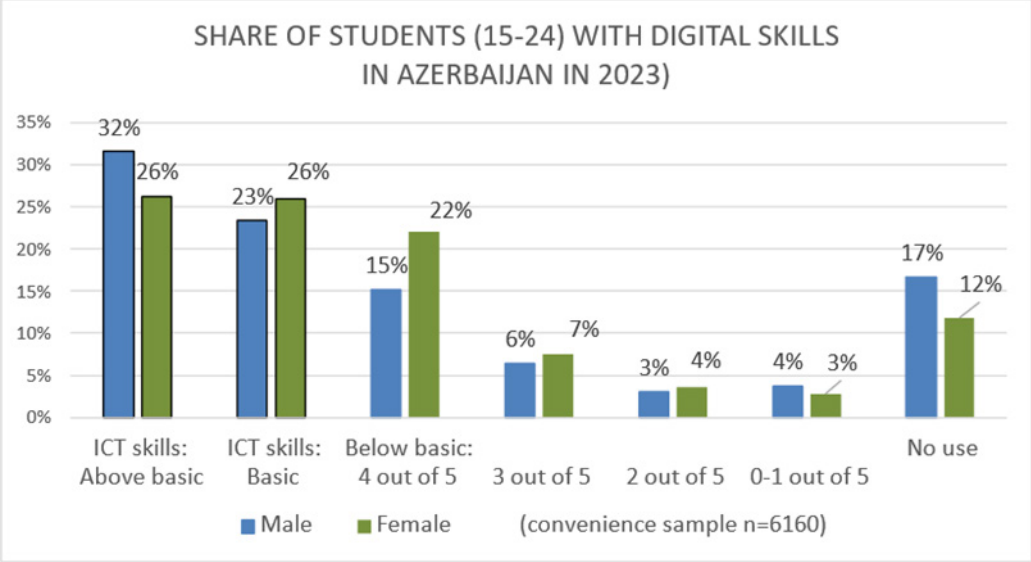
Students: Basic and advanced digital skills

In the survey, 53.5 per cent of respondents aged between 15 and 24 reported having *at least a basic level of digital skills*, with a slight gender disparity toward female students (males: 55%

and females: 52%). Figure 15 shows that while males have more *above basic digital skills* (32%), slightly more females have *basic digital skills* (26%). The digital skills assessment included only those who used the Internet in the last three months (n=5316). Additionally, the survey showed that 17 per cent of male respondents and 12 per cent of female respondents had not used the Internet in the last three months.

Figure 15: Students with digital skills in higher education

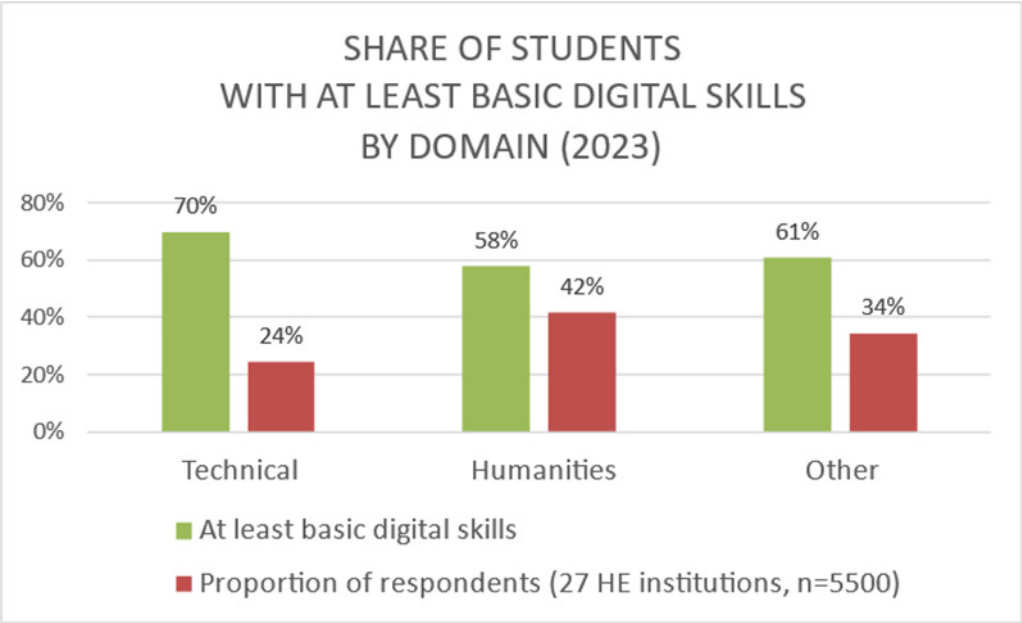
The results are not representative of the whole population.



Source: ITU

The respondents studied a wide range of subjects (Figure 16): 70 per cent of those studying technical subjects had *at least basic digital skills* while those studying humanities had 58%, and 61 per cent of those studying other subjects had *at least basic digital skills*.

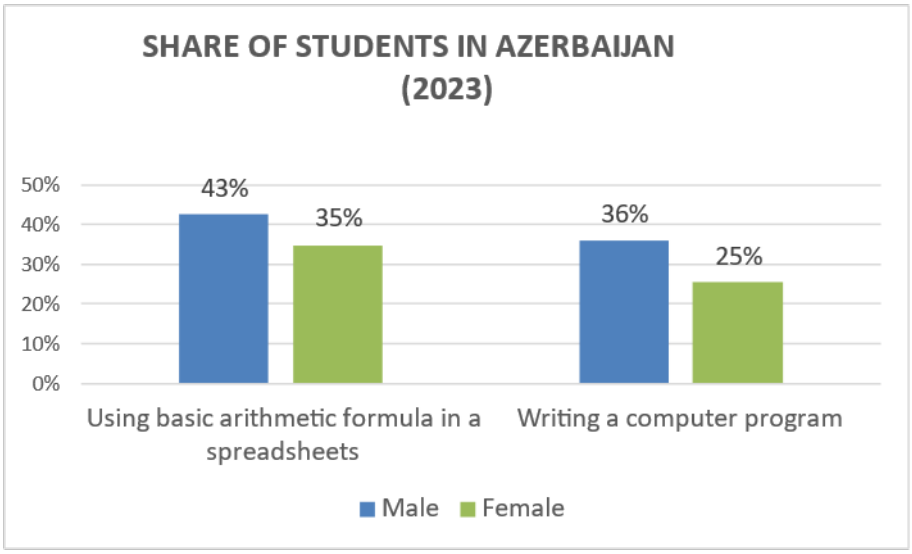
Figure 16: *At least basic digital skills* by domain of study (convenience sampling, Internet users, all ages of respondents included)



Source: ITU

For more advanced digital activities, 38 per cent of students said that they had used basic spreadsheet formulas, and 29 per cent had written a computer program in the last three months (Figure 17). The share of male respondents was higher for both activities (10% for programming and 8% for spreadsheets).

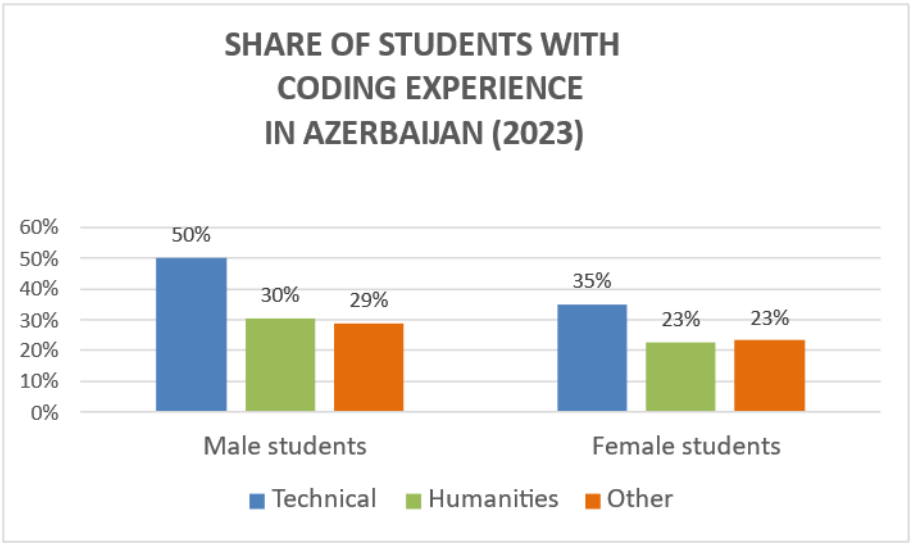
Figure 17: Students with more advanced ICT activities (convenience sampling, Internet users, n=5 500)



Source: ITU

Of those studying in technical domains, 50 per cent of male students had a coding experience in the last three months as opposed to 35 per cent of female students (Figure 18). Among the respondents in other fields (humanities and other subjects), the gender difference was less pronounced (around 7 per cent).

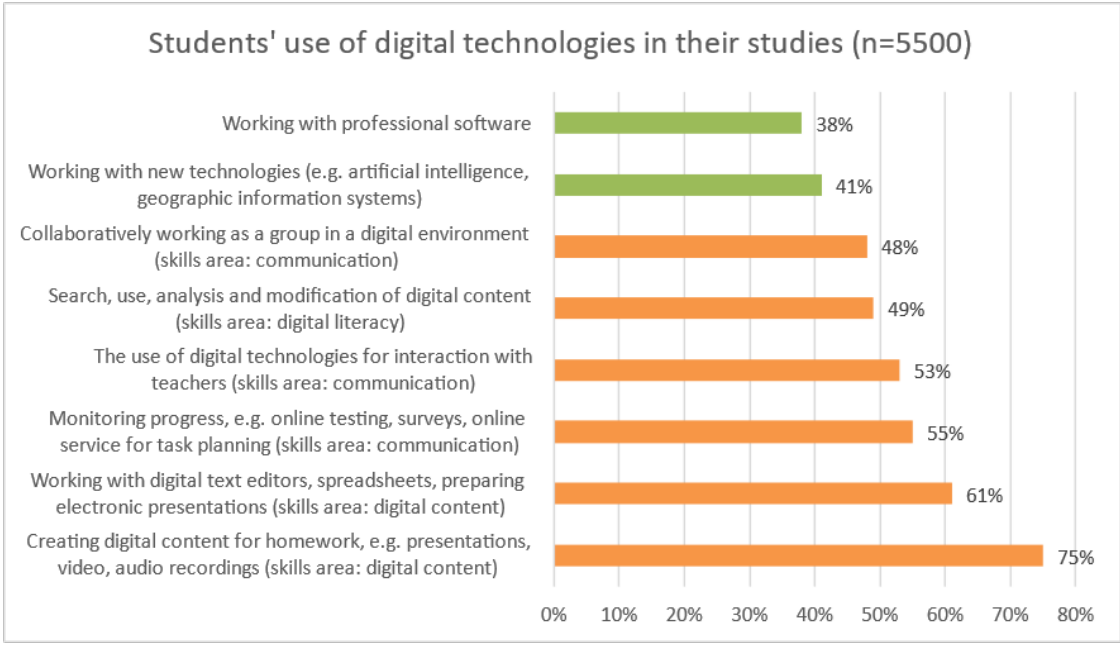
Figure 18: Students with programming activities by domain of study (convenience sampling, Internet users, n=5500)



Source: ITU

Additionally, students were asked about their use of digital technologies for learning activities (Figure 19). In this survey, 75 per cent of the respondents said they create digital content for homework and 61 per cent worked with digital content (e.g. text, spreadsheets, presentations). About half of respondents notes that they had worked collaboratively (as a group) in digital environments (48%). Of all students, 69 per cent of females and 64 per cent of males noted that they had improved their knowledge by using online resources (all students 67%).

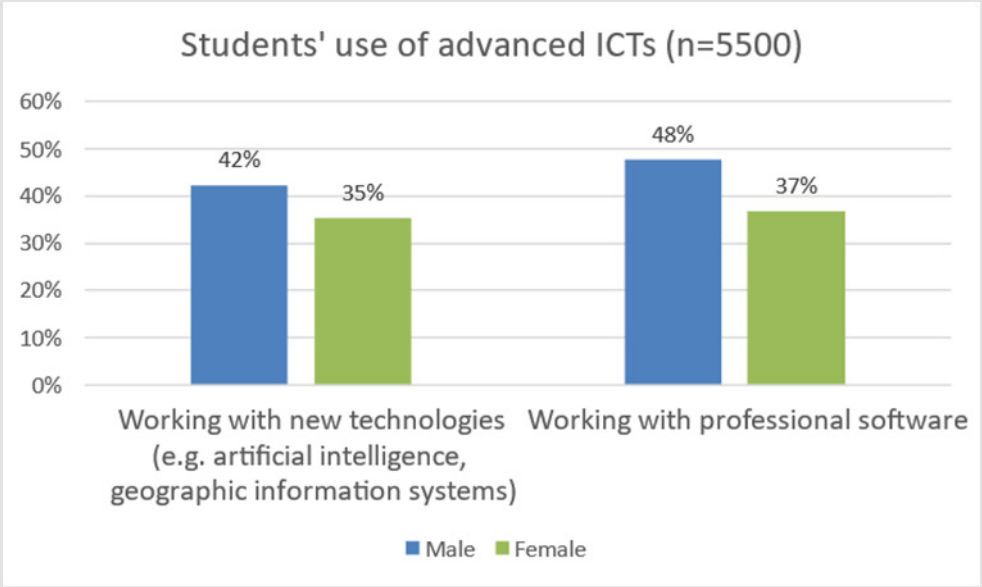
Figure 19: Digital activities during studies (convenience sampling, Internet users, n=5 500)



Source: ITU

Less than half of respondents reported having any experience with work-related software. However, 41 per cent had worked with new technologies (e.g. artificial intelligence (AI), geographic information systems) and 38 per cent with other professional software (Figure 19), with proportionally more males than females (Figure 20) in both categories. In the category of professional software, the difference was more than 10 per cent (48% vs 37%). These numbers could improve if more relevant professional practices were included in the study curriculum. Attention should also be paid to equally promoting such use among males and females.

Figure 20: Use of professionally oriented software during studies (convenience sampling, Internet users, n=5500)

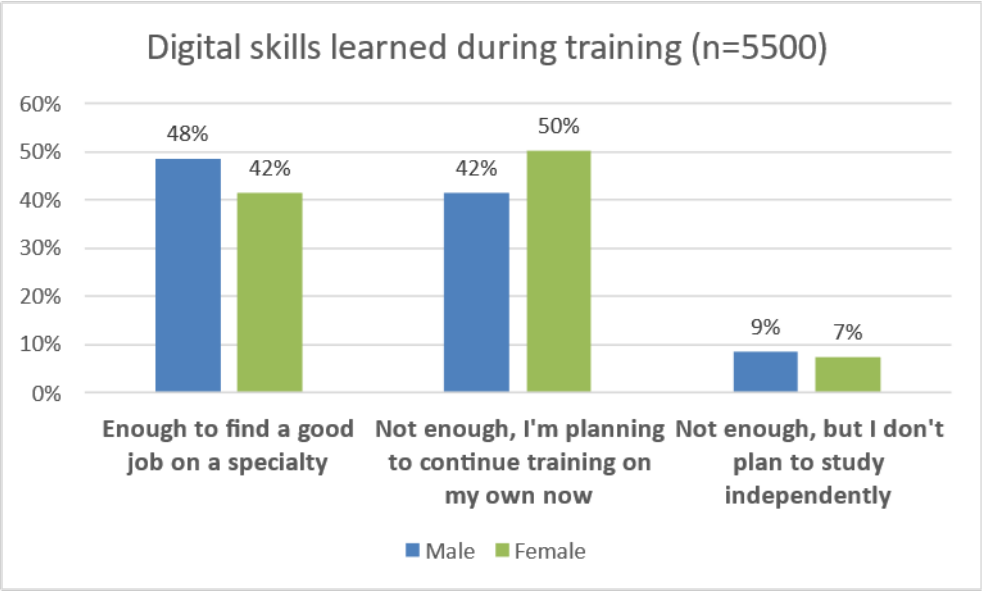


Source: ITU

Students: Skill areas lagging and upskilling

Figure 21 shows that 48 per cent of male respondents considered that the level of digital skills they had gained during their studies would be enough to find a job, whereas the figure was proportionally less for females (42 per cent).

Figure 21: Student digital skills (convenience sampling, Internet users, n=5500)

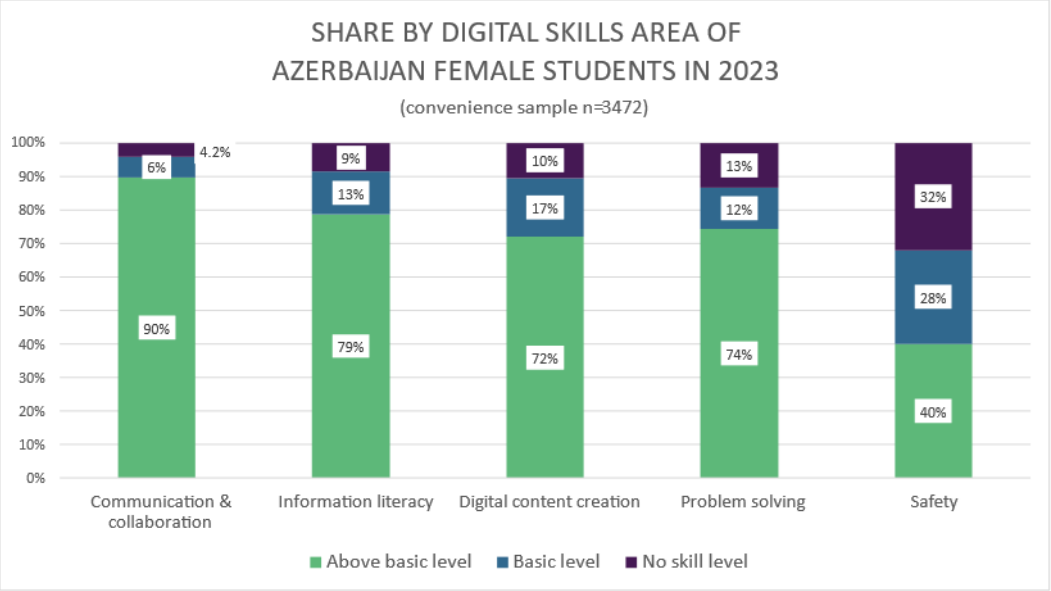


Source: ITU

Half of the female respondents and 42 per cent of males noted that their digital skills were not enough and they planned to continue training on their own. Less than 10 per cent of respondents indicated that their digital skills were insufficient but did not plan to study further. Why so many females were left with the impression that they had not acquired sufficient level of digital skills during their studies is a cause for concern.

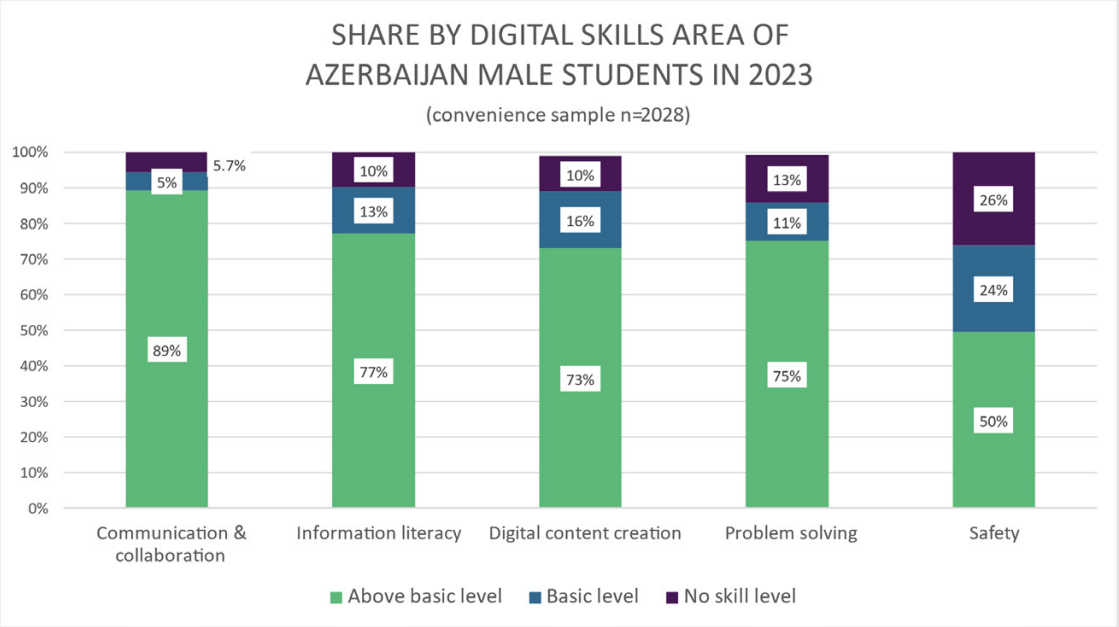
An analysis of digital skills, such as those used to determine the level of *at least basic digital skills* for students in higher education in Azerbaijan, indicates that the most important skills area to improve is safety, and to a much lesser degree, problem-solving and digital content creation. Significantly, 32 per cent of responding females (Figure 22) and 26 per cent of males had not carried out any safety-related activities in the last three months (Figure 23). Such activities include changing the privacy settings of their devices or apps or setting up effective security measures such as strong passwords. Safety is the area with the biggest skills gap by far, and the results suggest that campaigns in cyber-hygiene could be planned for the student population to better understand possible harms and acquire the skills to mitigate the risks.

Figure 22: Female students in higher education: share of digital skills by skills area (convenience sampling, Internet users)



Source: ITU

Figure 23: Male students in higher-education: share of digital skills by skills area (convenience sampling, Internet users)



Source: ITU

The survey also showed that 13 per cent of respondents did not not apply their skills to any problem-solving activities. Skills in problem-solving include two types: technical, such as finding, downloading, installing, and configuring software, connecting and installing new devices, transferring files or applications between devices, conducting electronic financial transactions, purchasing or ordering goods or services, or following an online course.

Students also reported a lack digital skills in **content creation** with only 10 per cent of both responding males and females indicating that they have yet to carry out any activities in this skills area. In additional, 9 per cent of responding females and 10 per cent of males lack skills in the area of information literacy, such as searching for information, reading or downloading newspapers verifying the reliability of information found online.

Table 13: Students aged 15-24 and reasons for not using the Internet (multiple options)

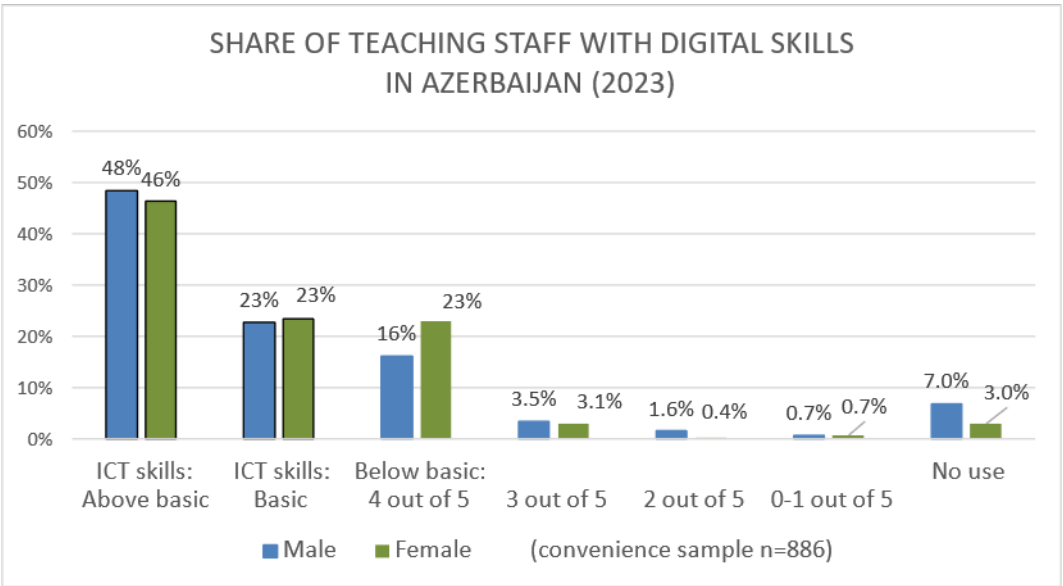
Reasons for non-use of the Internet (students 15-24, n=872)	
47%	Internet speed is too low
37%	Don't have a suitable device (cost of the equipment is too high)
36%	Do not need the Internet / the content is not relevant for me
35%	Privacy or security concerns (personal data concerns, fear of online-fraud, harassment or unacceptable content)
34%	Not allowed to use the Internet
33%	Can't afford to use the Internet (cost of service is too high)
31%	Internet service is not available in the area

Among student responses, the non-use of the Internet in the last three months was notable at 14 per cent, reflecting a much higher rate for students in this online survey than that measured in the ICT Household survey (3.4%). Table 13 lists the reasons for students (aged between 15 and 24) for not using the Internet. The most cited reason for non-use was that the connection speed was too slow (47%), and for 31 per cent of students, the Internet service was not available. Costs also played a part: 37 per cent said that they did not have a suitable device because the cost of equipment is too high and 33 per cent cited the cost of the connection to Internet services was too high. Although, 36 per cent reported no need for the Internet, 35 per cent cited privacy or security concerns. Somewhat alarmingly, 34 per cent of the respondents to this question said they were not allowed to use the Internet.

Educators: Basic and advanced digital skills

Overall, 70 per cent of teaching staff who used the Internet in the last three months had *at least basic digital skills*, with one percentage point disparity between male and female educators (males: 71% and females: 70%). Figure 24 shows that while males have more *above basic digital skills* (48%), the number is equal for *basic digital skills* (23%). At *below basic level*, 23 per cent of female teaching staff have four skill areas out of five; in other words, they need more upskilling to reach the basic level (females: 23% - males: 16%). A further 4.6 per cent of teaching staff have zero to three skill areas out of five; this group needs more training and upskilling to achieve a basic level of digital skills.

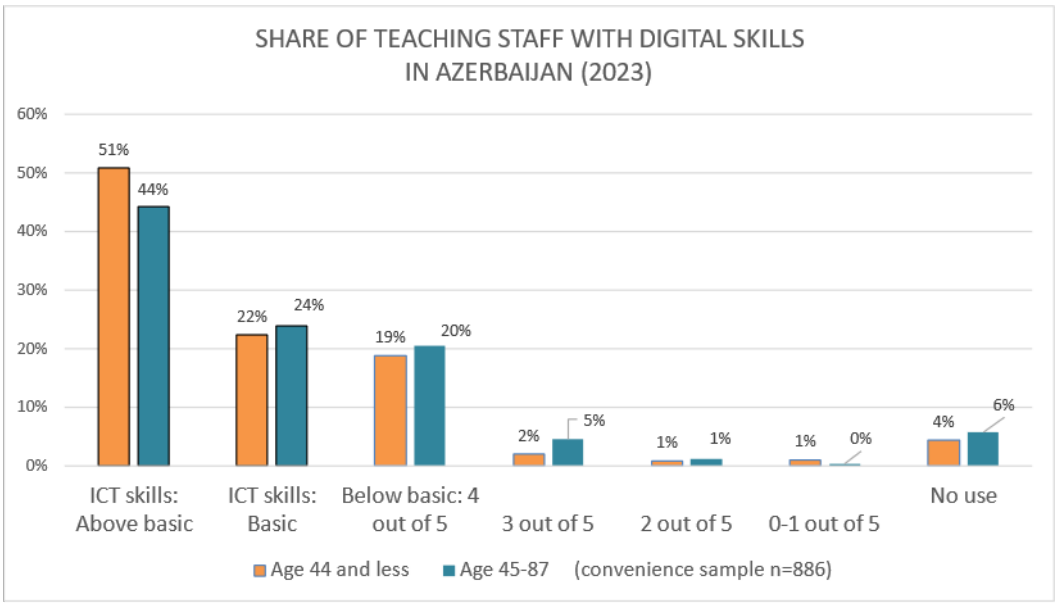
Figure 24: Teaching staff levels of digital skills by gender (convenience sampling, all users, n=886)



Source: ITU

Looking at the age differences in terms of the share of digital skills of the teaching staff who responded to the survey (Figure 25), it appears that males aged 44 and less have more *above basic digital skills* than women (males: 51% - females: 44%).

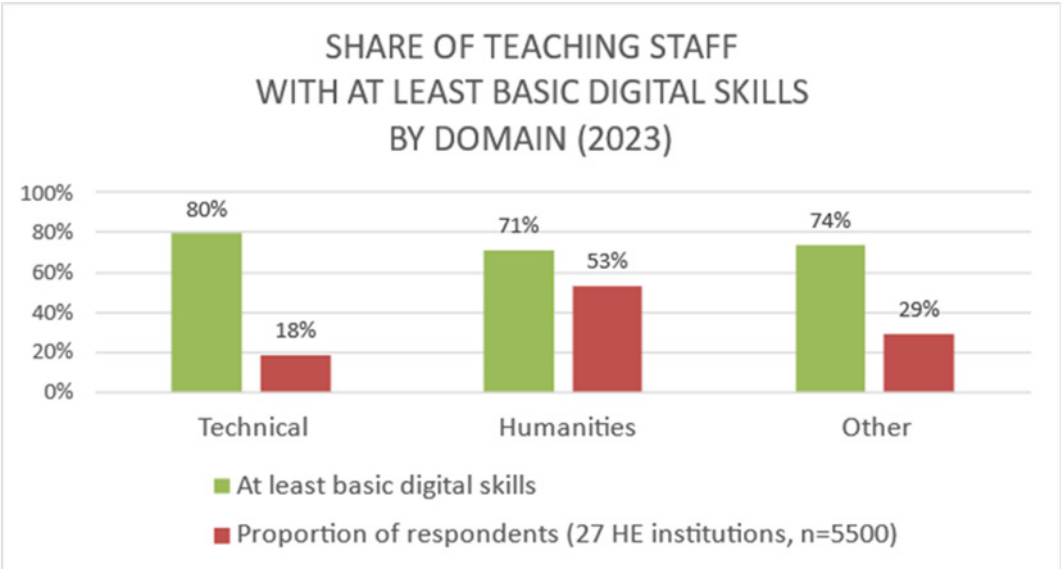
Figure 25: Teaching staff levels of digital skills by age category (convenience sampling, all users, n=886)



Source: ITU

The respondent teaching staff comes from various domains (Figure 26). Regarding the level of digital skills, 80 per cent of respondents in technical domains attain *at least basic digital skills* and 71 per cent of the respondents in humanities. Of those who teach "other domains", 74 per cent of respondents had *at least basic digital skills*.

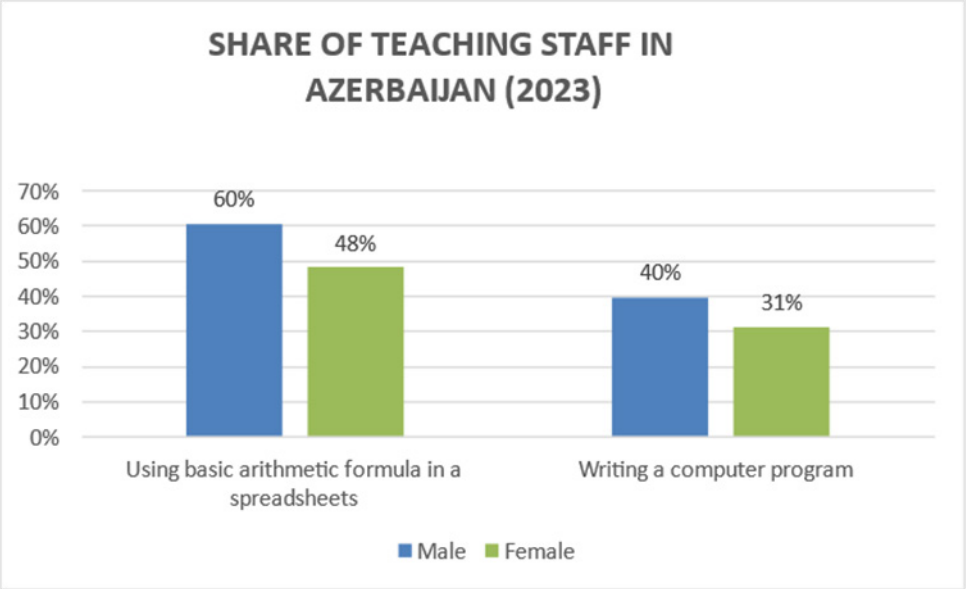
Figure 26: Teaching staff from 27 different institutions, share of staff with at least digital skills by domain (Internet users, convenience sampling)



Source: ITU

Educators were also asked about more *advanced digital activities*; 52 per cent said that they had used basic spreadsheets formulas, while 34 per cent said that they had written a computer program in the last three months (Figure 27). The share of male respondents was higher for both activities (8 per cent for programming and 12 per cent for the use of spreadsheets).

Figure 27: Share of teaching staff with more advanced ICT activities by gender (Internet users, convenience sampling, n=847)

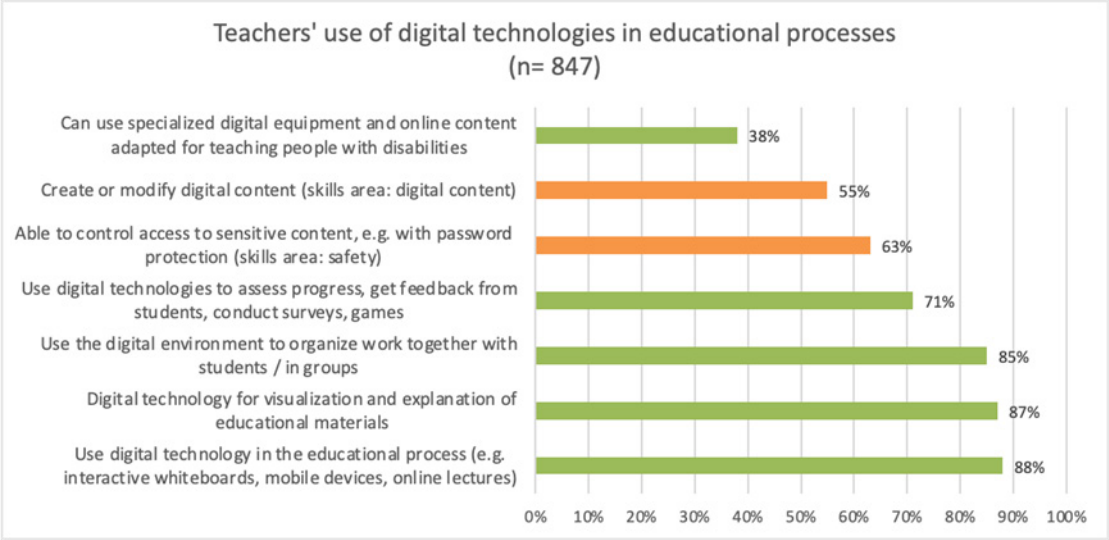


Source: ITU

Overall, the above data shows a high level of generic digital skills among the teaching staff, which is a good indicator of their capacity to use digital technologies for pedagogical and organizational purposes. The survey also covered the use of digital technologies in used in teaching activities.

In terms of pedagogical competence (Figure 28, indicated in green), 88 per cent use digital technologies when teaching; 87 per cent for visualization and explanation of educational materials, and 85 per cent use digital environments to organize work with students such as group work. In 71 per cent of responses, use of digital technologies for assessment purposes were indicated, for example to assess progress, get feedback from students, conduct surveys, games. A much lower percentage (38%) indicated the use of digital equipment and content for teaching persons with disabilities. For other digital skills: 63 per cent reported that they are able to control access to sensitive content, for example through a password (skills area: safety), and 55 per cent can modify digital content (skills area: content creation).

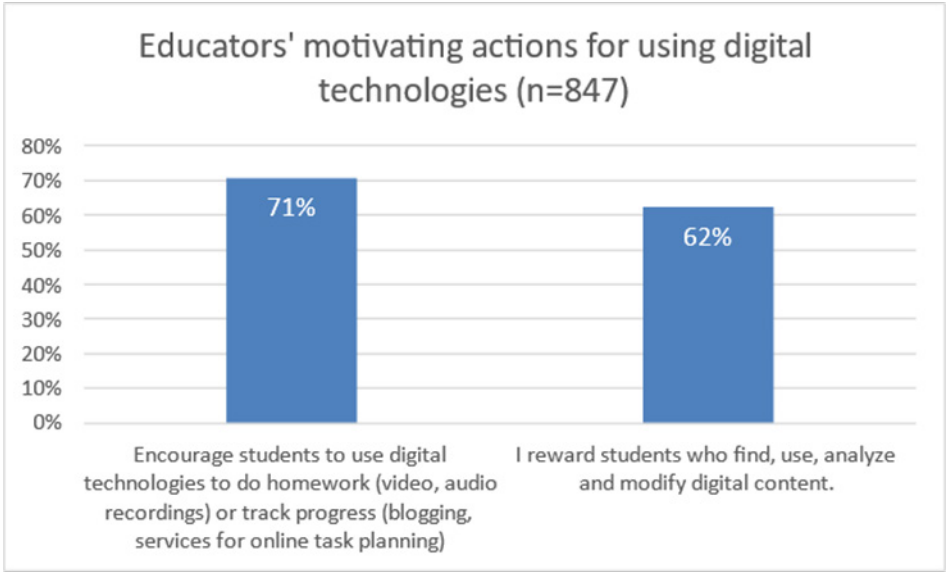
Figure 28: Tasks for which teaching staff use the Internet (multiple answers allowed)



Source: ITU

Teachers were also asked about how they motivated students to apply their digital skills, 71 per cent said they encouraged students to use digital technologies to do homework or track their progress, and 61 per cent said they also rewarded students who apply their skills in editing or analysing digital content (Figure 29). Such encouragement can be important for students to learn how to put digital skills into action for their future professional roles.

Figure 29: Encouraging and rewarding students for using their digital skills (Internet users, convenience sampling)



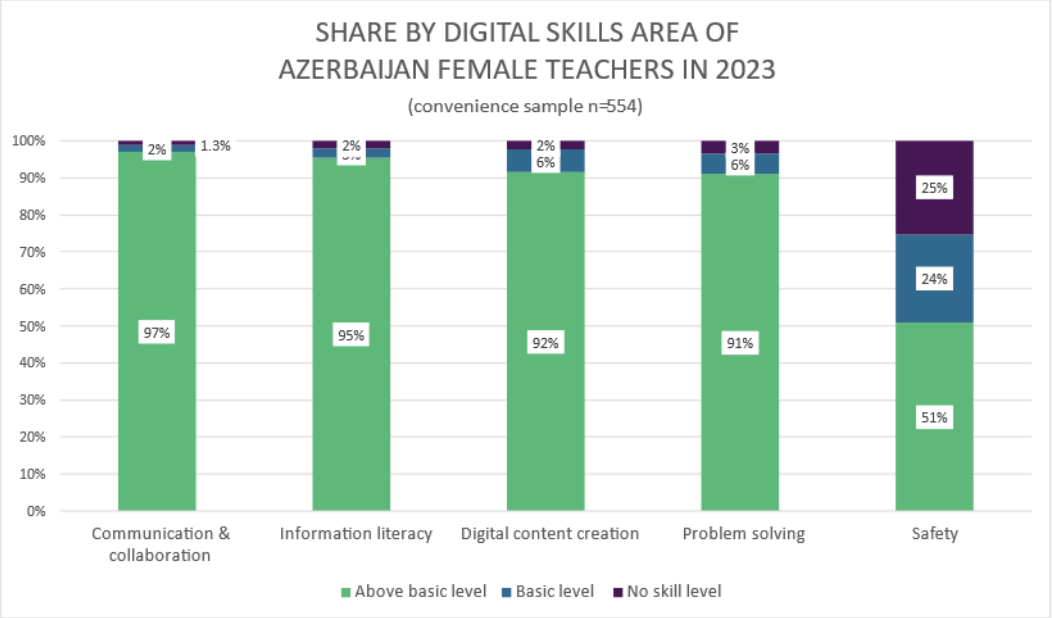
Source: ITU

A large majority of teachers were confident about their knowledge and ability to use the Internet safely and teach students; only 9 per cent of males and 6 per cent of females were not. To help them keep up-to-date and improve their digital skills, 91 per cent of the responding female staff and 87 per cent of male staff use online resources.

Educators: Skill areas improvement and upskilling

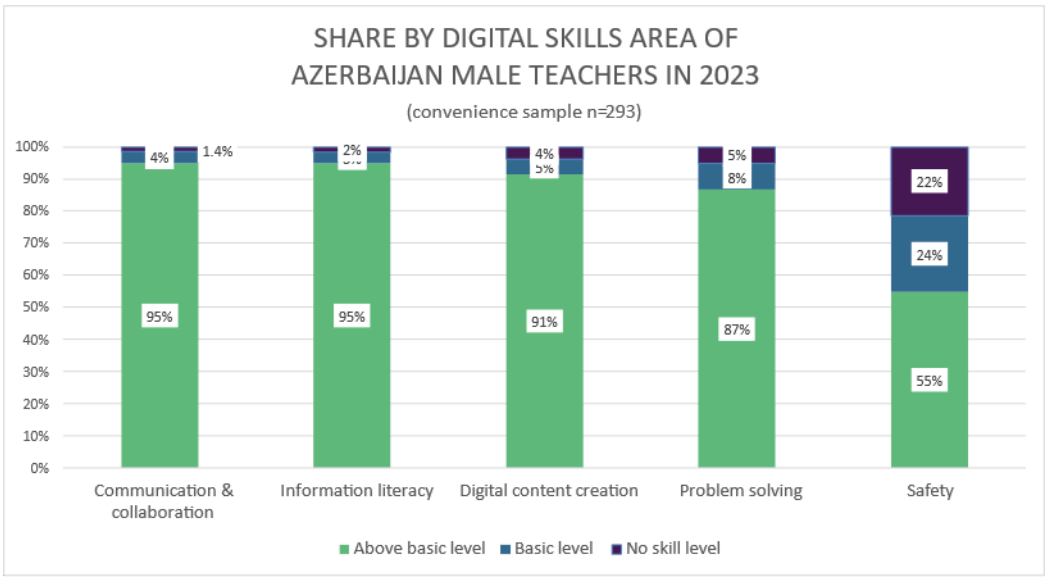
As seen above, the teaching staff has a high level of at least basic digital skills. To better understand the skill areas that need to be improved, further insights can be gained by looking at activities carried out in the last three months in all skill areas (information literacy, communication and collaboration, digital content creation, safety and problem solving).

Figure 30: Female teaching staff: share of digital skills by skill area (Internet users, convenience sampling)



Source: ITU

Figure 31: Male teaching staff: share of digital skills by skill area (Internet users, convenience sample)



Source: ITU

For both male and female teachers, an important skills area that needs improvement is safety; 25 per cent of the female respondents (Figure 30) and 22 per cent of males have not carried

out any safety-related activities (Figure 31), such as changing their privacy settings or setting up effective security measures. In other skill areas, only a small percentage of respondents (2% to 5%) have no skills.

4.4 Public and business employees

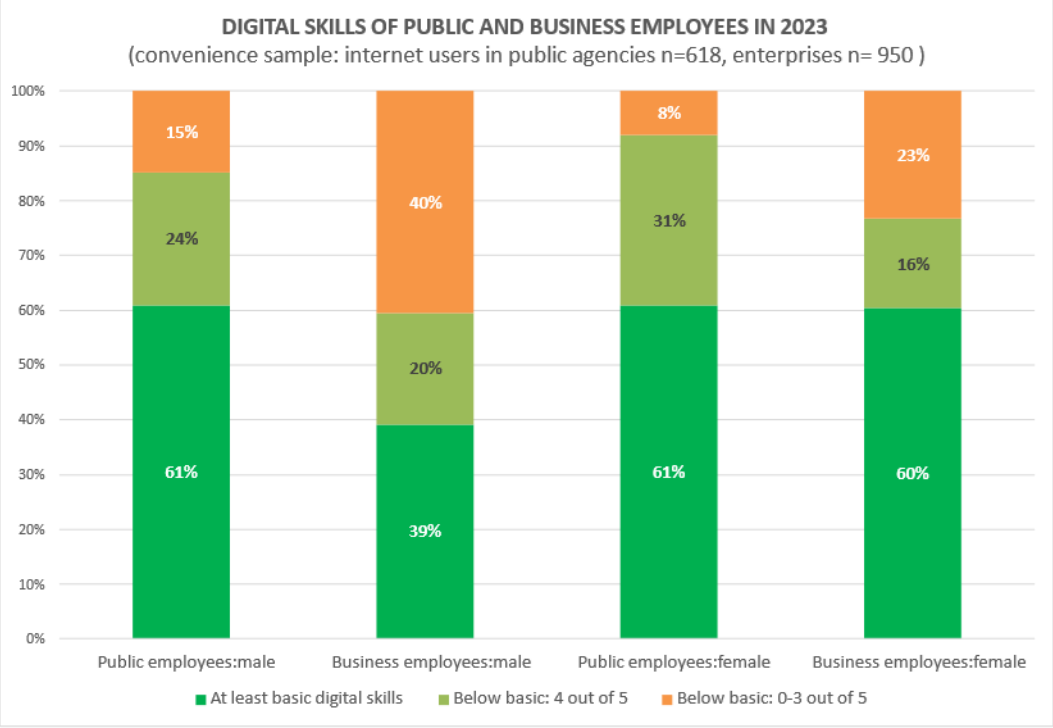
Public and private business employees were asked to answer an online questionnaire (see Annex 2 for the questionnaire and more details) focusing on their use of digital technologies. The same method of the ICT composite indicator was applied to this population to gauge their level of digital skills. As the surveys were based on voluntary participation and not on sampling techniques applied to the ICT Household Survey of Individuals, the results do not represent these two target populations. However, they yield valuable insights for further policy actions.

Employees: Basic digital skills and upskilling

Initial analysis shows that the respondents working in public services and private enterprises have a higher level of digital skills than the general public. Figure 32shows that for male and female responders, 61 per cent of public employees have *at least basic digital skills*. In the private sector, 60 per cent of female respondents have *at least basic digital skills*, with only 39 per cent of male respondents in the private sector.

Women (31%) and male (24%) public sector employees possess skills in four out of five skill areas but lack one skill area. In the business sector, this group comprises of 20 per cent males and 16 per cent females.

Figure 32: Digital skills of employees in public and private sectors, not representative of the entire population



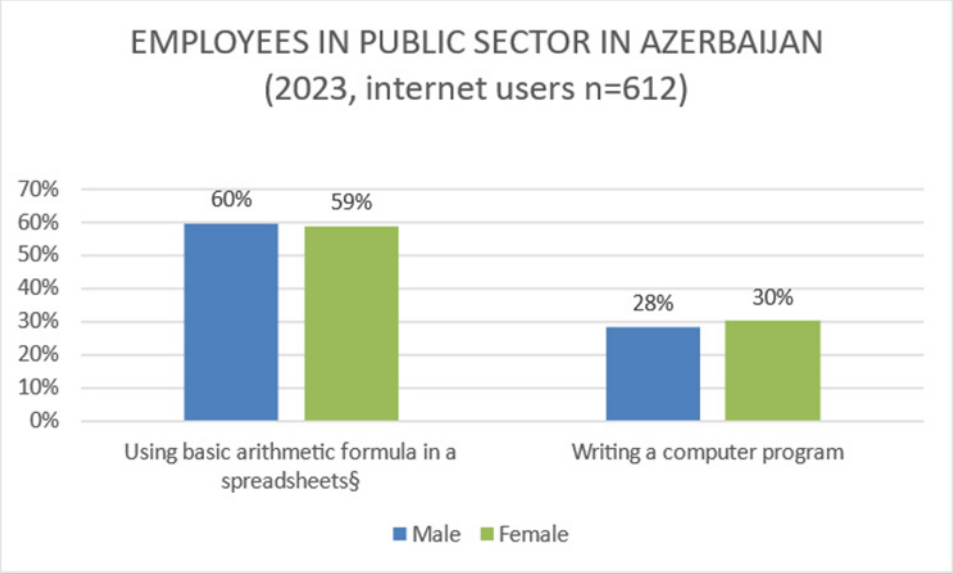
Source: ITU

The group of employees with only zero to three skill areas lack the digital skills needed to remain safe online. Male respondents working in the private sector represent 40 per cent of individuals in this group, whereas females in the same sector represent only 23 per cent. This gap might be partly explained by the wide array of sectors, as presented in Table 10, and the work of some respondents might not be considered ICT-dependent jobs.

Employees: Advanced digital skills

Employees were asked about their more advanced digital activities with software. In the public sector, 28 per cent of male respondents and 30 per cent of female respondents claimed to have written a computer program in the last three years. In addition, 60 per cent of male respondents claimed to have used spreadsheet formulas over the same period compared to 59 per cent of female respondents (Figure 33).

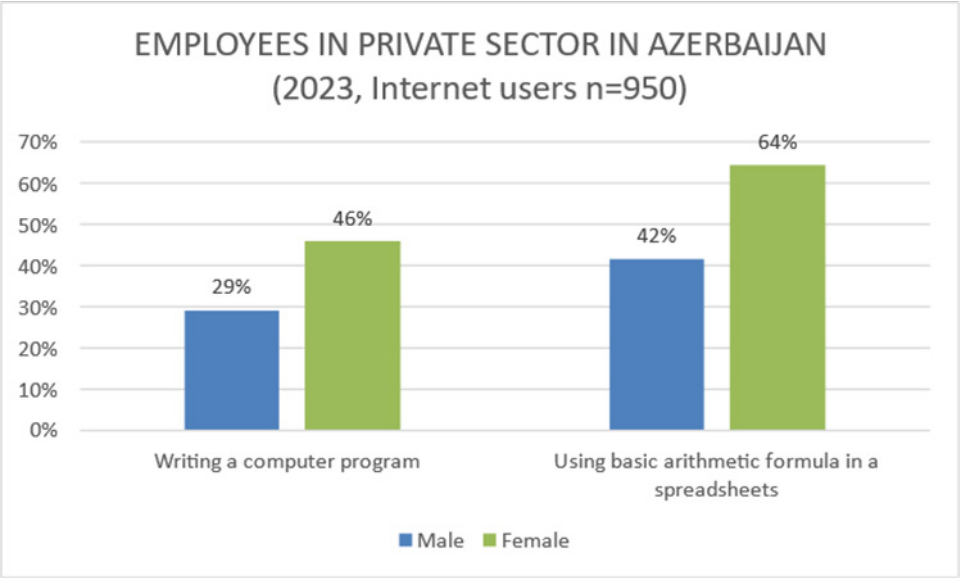
Figure 33: ICT activities of employees in the public sector (Internet users, convenience sampling)



Source: ITU

In the private sector, 29 per cent of male respondents and 46 per cent of female respondents have written a computer program in the last three years. Regarding the use of basic arithmetic formulas in a spreadsheet; 42 per cent of male respondents had done so, against 64 per cent of female respondents.

Figure 34: ICT activities of employees in the private sector (Internet users, convenience sampling)

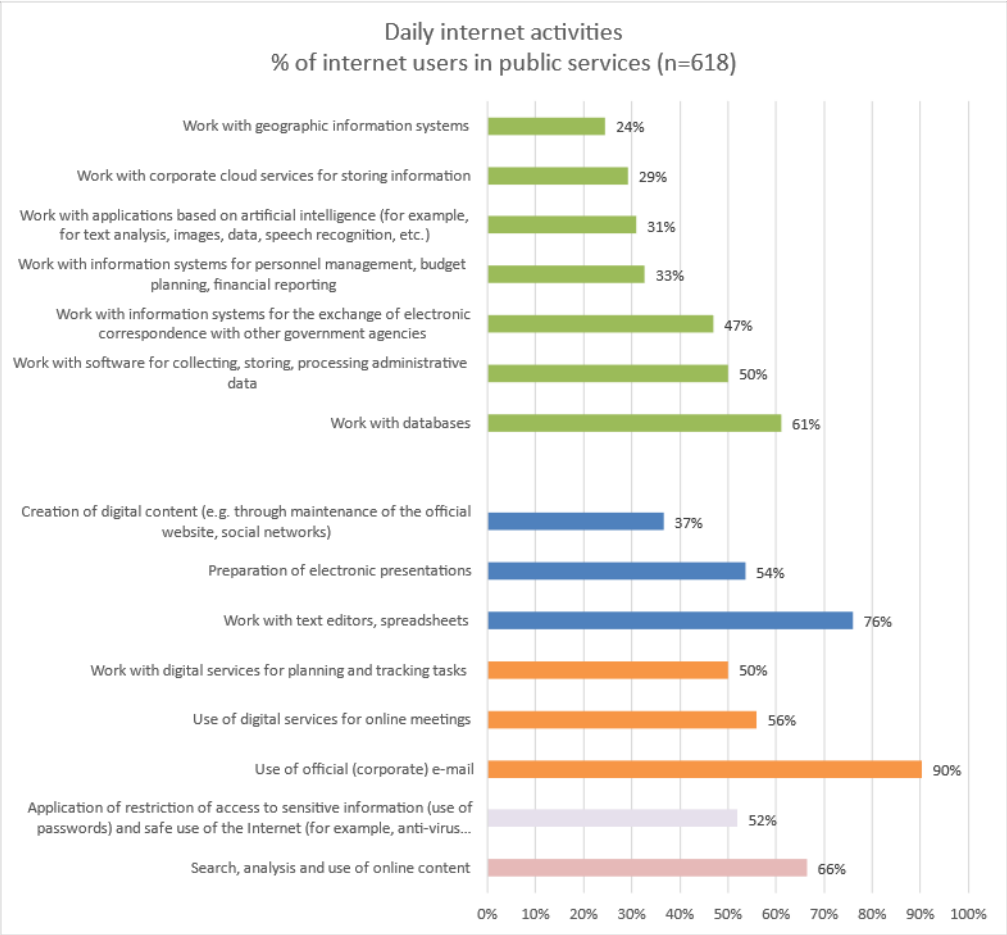


Source: ITU

Employees: Regular Internet use

Respondents were also asked about work-related activities that they usually carry out over the Internet. For those working in public services, the list of daily activities is outlined in Figure 35. It shows that almost half the tasks were related to the use of professional software and the other half with other tasks, such as digital content creation, and communication and collaboration. In addition, 61 per cent reported working with databases, 50 per cent with software collecting and storing data and 47 per cent with information systems connecting with other governmental agencies. In other tasks, using corporate email (90%) was popular, as well as working with text editors and spreadsheets (76%), and 52 per cent also reported working with sensitive information secured by passwords or anti-virus software.

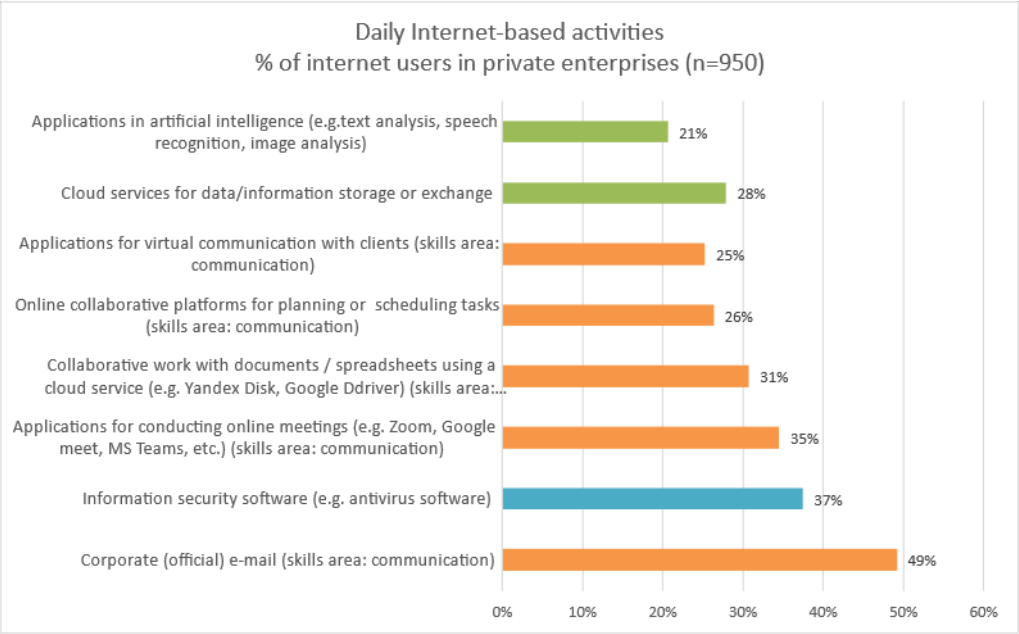
Figure 35: Daily Internet use by public sector employees (Internet users, convenience sampling)



Source: ITU

The list of daily Internet activities in the private sector survey is presented in Figure 36 (see also Figure 45, Annex 1). Half of the respondents used corporate email daily (49%), and interestingly, 37 per cent reported using security software (e.g. antivirus software). Outside of communication-related skills, only around a quarter carry out digital activities in areas such as cloud services (28%) or AI-driven applications for text analysis or speech recognition (21%).

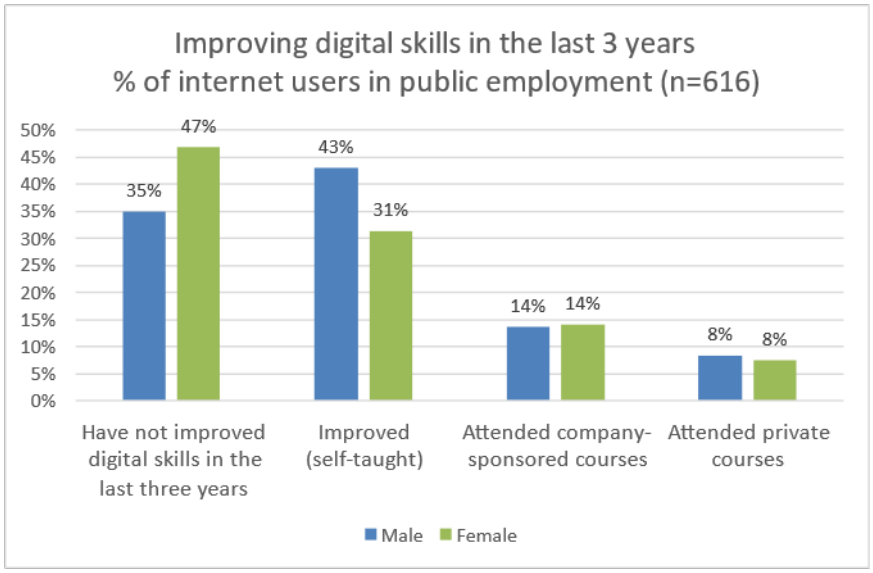
Figure 36: Daily Internet use by private sector employees(Internet users, convenience sampling)



Source: ITU

Respondents were asked about efforts to improve their digital skills over the last three years. For public sector employees (Figure 37), 47 per cent of the female respondents reported not carrying out any self-directed learning, whereas this figure was only 35 per cent for male respondents. Of all the respondents who reportedly improved their skills, 43 per cent of males had self-taught digital skills, 14 per cent had taken a sponsored course and 8 per cent had received private tuition. For females, 31 per cent had self-taught digital skills, 14 per cent attended a company course and 8 per cent private tuition.

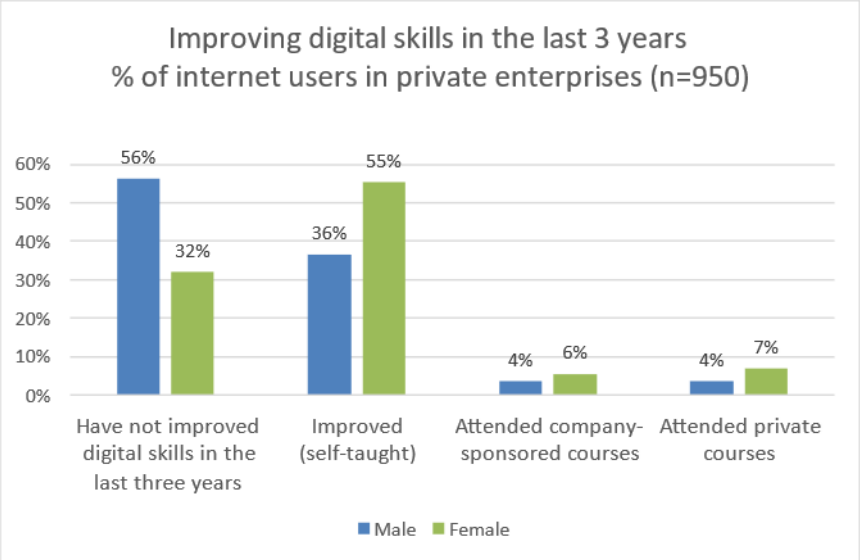
Figure 37: Public sector employees improving their digital skills



Source: ITU

In the private sector there is an opposite trend (Figure 38), whereby the majority of male respondents had not undertaken any self-directed learning in the last three years (56%), and only 32 per cent of the female respondents had not undertaken any self-directed learning.. In addition, 55 per cent of females had self-taught digital skills, with only 36 per cent of male respondents having done so. However, company or privately sponsored courses were attended by only a small group of respondents (an average of 5 per cent in each category).

Figure 38: Public sector employees improving their digital skills (Internet users, convenience sampling)



Source: ITU

5 Recommendations and next steps

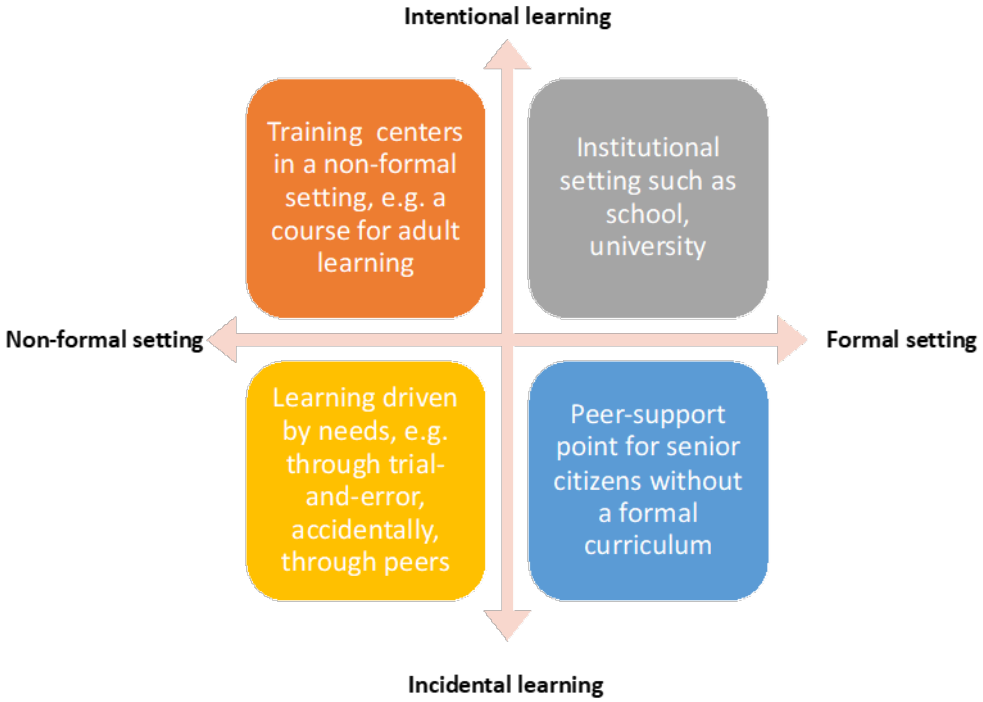
5.1 Takeaways and pointers for policy guidance

With this study, Azerbaijan has created a national digital skills assessment benchmark to better understand the current situation among the general population, those in higher education (both students and teaching staff) and those in employment (public and private sector). In the following, insights from the study are turned into "takeaways" to better plan targeted interventions for digital upskilling in Azerbaijan to enhance the level of digital skills.

A number of recommendations, both short and long-term, are outlined by age group, first focusing on the general population aged between 25 and 74 and then the 15 to 25 age group. For the latter, connections with education institutions are made as formal education offers a structured context to implement digital upskilling strategies to guarantee *at least basic digital skills* as part of a student exit profile from education and training. The list is indicative and not exhaustive.

It is important to note that meaning of the term "*upskilling*" depends on context for example it can refer to learning that takes place in formal or non-formal settings or incidental learning and informal learning (Figure 39).

Figure 39: Different contexts for upskilling efforts ()



Source: ITU

Some examples include:

- *Formal learning organized:* this is through educational institutions that follow *curricula and an assessment* which can lead to certification.
- *Non-formal learning through training*: For example *a digital skills course in a training centre*. Course completion can be based on attendance or other types of assessment of acquired competences can be part of the learning offer.

- *Learning activities following a curriculum or set of expected learning outcomes*: This can be either self-paced or face-to-face, for example learning cafés on a given topic, such as tackling misinformation, using various e-government services through e-ID.
- *Acquiring digital skills in an informal setting:* This is where *the motivation to learn is intrinsic, and learners determine their own learning goals* without a formal curriculum, e.g. upskilling can happen at points of peer-support for senior citizens set up in local libraries for people to seek help for their digital problems.
- *Acquiring digital skills in an incidental manner:* This is without any intention to learn but based on the user's needs. Acquiring skills in this manner can take place, for example, through naturally occurring life events such as discovering a new digital feature/service through trial-and-error, accidentally, or through peer-learning.

The 25 to 74 age group

The ICT Household data for individuals aged form 25 to 74 show that 23 per cent of the population have *at least basic digital skills*. These individuals carry out digital activities in all five skill areas. They have adequate digital skills to confidently, responsibly, and safely participate in society, the economy, and labour market activities through digital means.

To bring the rest of the population up to the same level, targeted interventions and policy actions are needed to guarantee the digital inclusion of all members of society. A wide-reaching and long-term digital inclusion policy should emphasize digital skills as a key driver to social inclusion and to fight digital inequality.

A short-term strategy to improve the digital skills of the entire population should focus on three skill areas:

1) Most importantly, in the area of safety, 52 per cent of respondents have not carried out any safety-related activities in the last three months. These people can be vulnerable online as they are susceptible to online attacks and digital hoaxes (e.g. financial scams, online fraud, identity theft, malware attacks), and they often lack strategies to mitigate harm when an incident occurs.

   Focusing on campaigns on safety is crucial such as changing the privacy settings of their devices or apps or setting up effective security measures such as strong passwords.

2) In digital content creation, 47 per cent of survey respondents said they had not carried out any activities in this skills area. Upskilling should aim to include the whole population and not only target those in the labour market with employable skills such as manipulating word processing and spreadsheet software. This is an important factor in motivating low-skilled individuals to start with digital content creation. A broader context helps to understand how digital content is created and its purpose (e.g. to link with deep-fakes and other AI-generated content).

   - Activities in this area could be built around simple tasks such as using software to create electronic presentations; upload self/user-created content; edit text, spreadsheets, presentations; to more complex activities such as using basic spreadsheet formula or writing a computer program.
   - Activities could also focus on using speech-to-text software on smartphones, and using generative AI applications to create text (e.g. an official letter). Such skills are also useful for those with difficulties in basic literacy and numeracy.

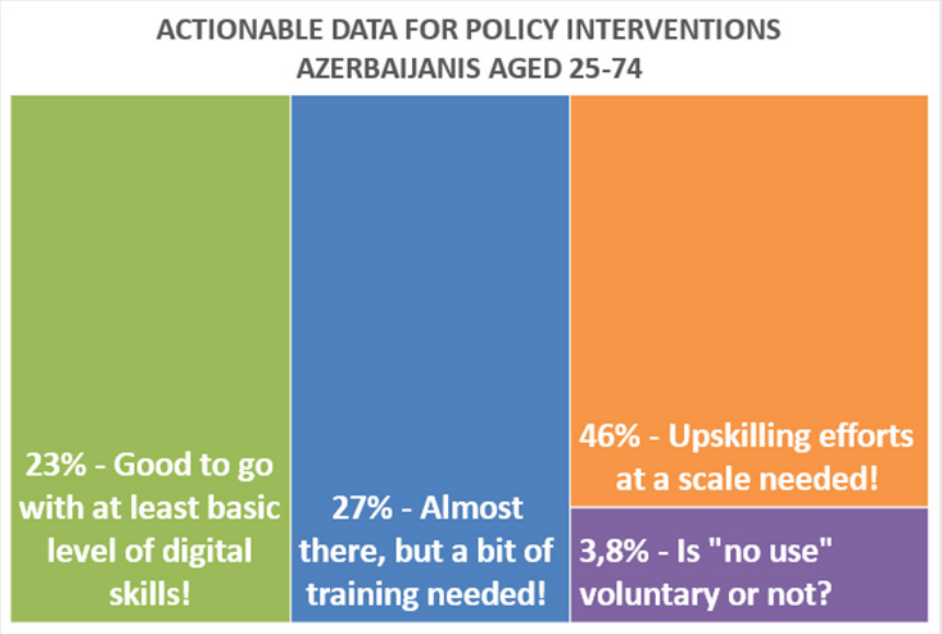
3) In problem-solving, 43 per cent did not apply their skills in this area. Skills in problem-solving include a minimum understanding of basic principles underlying digital technologies and those that focus more on using (public and private) online services, which is also dependent on the supply of such services in the country:

- technical skills such as finding, downloading, installing and configuring software, connecting and installing new devices, transferring files or applications between devices;
- needs-driven use, such as conducting electronic financial transactions, purchasing or ordering goods or services, or doing an online course.

A pilot project focusing on these three skill areas is recommended. The upskilling should take place around authentic, everyday life scenarios such as:

- safe digital media usage for parents and teenagers/for senior citizens/for students (focus on the area of safety; recognizing misinformation and deep-fakes especially generative misinformation; creation of digital content for sharing such as photos, media-memes, etc.);
- using services offered by e-government (focus on the area of safety; digital identity and authentication; awareness of existing online services regionally and nationally; positives and negatives of digital transformation of services).

Figure 40: Actionable data for future digital inclusion policies



Source: ITU

A two-pronged strategy could be envisaged for different target groups:

1) 27 per cent of respondents reported having carried out activities in four out of five skill areas (Figure 40). This group of users is most likely already comfortable with using digital devices and connecting to the Internet. However, based on the data, they most often need to improve skills relative to safety.

   A special campaign about strong passwords and restricting the use of personal data by various apps is needed. The campaign should include topic awareness raising, step-by-step guidance, and motivational goals, which are important to make people actually apply their skills and knowledge in practical use. The campaign could be carried out informally as this target group might be hard to include in formal digital skills training as they probably consider themselves already digitally able.

2) 46 per cent of individuals are clearly below the basic level of digital skills (Figure 40), a separate approach should be envisaged for them. As they lack skills in more areas (from zero to 5 skill areas), a wider curriculum is needed.

- The upskilling syllabus would not need to cover the area of communication and collaboration as many respondents already claim to have the necessary skills in this area. In addition, this area could be used as a context for upskilling activities, for example, learning how to configure safety features, safely accessing e-government and other public services, and becoming knowledgeable and critical readers of social media and understanding the purpose behind such content.
- Instructional material should be contextualized to the needs and activities of the target group so that the skills learned could become immediately implementable. The upskilling syllabus is similar for all target groups for skill areas of safety, problem solving, and information literacy (focusing on misinformation) is , however customization is recommended for the skill area of digital content creation. Table 12 seeks to offer guidance for crucial skill areas for a given target group by education background.
- It is recommended to include a light self-diagnostic for people to start with. This would allow for more targeted upskilling efforts focusing on the skill areas that are missing. This is also crucial from a motivational point of view.
- Informal and non-formal settings for upskilling are also recommended to take advantage of the self-teaching method previously reported by many respondents to learn ICT skills (33%). In addition, setting up training courses with flexible timing / attendance would be important to accommodate the needs of those who are working. For training opportunities, regional strategies become indispensable.

As an example, OEAD in Austria offers workshops for people with low digital skills including a four-step approach to engage people with limited digital skills. The strategy is offer workshops in rural areas, at convenient times and which focus on key areas such as safety (Figure 41).

Figure 41: Targeting those outside the labour force and education

Source: OEADA long-term strategy is needed to prevent the lack of digital skills becoming a significant barrier to digital transformation in Azerbaijan. Different strategies should address different target audiences, for example those in employment and those not in education and not in the labour market. The current ICT Household survey does not provide information in this respect, however, in 2019, a third of respondents (33%) reported having taught themselves ICT skills, followed by formal education (27 per cent reported educational institutions), with 12 per

cent through training courses and 5.5 per cent reported having gained digital skills through vocational training (from the State Statistical Committee of the Republic of Azerbaijan, 2019).

The survey also offered some insights into the ICT skills of those employed in public or private sectors, although the results are not representative of the whole population. In these sectors, more than half of the respondents had improved their digital skills in the last three years, mostly through self-teaching (Figures 37 and 38). It is not clear whether this was incentivized by the employers, but doing so would be a good way to get a broader buy-in. For example, it was reported that attendance in company-sponsored courses remained low (14 per cent in the public sector and only 5 per cent private sector). Employers could include other types of upskilling offers in addition to courses, for example in-house training programmes or one-off workshops could offer interesting alternatives, as well as more informal means such as mentorship. in addition, partnering with local educational institutions could offer new opportunities for upskilling. In general, incentivizing digital upskilling at work can help both employees and employers benefit from increased work productivity and satisfaction, as well as offering employees more growth opportunities and reducing turnover. Additional ways for the government to offer grants, subsidies or tax incentives to encourage businesses to invest in employees could be developed. Within this segment of the population, special attention should be paid to the digital skills of the unemployed. Providing job-seekers with transferable digital skills can enhance their employment opportunities, and at the same time, it will be indispensable for the future of digital transformation.

As for the segment of the population not in education and outside the labour force, digital upskilling is paramount as it can bring significant positive outcomes, self-empowerment, social inclusion and participation in society. Incentivizing and supporting self-teaching can be part of a government supported digital upskilling strategy for this segment of the population, however, it will need to be accompanied by robust support networks, both local and online, to ensure that support is available for those who need it. For such strategies to be successful and sustainable, joint efforts are needed from the public and private sectors, as well as professionals and volunteers, (for more information, see Digital Society Alliance[12]). It is also important to prevent the growth of inequality at the cost of digitalization. In terms of adult education, recommendations from the European Training Foundation (ETF) Torino Process[13] assessment are also very relevant, namely to prioritize the expansion of adult education opportunities and the collection of evidence on participation in adult education (ETF, 2020b).

For the government, it will be important to keep monitoring the progress of policy actions and achievement of policy goals in assessing digital skills of the population. The results of this survey offer a good benchmark. Going forward, gathering such data periodically, e.g. every three to five years, will help guarantee actions and expected results are on the right track, ensuring that the benefits are maximized. The EU, for example, has set the objective of ensuring that 80 per cent of Europeans aged from 16 to 74 will have at least basic digital skills by 2030 and it is monitored by the Digital Skills Indicator.

The 15 to 24 age group

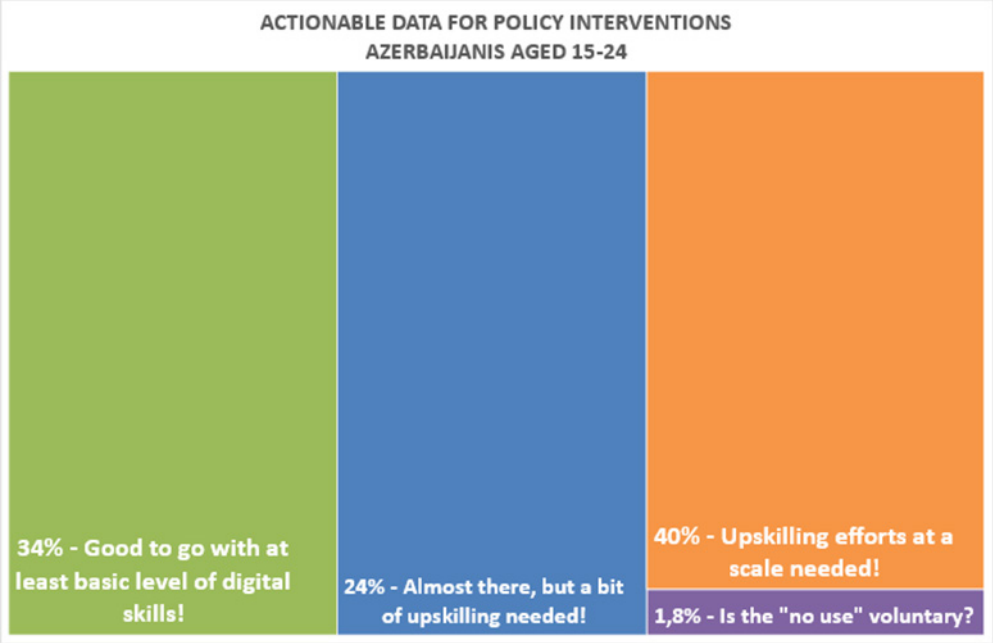
The study was composed of two different data sets for young people: those drawn from the ICT Household survey (representative sample: n=5 309 individuals aged 15 to 24) and students

[12] Digitaalsamenleven.nl
[13] https://www.etf.europa.eu/en/publications-and-resources/publications/torino-process

in higher-education institutions (convenience sample: n=6 160 individuals aged 15 to 24). Although the data is not directly comparable due to its sampling method (students in higher education are a self-selected group who most likely are keen users of digital technologies), insights can still be drawn from it.

Between the two groups, remarkable differences in their level of digital skills can be observed: 53.5 per cent of those in higher education institutions have *at least basic digital skills*, whereas the figure was 33.6 per cent for respondents of the ICT Household survey (Figure 42).

Figure 42: Actionable data for future digital inclusion policies (15 to 24 age group)



Source: ITU

The 15 to 24 age group are mostly fresh out of education and training, ready to start their professional life. The education system gives young people a formal, structured and equal opportunity to develop their digital skills, regardless of their family's social and economic background. Developing a wide set of digital skills during education and training can help young people unlock the full potential of digital technologies as learners, employees, entrepreneurs and citizens. The results from this study indicate that there is room for targeted interventions and long-term policy actions in this area.

For a short-term strategy, proposals from the age group of 25 to 74 are applicable (see above).

However, as a long-term strategy**,** the inclusion of structured digital competence development into official school curricula is recommended. A digital competence reference framework, such as the DigComp framework, becomes useful for such purposes. It covers 21 crucial competences divided into the five skill areas, similar to those used in this assessment framework. The implementation can draw from rich experiences in EU Member States (e.g. Eurydice 2019); recent experiences can be found in Austria[14] and Romania, where an adapted national version of the framework was created, and from Spain[15] where the framework was also adopted. Careful planning and implementation would include setting exit profiles for learners in general

[14] https://www.fit4internet.at/view/verstehen-das-modell/&lang=EN
[15] https://intef.es/competencia-digital-educativa/competencia-digital-del-alumnado/

secondary education, thus formalizing the expectation that young people leaving compulsory education has the digital skills in all five areas of the digital competence framework and can act as independent and autonomous users of digital technologies.

Recommendations for education institutions in compulsory education

Teachers with digital skills are needed to properly implement a digital competence curriculum for learners. The survey of teaching staff in higher education (n=847) shows a group of highly motivated and digitally skilled educators working in higher education. It could be assumed that similar groups of digitally skilled educators also exist in other sectors of education (e.g. compulsory education and vocational training). As a short-term plan, these teachers could be incentivized to become peer-tutors and mentors in education institutions to help assess the level of digital skills to get a better picture of future training needs.

For educators of all levels, a good level of digital competence is necessary to be able to teach digital skills.It also gives a solid base for educators to build professional capacities in using digital technologies for instruction, supporting learning, assessment, and other professional tasks that are part of teacher job-descriptions in Azerbaijan.

For example, using the levels of the DigComp framework, which run from level one to eight, educators should possess at least level five of digital competence. This would guarantee that they can guide others to acquire digital skills, in addition to being independent and confident users of digital technologies.

Secondly, as part of a longer-term plan for educators, the use of a professional digital skills framework would be recommended (e.g. DigCompEdu by the EU, UNESCO ICT Competency Framework for Teachers, for more, see[16]). It can have a dual purpose: in addition to guiding and supporting the use of digital technologies to support learning, it can also be used to support professional development and to conduct a gap analysis of practices either at the individual or institutional level. There are many advantages to self-evaluating skills for lifelong learning purposes, for example, through the use of self-reflection, and for which some professionally focused tools exist[17]. A number of good practices already exist in this area, for example, a tool called SELFIEforTEACHERS, which has been translated into Azerbaijani[18], could be useful.

Recommendations for higher education, applicable also to vocational education and training

The survey on students in higher education shows a good level of digital skills (53.5%) compared to the rest of the younth population (33.6%). However, expectations should be set higher (e.g. 100 per cent *at least basic digital skills*) and they should concern both students and teaching staff in higher education in order to guarantee that the population will be able not only to take advantage of digital transformation, but also actively contribute to it and even lead it. As formal education offers a structured context to implement digital upskilling strategies, higher education and VET institutions could serve as the last resort to guarantee *at least basic digital skills*. However, their main focus should be to offer opportunities to develop more advanced skills both in professional profiles, which increasingly require a confident use of digital technologies,

16 https://unevoc.unesco.org/home/Digital+Competence+Frameworks
17 For example, online tools such as SELFIE, SELFIEforTEACHERS.
18 https://education.ec.europa.eu/az/selfie-for-teachers

and in specific professional software (e.g. ICT-dependent jobs and ICT-enhanced jobs[19]), as well as in more ICT-intensive fields (for example work that is directly focused on the use of ICTs, which cannot exist without the corresponding digital services, products, or technologies).

The survey data, which targeted higher-education students, highlights areas for improvement. Firstly, the share of those with *at least basic digital skills* was higher among students in technical domains, which can be expected. However, more work should be done so that students studying humanities and other subjects get the same opportunities for digital upskilling (Figure 16). Moreover, their application directly in studies (e.g. hands-on) and homework is of utmost importance (e.g. Figure 29). Too often, digital technologies in education are only used for delivering instruction (e.g. video conferencing) or organizing group work on digital platforms, and less attention is paid to how they should be applied in various professional tasks. This can deliver confident learners who can skilfully use digital technologies in their future professions to draw more tangible outcomes for themselves and society.

Secondly, for more advanced ICT skills such as the use of formulas in spreadsheet software, or programming, women reported fewer experiences in the last three months (Figure 17). This indicates that they possibly had fewer opportunities within their formal study programme to learn and apply such skills. Within all study programmes, building checkpoints for students to gain more advanced digital skills, including simple programming exercises, should be considered and not only as part of optional studies. These employable skills are highly demanded in the labour market. Making sure that the right type of supply of skills comes out of educational institutions is crucial for the future of the Azerbaijan economy.

Thirdly, 41 per cent of students indicated that their study programme offered them too few digital skills for their future work-related needs. Such sentiments could be explained by the little applied practice that students reported getting during their studies; only 41 per cent had worked with new technologies (such as AI and geographic information systems) and 38 per cent with other professional software. In terms of these two categories, proportionally more male respondents had done so than females (Figure 20). In using professional software, the difference was greater than 10 percentage points (48% vs 37%). In the future, this area could be improved, for example, by including more relevant professional practices using new technologies in the study curriculum. Attention should also be paid to equally promote such use among males and females.

Last, among the student respondents, 14 per cent said they could not access the Internet in the last three months, the most cited the slow speed as the reason (47%) and that they do not have a suitable device (37%). Such barriers put some learners at a disadvantage, and more could be done by education authorities at the local level to facilitate access to both the Internet and suitable hardware. In terms of hardware, it should be emphasized that students would need access to (laptop) computers to work and get acquainted with professional software, especially in ICT-intensive fields and in ICT-dependent jobs, as a smartphone alone is rarely sufficient.

Short-term goals: too many students carried out any safety-related activities within the last three months (26 per cent in the survey targeted to higher education institutions). Such gap seems to appear across the whole student population in the survey, putting them in a vulnerable situation when online. Moreover, it sets a bad precedent for future professional settings where more rigorous cyber safety and hygiene routines are needed. An information campaign,

[19] https://digital-skills-jobs.europa.eu/en/latest/briefs/digital-jobs-deep-dive

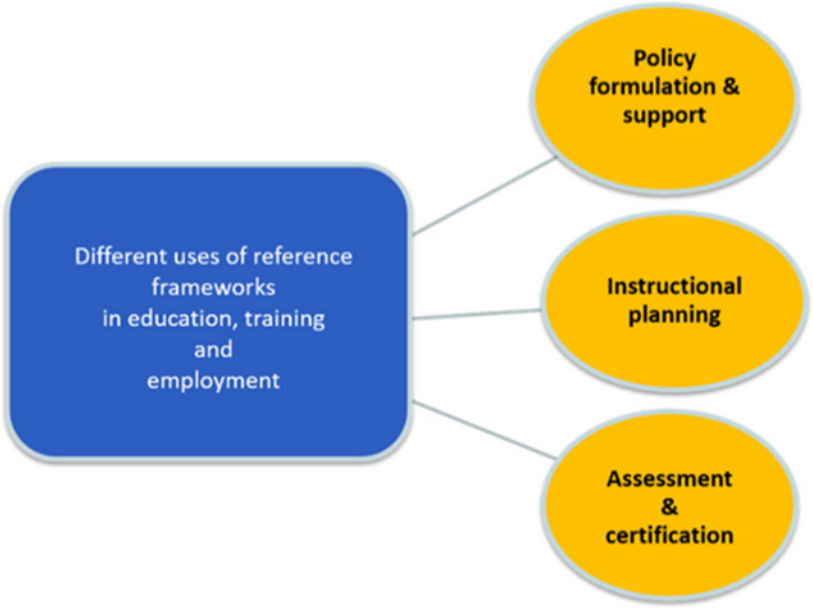
with actionable support and motivation, such as targeting both students and teaching staff in higher education institutions with routine reminders to change passwords to access their digital learning platforms (automated from the back-end thus forcing to change the password at the beginning of each semester, for example). Such institutional routines could become part of personal habits in the long run.

A longer-term goal: Higher education and VET education institutions could also use a digital competence framework to ensure that all students acquire the essential digital skills both for learning and for professional use later in life. For example, The Jisc digital capabilities framework (JISC, 2024), which is very similar to the DigComp framework, adapts its skill areas to learning contexts in higher education.

5.2 Why a nationwide reference framework for digital competence?

To build a vision among the government and relevant stakeholders for the future of digital skills, the first action is to adopt a national reference framework for digital competence (see also ITU, 2018). Such an overall reference framework provides a complete and shared understanding of digital competence. A shared vision and reference framework will enable the sharing of common goals and align strategies at national and regional levels, and to provide a wider, more international context. The common reference framework can also help align existinginitiatives to support a government-wide engagement for digital skills strategies.

Figure 43: How a reference framework for digital competence can be used



Source: Adapted from Vuorikari & Punie, 2019

At a national level, a digital skills and competence framework can support various tasks such as assisting policy-makers to support digital competence building, setting policy targets and monitoring their success (e.g. using an ICT indicator similar to the one used in this study to support monitoring in addition to aligning methodologies with international standards). Moreover, it can be used for instructional planning including curriculum reforms and teacher training to improve digital competence of specific target groups. They can also be used for assessment and possible certification as well as to create valid and reliable assessment instruments (Figure 43).

The Digital Competence Framework for Citizens (DigComp) should be considered as a candidate for such a reference framework (EU, 2022a). Apart from being already in use in many European Union Member States, it has also been endorsed by international organizations such as UNESCO and ITU, which uses it to guide data collection for ICT indicators, similar to the one used in this study. An adaptation of such a framework to the Azerbaijan context would be needed to consider its current national policies, and social and cultural settings. Additionally, following UNESCO recommendations, indicators for operating digital devices and software should be added to better understand the nature of digital transformation in general.

A national reference framework on digital competence would need to form part of wider policy initiatives, such as an overarching policy on digital inclusion. This would guarantee that user needs of a wider-public would be met through a human-centric approach to public online products, services and policies.

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Annex 1

Table 14

Digital activities individuals say they conducted in the last 3 months	% of Internet users - all ages	% of all individuals
1. Making calls (Telephoning over the Internet)	97.6%	88%
2. Participating in social networks	85.4%	77%
3. Reading or downloading newspapers, magazines or electronic books in a digital format	58.9%	53%
4. Getting information about goods or services	57.7%	52%
5. Seeking health-related information	49.8%	45%
6. Sending messages (e.g.email, messaging service, SMS) with attached files	49.6%	45%
7. Verifying the reliability of information	48.4%	44%
8. Changing privacy settings your device, account or app to limit the sharing of personal data and information (e.g. name, contact information, photos)	39.8%	36%
9. Using copy and paste tools to duplicate or move data, information and content in digital environments (e.g. within a document, between devices, on the cloud)	38.2%	35%
10. Electronic financial transaction (includes electronic transactions with a bank for payment, transfers, etc. such as M-Pesa, or for looking up account information)	36.1%	33%
11. Purchasing or ordering goods or services	27.0%	24%
12. Setting up effective security measures (e.g. strong passwords, log-in attempt notification) to protect devices and online accounts	25.9%	24%
13. Finding, downloading, installing and configuring software	24.1%	22%
14. Taking part in consultation or voting via Internet	20.0%	18%
15. Transferring files or application between device (including via cloud-storage)	15.5%	14%
16. Uploading self/user-created content	11.4%	10%
17. Creating electronic presentations presentation software (including text, images, sound, video or charts)	11.0%	10%
18. Using basic arithmetic formula in a spreadsheets	10.8%	10%
19. Connecting and installing new devices (e.g. a modem, camera, printer) through wired or wireless technologies	9.9%	9%

Table 14 (continued)

Digital activities individuals say they conducted in the last 3 months	% of Internet users - all ages	% of all individuals
20. Using software run over the Internet for editing text documents, spreadsheets or presentations	9.5%	9%
21. Doing an on online course	8.2%	7%
22. Programming or coding in digital environments (e.g. computer software, app development)	7.8%	7%

Table 15: The level of digital skills of in-scope individuals by gender

The level of skills is calculated for those who used the Internet in the last 3 months.

All individuals	Sex		
aged 15 – 74	**Total**	Male	Female
ICT skills: at least basic level	***25.1%***	***27.3%***	***22.9%***
ICT skills: above basic level	**7.8%**	9.6%	5.9%
ICT skills: basic level	**17.3%**	17.6%	17.0%
Below basic: 4 out of 5 skill areas	**26.5%**	27.0%	26.0%
Below basic: 3 out of 5 skill areas	**15.3%**	15.1%	15.4%
Below basic: 2 out of 5 skill areas	**22.1%**	20.4%	23.8%
Below basic: 0-1 out of 5 skill areas	**7.5%**	7.1%	8.0%
No use	**3.4%**	3.1%	3.8%
Grand Total	**100%**	**100%**	**100%**

Table 16: Number of respondents aged 15-24 by educational background and the level of skills

Individuals aged 15-24	Higher Ed	Vocational/ professional	General education	Grand total
At least basic digital skills	467	235	1 081	1 783
Below basic level digital skills	840	388	2 197	3 425
	1 307	*623*	*3 278*	*5 208*

Figure 44: The level of digital skills for individuals of all ages (Internet users). At least basic level combines ICT skills: above basic level and ICT skills: basic level.

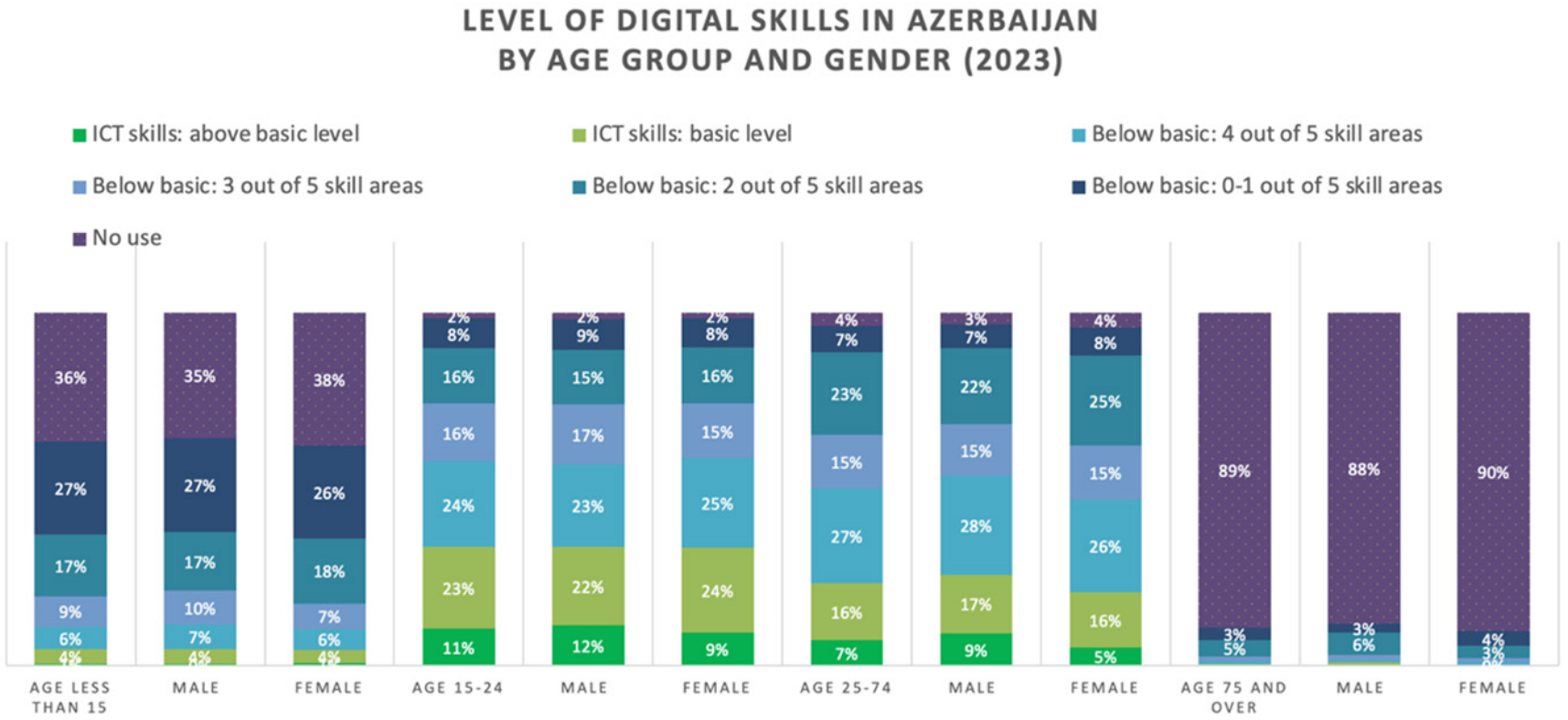


Table 17: The level of digital skills by economic region and by gender

Economic region		At least basic	ICT skills: Above basic	ICT skills: Basic	Below basic: 4 out of 5	Below basic: 3 out of 5	Below basic: 2 out of 5	Below basic: 0-1 out of 5	No use
	Men	5.4%	2.1%	3.3%	9.6%	4.7%	4.1%	0.7%	0.5%
	Women	5.5%	2.0%	3.5%	9.3%	4.7%	5.2%	0.6%	0.4%
Baku city	Total	5.5%	2.0%	3.4%	9.4%	4.7%	4.6%	0.6%	0.5%
	Men	1.3%	0.5%	0.9%	1.2%	1.0%	1.0%	0.5%	0.1%
	Women	0.7%	0.2%	0.5%	1.1%	0.8%	1.7%	0.8%	0.3%
Nakhchivan	Total	1.0%	0.3%	0.7%	1.2%	0.9%	1.4%	0.7%	0.2%
	Men	4.0%	1.6%	2.4%	1.8%	1.0%	0.7%	0.1%	0.4%
	Women	3.6%	1.0%	2.6%	2.2%	1.4%	0.9%	0.1%	0.4%
Absheron – Khizi	Total	3.8%	1.3%	2.5%	2.0%	1.2%	0.8%	0.1%	0.4%
	Men	0.7%	0.0%	0.7%	0.4%	0.3%	1.4%	0.3%	0.1%
	Women	0.5%	0.0%	0.5%	0.4%	0.5%	1.2%	0.3%	0.1%
Mountainous Shirvan	Total	0.6%	0.0%	0.6%	0.4%	0.4%	1.3%	0.3%	0.1%
	Men	1.1%	0.4%	0.6%	1.9%	0.5%	0.4%	2.2%	0.4%
	Women	0.6%	0.1%	0.5%	2.0%	0.7%	0.5%	2.3%	0.4%
Ganja – Dashkasan	Total	0.9%	0.3%	0.6%	2.0%	0.6%	0.5%	2.2%	0.4%
	Men	1.9%	0.6%	1.3%	2.0%	0.7%	3.0%	0.3%	0.2%
	Women	1.5%	0.4%	1.2%	2.0%	0.6%	2.7%	0.3%	0.3%
Karabakh	Total	1.7%	0.5%	1.3%	2.0%	0.6%	2.9%	0.3%	0.3%
	Men	1.0%	0.3%	0.7%	1.0%	1.7%	1.8%	0.3%	0.1%
	Women	0.6%	0.1%	0.5%	1.1%	1.6%	2.2%	0.3%	0.3%
Kazakh – Tovuz	Total	0.8%	0.2%	0.6%	1.1%	1.7%	2.0%	0.3%	0.2%
	Men	2.1%	1.1%	1.0%	1.5%	0.7%	0.9%	0.1%	0.2%
	Women	1.3%	0.5%	0.8%	1.3%	1.0%	1.6%	0.3%	0.3%
Guba – Khachmaz	Total	1.7%	0.8%	0.9%	1.4%	0.9%	1.2%	0.2%	0.3%
	Men	0.8%	0.2%	0.6%	2.5%	1.8%	3.1%	0.5%	0.4%
	Women	0.8%	0.1%	0.7%	1.7%	1.2%	3.4%	0.7%	0.6%
Lankaran – Astara	Total	0.8%	0.1%	0.7%	2.1%	1.5%	3.2%	0.6%	0.5%

Table 17: The level of digital skills by economic region and by gender (continued)

Economic region		At least basic	ICT skills: Above basic	ICT skills: Basic	Below basic: 4 out of 5	Below basic: 3 out of 5	Below basic: 2 out of 5	Below basic: 0-1 out of 5	No use
	Men	3.2%	1.2%	2.0%	1.7%	0.6%	0.9%	0.5%	0.1%
	Women	2.7%	0.6%	2.2%	1.9%	0.8%	0.9%	0.4%	0.2%
Central Aran	Total	3.0%	0.9%	2.1%	1.8%	0.7%	0.9%	0.5%	0.2%
	Men	2.6%	0.8%	1.8%	1.0%	0.6%	0.6%	0.4%	0.1%
	Women	2.3%	0.6%	1.7%	1.1%	0.7%	0.6%	0.4%	0.2%
Mil-Mugan	Total	2.4%	0.7%	1.7%	1.0%	0.7%	0.6%	0.4%	0.2%
	Men	2.1%	0.6%	1.5%	1.7%	1.0%	1.3%	0.5%	0.1%
	Women	1.6%	0.4%	1.2%	1.2%	1.0%	1.8%	0.6%	0.2%
Sheki – Zagatala	Total	1.8%	0.5%	1.3%	1.5%	1.0%	1.6%	0.6%	0.1%
	Men	1.1%	0.2%	0.9%	0.7%	0.5%	1.2%	0.8%	0.2%
	Women	1.0%	0.1%	0.9%	0.7%	0.3%	1.2%	0.9%	0.2%
Shirvan – Salyan	Total	1.1%	0.1%	0.9%	0.7%	0.4%	1.2%	0.9%	0.2%
Grand total		***25.1%***	***7.8%***	***17.3%***	***26.5%***	***15.3%***	***22.1%***	***7.5%***	***3.4%***

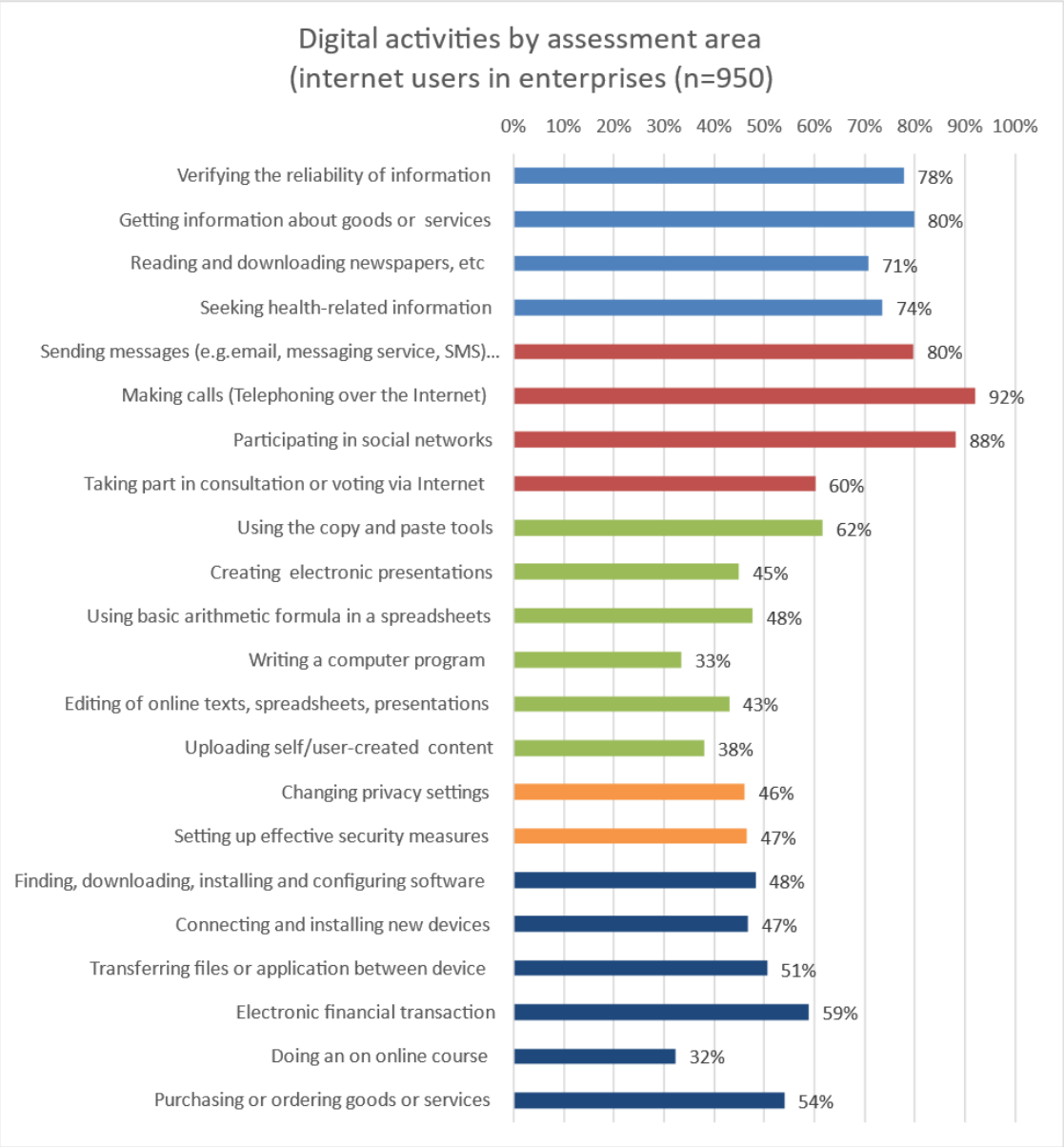
Table 18: The level of digital skills by education background. (The percentage is calculated from the total of in-scope individuals, Internet users).

	HigherEd	Vocational/ Professional	General
ICT skills: Above basic	4%	1%	2%
ICT skills: Basic	4%	4%	10%
Below basic: 4 out of 5	7%	7%	13%
Below basic: 3 out of 5	3%	4%	9%
Below basic: 2 out of 5	2%	4%	16%
Below basic: 0-1 out of 5	1%	1%	8%
Grand total:	21%	21%	58%

Table 19

All individuals aged 15 - 74	No income			Up to 400 manats			From 400 to 500 manats			From 500 to 1000 manats			Above 1000 manats		
	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F
ICT skills: at least basic level	30%	14%	33%	18%	21%	15%	26%	28%	21%	29%	32%	28%	34%	35%	32%
ICT skills: above basic level	8%	3%	8%	3%	5%	2%	8%	9%	6%	11%	16%	8%	16%	17%	15%
ICT skills: basic level	23%	10%	25%	14%	16%	13%	18%	20%	15%	18%	17%	20%	18%	18%	17%
Below basic: 4 out of 5 skill areas	19%	13%	21%	26%	27%	26%	23%	23%	23%	28%	30%	27%	46%	44%	52%
Below basic: 3 out of 5 skill areas	16%	17%	16%	13%	11%	13%	18%	18%	17%	16%	16%	17%	12%	12%	11%
Below basic: 2 out of 5 skill areas	18%	18%	18%	27%	27%	28%	23%	22%	26%	19%	15%	22%	5%	5%	5%
Below basic: 0-1 out of 5 skill areas	11%	18%	10%	9%	9%	10%	7%	7%	8%	6%	5%	7%	3%	4%	0%
No use	5%	20%	3%	7%	5%	8%	3%	2%	5%	0%	1%	0%	0%	0%	1%
Grand Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Figure 45: Digital activities by employees in the private sector used for the level of digital skills



Source: ITU

Annex 2

Data collection, regions:

For *households survey* 7% of households from 13 out of 14 economic regions were sampled. In Karabakh economic region several districts were excluded from the survey. These areas were excluded due to very low population density. Information was collected on 10-25 August 2023 through personal interviews using tablets (CAPI). The sample survey form was filled out by enumerators based on the answers of the household members aged 7 and older. Before the launch of the survey, a draft questionnaire was tested among a small group of respondents.

For *the other target groups* the survey was conducted online on a voluntary basis on 10-25 August (except universities) and on 15-30 September (after the start of the school year). All respondents were informed that "the State Committee on Statistics of the Republic of Azerbaijan conducts a sample statistical survey to study the level of digital skills of the country's population. In accordance with the Law of the Republic of Azerbaijan "On Official Statistics", the confidentiality of statistical survey data is guaranteed, and they will be used only in a generalized form".

For sampling see point 1.2 below:

- 0.5% of households
- 84.3% of high educational facilities
- 1.1% of enterprises
- 1.9% of public agencies

Distribution of roles:

The **Ministry** was responsible for overall coordination and implementation of the activities in accordance with Table 20. The Ministry engaged the Scientific Research and Statistical Innovation Center of the State Statistics Committee for development of questionnaires, conducting the survey, data compilation and micro-editing of the survey data. The Ministry was engaged at the every stage of the survey, identified target population groups, commented and validated questionnaires, provided information on existing measures in the field of digital skills development, as well as commented and validated final report.

The **ITU** was responsible for the coordination and implementation of the activities in accordance with Table 20. The ITU assisted the State Statistical Committee in development of questionnaires. For in-depth analysis of the survey data, preparation of the report and developing recommendations ITU contracted a consultant, who liaised with and sought assistance from the Ministry, in deskreview of the existing digital literacy measures.

Table 20: Different roles and their distribution within the study

Result	Activity Description	Responsible
1	**Assessment survey implementation**	
	1.1 Engaging the State Statistical Committee for conducting a survey	*1.1 The Ministry of Digital Development and Transport*
	1.2 Compilation of the list of public agencies, enterprises and higher education institutions that will participate in the survey	*1.2 The State Statistical Committee*
	1.3 Development of the main survey questionnaire for households and questionnaires for other target groups	*1.3 The State Statistical Committee under the guidance of and in coordination with the ITU and the Ministry*
	1.4 Organization of a test survey (among at least 100 respondents) with the use of the main questionnaire	*1.4 The State Statistical Committee*
	1.5 Adjustment of questionnaires based on test survey results, if needed	*1.5 The State Statistical Committee in consultation with the Ministry and the ITU*
	1.6 Organization of a survey for all target groups on the basis of the questionnaires (main and specific)	*1.6 The State Statistical Committee*
	1.7 Initial compilation and evaluation of the survey data (identifying potential data collection failures, assessment of sampling reliability and nonsampling errors)	*1.7 The State Statistical Committee, in consultation with the ITU*
2	**Analysis and reporting of the results**	
	2.1: Contracting a consultant for analysis of survey data	*2.1 ITU Regional Office for CIS*
	2.2: Conducting a desktop analysis of existing national digital literacy measures	*2.2 ITU Consultant in consultation with the line Ministries*
	2.3: In-depth analysis of survey results, identification of digital skills gaps per target group	*2.3 ITU Consultant under the guidance of the ITU Regional Office for CIS*
	2.4: Development of concrete recommendations on possible digital skills interventions, actions, policy or strategy based on identified gaps, existing national measures and best international practices	*2.4 ITU Consultant in consultation with line Ministries and ITU Regional Office for CIS*
	2.5: Preparation of the final report	*2.5 ITU Consultant*
3	**Report validation and presentation**	
	3.1: Development of a PowerPointpresentation	*3.1. ITU Consultant*
	3.2: Report validation and presentation	*3.2 ITU Regional Office for CIS ensures internal validation, while the Ministry of Digital Development and Transport ensures national validation*

Prepared by the Scientific Research and Statistical Innovation Center of the State Statistics Committee of the Republic of Azerbaijan and agreed with the Ministry of Digital Development and Transport of the Republic of Azerbaijan.

Statistical survey

Dear respondent!

The State Committee on Statistics of the Republic of Azerbaijan conducts a sample statistical survey to study the level of digital skills of the country's population. In accordance with the Law of the Republic of Azerbaijan "On Official Statistics", the confidentiality of statistical survey data is guaranteed, and they will be used only in a generalized form.

We thank you in advance for your participation in the sample survey

The sample survey form is filled out by the person conducting the survey based on the answers of the household members aged 7 and older. Data on digital skills must cover the last 3 months.

A statistical survey on the learning of digital skills in households

	Name	The code		Name	The code
District			Administrative territorial unit		
City			Township		
City district			Village		
Street, avenue, neighborhood etc..			House N°	Apartment N°	

Household and respondent information	
Number of household members (individuals)	
including the number of children aged 6 and under	

QUESTIONS FOR HOUSEHOLD MEMBERS

(all household members aged 7 and over answer, including the head of the household)

(Surname, first name, father's name of respondents)

Respondent No.1.....

Respondent No.2.....

Respondent No.3.....

Respondent No.4.....

Respondent No.5.....

	Respondent N° 1	Respondent N° 2	Respondent N° 3	Respondent N° 4	Respondent N° 5
Information about the respondent					
1. Completed age of the respondent:					
2. Your gender:					
Male	1	1	1	1	1
Female	2	2	2	2	2
3. Do you live permanently in this settlement?					
Yes	1	1	1	1	1
No	0	0	0	0	0
I don't have a permanent place of residence	3	3	3	3	3
4. Average monthly income from all sources:					
No income	0	0	0	0	0
Up to 400 manats:	1	1	1	1	1
From 400 to 500 manats	2	2	2	2	2
From 500 to 1000 manats	3	3	3	3	3
Above 1000 manats	4	4	4	4	4
5. Your education level:					
Primary	1	1	1	1	1
General	2	2	2	2	2
Profession	3	3	3	3	3
Vocational	4	4	4	4	4
Higher	5	5	5	5	5

(continued)

	Respon-dent N° 1	Respon-dent N° 2	Respon-dent N° 3	Respon-dent N° 4	Respon-dent N° 5
6. By the Medical Social Expert Commission has a defined disability?					
There is no	0	0	0	0	0
1st grou	1	1	1	1	1
2nd group	2	2	2	2	2
3rd group	3	3	3	3	3
7. Do you have a health limitation?					
There is none	0	0	0	0	0
There is	1	1	1	1	1
8. Did you use the Internet in the last 3 months for private purpose (IU)?					
Yes (if yes - go to question 9)	1	1	1	1	1
No (if no - go to question 10)	0	0	0	0	0
9. For which of the following activities did you use the Internet (including via mobile applications) in the last 3 months for private purpose? (tick all that apply):					
9.1. Digital skills – data and information literacy (DSKG_IL) *(multiple choice, if selected score 1, of not - 0)*					
DSKG_IL_1: Verifying the reliability of information	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_IL_2: Getting information about goods or services	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_IL_3: Reading and downloading newspapers, etc	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_IL_4: Seeking health-related information	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
9.2 Digital skills - communication and collabouration (DSKG_CC) *(multiple choice, if selected score 1, of not - 0)*					
DSKG_CC_1: Sending messages (e.g. email, messaging service, SMS) with attached files	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_CC_2: Making calls (Telephoning over the Internet)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_CC_3: Participating in social networks	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_CC_4: Taking part in consultation or voting via Internet	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
9.3. Digital skills - digital content creation (DSKG_DCC) *(multiple choice, if selected score 1, of not - 0)*					
DSKG_DCC_1: Using the copy and paste tools	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_DCC_2: Creating electronic presentations	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0

(continued)

	Respon-dent N° 1	Respon-dent N° 2	Respon-dent N° 3	Respon-dent N° 4	Respon-dent N° 5
DSKG_DCC_3: Using basic arithmetic formula in a spreadsheets	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_DCC_4: Writing a computer program	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_DCC_5: Editing of online texts, spreadsheets, presentations	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_DCC_6: Uploading self/user-created content	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
9.4. Digital literacy - safety (DSKG_SF) *(multiple choice, if selected score 1, of not - 0)*					
DSKG_SF_1: Changing privacy settings	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_SF_2: Setting up effective security measures	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
9.5. Digital skills – problem solving skills (DSKG PS) *(multiple choice, if selected score 1, of not - 0)*					
DSKG PS_1: Finding, downloading, installing and configuring software	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG PS_2: Connecting and installing new devices	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG PS_3: Transferring files or application between device	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG PS_4: Electronic financial transaction	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG PS_5: Doing an on online course	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG PS_6: Purchasing or ordering goods or services	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
10. Reasons for not using the Internet (tick all that apply) *(if selected score 1, if not - 0):*					
Do not need the Internet / the content is not relevant for me	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Internet service is not available in the area	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Internet speed is too low	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Can't afford to use the Internet (cost of service is too high)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Don't have a suitable device (cost of the equipment is too high)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Privacy or security concerns (personal data concerns, fear of online-fraud, harassment or unacceptable content)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Not allowed to use the Internet	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
End of survey Name and surname of the person making the request _____signature_____					

Prepared by the Scientific Research and Statistical Innovation Center of the State Statistics Committee of the Republic of Azerbaijan and agreed with the Ministry of Digital Development and Transport of the Republic of Azerbaijan.

Statistical survey

Dear respondent!

The State Committee on Statistics of the Republic of Azerbaijan conducts a sample statistical survey to study the level of digital skills of the country's population. In accordance with the Law of the Republic of Azerbaijan "On Official Statistics", the confidentiality of statistical survey data is guaranteed, and they will be used only in a generalized form.

We thank you in advance for your participation in the sample survey

The survey form is filled based on the answers of the officials of the government agency. Data on digital skills must cover the last 3 months.

Statistical survey on the study of digital skills of officials of government agency

Identification (statistical) code of the government agency	
Name of the government agency	
The level of the position of government officials (he/she holds)	

The year 2023

Information about the respondent	
1. Completed age of the respondent:	
2. Your gender: Male Female	 1 2

(continued)

3. Average monthly income from all sources:	
Up to 400 manats	1
From 400 to 500 manats	2
From 500 to 1000 manats	3
Above 1000 manats	4
4. By the Medical Social Expert Commission has a defined disability?	
1st group	1
2nd group	2
3rd group	3
5. Do you have a health limitation?	
There is none	0
There is	1
6. Did you use the Internet in the last 3 months for private or professional purpose (IU)?	
Yes (if yes - go to question 7)	1
No (if no - go to question 12)	0
7. For which of the following activities did you use the Internet (including via mobile applications) in the last 3 months for private purpose? *(tick all that apply)*	
7.1. Digital skills – data and information literacy (DSKG_IL) *(multiple choice, if selected score 1, of not - 0)*	
DSKG_IL_1: Verifying the reliability of information	1 / 0
DSKG_IL_2: Getting information about goods or services	1 / 0
DSKG_IL_3: Reading and downloading newspapers, etc	1 / 0
DSKG_IL_4: Seeking health-related information	1 / 0
7.2 Digital skills - communication and collaboration (DSKG_CC) *(multiple choice, if selected score 1, of not - 0)*	
DSKG_CC_1: Sending messages (e.g.email, messaging service, SMS) with attached files	1 / 0
DSKG_CC_2: Making calls (Telephoning over the Internet)	1 / 0
DSKG_CC_3: Participating in social networks	1 / 0
DSKG_CC_4: Taking part in consultation or voting via Internet	1 / 0
7.3. Digital skills - digital content creation (DSKG_DCC) *(multiple choice, if selected score 1, of not - 0)*	
DSKG_DCC_1: Using the copy and paste tools	1 / 0
DSKG_DCC_2: Creating electronic presentations	1 / 0
DSKG_DCC_3: Using basic arithmetic formula in a spreadsheets	1 / 0
DSKG_DCC_4: Writing a computer program	1 / 0
DSKG_DCC_5: Editing of online texts, spreadsheets, presentations	1 / 0
DSKG_DCC_6: Uploading self/user-created content	1 / 0
7.4. Digital literacy - safety (DSKG_SF) *(multiple choice, if selected score 1, of not - 0)*	

(continued)

DSKG_SF_1: Changing privacy settings	1 / 0
DSKG_SF_2: Setting up effective security measures	1 / 0
7.5. Digital skills – problem solving skills (DSKG PS) *(multiple choice, if selected score 1, of not - 0)*	
DSKG PS_1: Finding, downloading, installing and configuring software	1 / 0
DSKG PS_2: Connecting and installing new devices	1 / 0
DSKG PS_3: Transferring files or application between device	1 / 0
DSKG PS_4: Electronic financial transaction	1 / 0
DSKG PS_5: Doing an on online course	1 / 0
DSKG PS_6: Purchasing or ordering goods or services	1 / 0
8. What digital skills do you regularly use in your professional activities *(multiple choice, if selected score 1, of not - 0)*	
Use of official (corporate) e-mail	1 / 0
Search, analysis and use of online content	1 / 0
Creation of digital content (e.g. through maintenance of the official website, social networks)	1 / 0
Work with text editors, spreadsheets	1 / 0
Preparation of electronic presentations	1 / 0
Work with information systems for personnel management, budget planning, financial reporting	1 / 0
Work with corporate cloud services for storing information	1 / 0
Work with databases	1 / 0
Work with information systems for the exchange of electronic correspondence with other government agencies	1 / 0
Work with software for collecting, storing, processing administrative data	1 / 0
Work with geographic information systems	1 / 0
Work with digital services for planning and tracking tasks	1 / 0
Use of digital services for online meetings	1 / 0
Application of restriction of access to sensitive information (use of passwords) and safe use of the Internet (for example, anti-virus programs)	1 / 0
Work with applications based on artificial intelligence (for example, for text analysis, images, data, speech recognition, etc.)	1 / 0
9. In your opinion, do you have enough digital skills to quickly solve work tasks?	
Yes, that's enough *(go to question 10 if the answer is 1)*	1
I need additional training to increase my confidence in solving tasks quickly *(go to question 11 if the answer is 2)*	2
10. In which of the following areas would you like to be trained? *(multiple choice, if selected score 1, of not - 0)*	

(continued)

Work with electronic documents	1 / 0
Working with spreadsheets	1 / 0
Working with graphic editors	1 / 0
Working with databases	1 / 0
Work with geographic information systems	1 / 0
Use of software for collection, storage, processing of administrative data	1 / 0
Visualization of administrative data	1 / 0
Service to websites	1 / 0
Web content creation	1 / 0
Other (specify) _____	1 / 0
11. Have you improved your digital skills in the last three years?	
Yes:	
Self-taught	1
Attended company-sponsored courses	2
Attended private courses	3
No	0
End of survey (for IU=1)	
12. Reasons for not using the Internet (tick all that apply) *(if selected score 1, if not - 0):*	
Do not need the Internet / the content is not relevant for me	1 / 0
Internet service is not available in the area	1 / 0
Internet speed is too low	1 / 0
Can't afford to use the Internet (cost of service is too high)	1 / 0
Don't have a suitable device (cost of the equipment is too high)	1 / 0
Privacy or security concerns (personal data concerns, fear of online-fraud, harassment or unacceptable content)	1 / 0
Not allowed to use the Internet	1 / 0
End of survey (for IU=0)	

Prepared by the Scientific Research and Statistical Innovation Center of the State Statistics Committee of the Republic of Azerbaijan and agreed with the Ministry of Digital Development and Transport of the Republic of Azerbaijan.

Statistical survey

Dear respondent!

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We thank you in advance for your participation in the sample survey

The survey form is filled out by the employees of legal persons (enterprises). Data on digital skills must cover the last 3 months before the date of the survey.

Statistical survey of the study of digital skills of employees of legal persons (enterprises)

QUESTIONNAIRE

Identification (statistical) code of the statistical unit (enterprise)	
Code of the type of economic activity (2 digits)	
Number of employees	

The year 2023

Information about the respondent	
1. Completed age of the respondent:	
2. Your gender: Male Female	 1 2

(continued)

3. Average monthly income from all sources:	
Up to 400 manats:	1
From 400 to 500 manats	2
From 500 to 1000 manats	3
Above 1000 manats	4
4. Your education level:	
Primary	1
General	2
Profession	3
Vocational	4
Higher	5
5. By the Medical Social Expert Commission has a defined disability?	
There is no	0
1st group	1
2nd group	2
3rd group	3
6. Do you have a health limitation?	
There is none	0
There is	1
7. Did you use the Internet in the last 3 months for private or professional purpose (IU)?	
Yes (if yes - go to question 8)	1
No (if no - go to question 13)	0
8. For which of the following activities did you use the Internet (including via mobile applications) in the last 3 months for private purpose? *(tick all that apply)*	
8.1. Digital skills – data and information literacy (DSKG_IL) *(multiple choice, if selected score 1, of not - 0)*	
DSKG_IL_1: Verifying the reliability of information	1 / 0
DSKG_IL_2: Getting information about goods or services	1 / 0
DSKG_IL_3: Reading and downloading newspapers, etc	1 / 0
DSKG_IL_4: Seeking health-related information	1 / 0
8.2 Digital skills – communication and collaboration (DSKG_CC) *(multiple choice, if selected score 1, of not - 0)*	
DSKG_CC_1: Sending messages (e.g.email, messaging service, SMS) with attached files	1 / 0
DSKG_CC_2: Making calls (Telephoning over the Internet)	1 / 0
DSKG_CC_3: Participating in social networks	1 / 0
DSKG_CC_4: Taking part in consultation or voting via Internet	1 / 0
8.3. Digital skills – digital content creation (DSKG_DCC) *(multiple choice, if selected score 1, of not - 0)*	

(continued)

DSKG_DCC_1: Using the copy and paste tools	1 / 0
DSKG_DCC_2: Creating electronic presentations	1 / 0
DSKG_DCC_3: Using basic arithmetic formula in a spreadsheets	1 / 0
DSKG_DCC_4: Writing a computer program	1 / 0
DSKG_DCC_5: Editing of online texts, spreadsheets, presentations	1 / 0
DSKG_DCC_6: Uploading self/user-created content	1 / 0
8.4. Digital literacy - safety (DSKG_SF) *(multiple choice, if selected score 1, of not - 0)*	
DSKG_SF_1: Changing privacy settings	1 / 0
DSKG_SF_2: Setting up effective security measures	1 / 0
8.5. Digital skills – problem solving skills (DSKG PS) *(multiple choice, if selected score 1, of not - 0)*	
DSKG PS_1: Finding, downloading, installing and configuring software	1 / 0
DSKG PS_2: Connecting and installing new devices	1 / 0
DSKG PS_3: Transferring files or application between device	1 / 0
DSKG PS_4: Electronic financial transaction	1 / 0
DSKG PS_5: Doing an on online course	1 / 0
DSKG PS_6: Purchasing or ordering goods or services	1 / 0
9. Do you use any of the following Internet-based services in your daily activities? *(multiple choice, if selected score 1, of not - 0)*	
Corporate (official) e-mail	1 / 0
Collaborative work with documents / spreadsheets using a cloud service (for example, Yandex Disk, Google Driver, etc.)	1 / 0
Cloud services for data/information storage or exchange	1 / 0
Online collaborative platforms for planning or scheduling tasks	1 / 0
Applications for conducting online meetings (e.g. Zoom, Google meet, MS Teams, etc.)	1 / 0
Information security software (e.g. antivirus software)	1 / 0
Applications in artificial intelligence (for example, text analysis, speech recognition, image analysis, etc.)	1 / 0
Applications for virtual communication with clients (through chat bots or messengers)	1 / 0
10. In your opinion, do you have enough digital skills to quickly solve work tasks? (*one answer)*	
Yes, that's enough (go to question 11 if the answer is 1)	1
I need additional training to increase my confidence in solving tasks quickly (go to question 12 if the answer is 2)	2
11. In which of the following areas would you like to be trained? *(multiple choice, if selected score 1, of not - 0)*	

(continued)

Working with electronic documents	1 / 0
Working with spreadsheets	1 / 0
Working with graphic editors	1 / 0
Working with databases	1 / 0
Website Maintenance	1 / 0
Working with web content	1 / 0
Internet Marketing	1 / 0
Programming	1 / 0
Other (specify) _____	1 / 0
12. Have you improved your digital skills in the last three years?	
Yes:	
Self-taught	1
Attended company-sponsored courses	2
Attended private courses	3
No	0
End of survey (for Internet-users, where IU=1)	
13. Reasons for not using the Internet (tick all that apply) *(if selected score 1, if not - 0):*	
Do not need the Internet / the content is not relevant for me	1 / 0
Internet service is not available in the area	1 / 0
Internet speed is too low	1 / 0
Can't afford to use the Internet (cost of service is too high)	1 / 0
Don't have a suitable device (cost of the equipment is too high)	1 / 0
Privacy or security concerns (personal data concerns, fear of online-fraud, harassment or unacceptable content)	1 / 0
Not allowed to use the interne	1 / 0
End of survey (for IU=0)	

Prepared by the Scientific Research and Statistical Innovation Center of the State Statistics Committee of the Republic of Azerbaijan and agreed with the Ministry of Digital Development and Transport of the Republic of Azerbaijan.

Statistical survey

Dear respondent!

The State Committee on Statistics of the Republic of Azerbaijan conducts a sample statistical survey to study the level of digital skills of the country's population. In accordance with the Law of the Republic of Azerbaijan "On Official Statistics", the confidentiality of statistical survey data is guaranteed, and they will be used only in a generalized form.

We thank you in advance for your participation in the sample survey

The sample survey form is filled out by the observer based on the answers of the students and teaching staff of the higher educational institution. Data on digital skills must cover the last 3 months.

Statistical survey on the study of digital skills of students and teaching staff of higher education institutions

QUESTIONNAIRE

Identification (statistical) code of the higher education institution	
Name of higher education institution	

The year 2023

	Respondent N° 1	Respondent N° 2	Respondent N° 3	Respondent N° 4	Respondent N° 5
Students do not answer question 10, teachers do not answer questions 8 and 9					
1. Completed age of the respondent:					

(continued)

	Respon-dent N° 1	Respon-dent N° 2	Respon-dent N° 3	Respon-dent N° 4	Respon-dent N° 5
2. Your gender:					
Male	1	1	1	1	1
Female	2	2	2	2	2
3. By the Medical Social Expert Commission has a defined disability?					
There is no	0	0	0	0	0
1st group	1	1	1	1	1
2nd group	2	2	2	2	2
3rd group	3	3	3	3	3
4. Do you have a health limitation?					
There is none	0	0	0	0	0
There is	1	1	1	1	1
5. Did you use the Internet in the last 3 months for private or educational purpose (IU)?					
Yes (if yes - go to question 6)	1	1	1	1	1
No (if no - go to question 11)	0	0	0	0	0
6. For which of the following activities did you use the Internet (including via mobile applications) in the last 3 months for private purpose? *(tick all that apply):*					
6.1. Digital skills – data and information literacy (DSKG_IL) *(multiple choice, if selected score 1, of not - 0)*					
DSKG_IL_1: Verifying the reliability of information	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_IL_2: Getting information about goods or services	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_IL_3: Reading and downloading newspapers, etc	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_IL_4: Seeking health-related information	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
6.2 Digital skills - communication and collaboration (DSKG_CC) *(multiple choice, if selected score 1, of not - 0)*					
DSKG_CC_1: Sending messages (e.g.email, messaging service, SMS) with attached files	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_CC_2: Making calls (Telephoning over the Internet)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_CC_3: Participating in social networks	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_CC_4: Taking part in consultation or voting via Internet	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
6.3. Digital skills - digital content creation (DSKG_DCC) *(multiple choice, if selected score 1, of not - 0)*					

(continued)

	Respon-dent N° 1	Respon-dent N° 2	Respon-dent N° 3	Respon-dent N° 4	Respon-dent N° 5
DSKG_DCC_1: Using the copy and paste tools	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_DCC_2: Creating electronic presen-tations	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_DCC_3: Using basic arithmetic formula in a spreadsheets	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_DCC_4: Writing a computer program	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_DCC_5: Editing of online texts, spreadsheets, presentations	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_DCC_6: Uploading self/user-created content	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
6.4. Digital literacy - safety (DSKG_SF) *(multiple choice, if selected score 1, of not - 0)*					
DSKG_SF_1: Changing privacy settings	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG_SF_2: Setting up effective security measures	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
6.5. Digital skills – problem solving skills (DSKG PS) *(multiple choice, if selected score 1, of not - 0)*					
DSKG PS_1: Finding, downloading, installing and configuring software	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG PS_2: Connecting and installing new devices	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG PS_3: Transferring files or application between device	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG PS_4: Electronic financial transaction	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG PS_5: Doing an on online course	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
DSKG PS_6: Purchasing or ordering goods or services	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
7. Specialty (for students) / Sphere of profes-sional interests (for teachers)					
- Technical	1	1	1	1	1
- Humanitarian	2	2	2	2	2
Your position					
Student (if 1 go to question 8-9)	1	1	1	1	1
Teacher (if 2 go to question 10)	2	2	2	2	2
8. What digital skills do you regularly use during the educational process *(multiple choice, if selected score 1, of not - 0)*					

(continued)

	Respon-dent N° 1	Respon-dent N° 2	Respon-dent N° 3	Respon-dent N° 4	Respon-dent N° 5
Search, use, analysis and modification of digital content	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Creating digital content for homework (presentations, video, audio recordings)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Monitoring progress (online testing, surveys, online service for task planning)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
The use of digital technologies for interac-tion with teachers	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Collaboratively work (as a group) in a digital environment	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Improving knowledge by freely using online resources	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Working with digital text editors, spread-sheets, preparing electronic presentations	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Working with professional software	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Working with new technologies (artifi-cial intelligence, Geographic information systems and others)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
9. In your opinion, are the digital skills you learned during training considered?					
Enough to find a good job on a specialty	1	1	1	1	1
Not enough, I'm planning to continue train-ing on my own now	2	2	2	2	2
Not enough, but I don't plan to study inde-pendently	3	3	3	3	3
10. What digital skills do you use in your professional (teaching) activities? *(multiple choice, if selected score 1, of not - 0)*					
Digital technology* to interact with students and colleagues	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Online resources to improve my skills	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Can find high-quality online content, use it, share it (via link, email, cloud services)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Create my own or modify online content on open resources (for example, Wikipedia)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Can control access to sensitive (emotional) content (e.g. with password protection)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0

(continued)

	Respon-dent N° 1	Respon-dent N° 2	Respon-dent N° 3	Respon-dent N° 4	Respon-dent N° 5
Use digital technology in the educational process (interactive whiteboards, mobile devices, online lectures, etc.)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Use the digital environment to organize work together with students / in groups	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Encourage students to use digital technologies to do homework (video, audio recordings) or track progress (blogging, services for online task planning)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Use digital technologies to assess progress, get feedback from students, conduct surveys, games	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Can use specialized digital equipment and online content adapted for teaching persons with disabilities	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Digital technology for visualization and explanation of educational materials	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
I reward students who find, use, analyze and modify digital content.	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
I have enough knowledge and skills to use the Internet safely and teach students	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
End of survey (for IU = 1)					
11. Reasons for not using the Internet (tick all that apply) *(if selected score 1, if not - 0):*					
Do not need the Internet / the content is not relevant for me	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Internet service is not available in the area	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Internet speed is too low	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Can't afford to use the Internet (cost of service is too high)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Don't have a suitable device (cost of the equipment is too high)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Privacy or security concerns (personal data concerns, fear of online-fraud, harassment or unacceptable content)	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Not allowed to use the interne	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
End of survey (for IU = 0)					

**The concept of "digital technologies" is employed as an umbrella term for digital resources and devices, thus comprising any kind of digital input: software (including apps and games), hardware (e.g. classroom technologies or mobile devices) or digital content/data (i.e. any files, including images, audio and video).*

Suggestions for additional questions to a national ICT skills surveys (to be adapted to the context)

Figure 46: Eurostat ICT Household survey model questionnaire 2022

B4.*	**Have you conducted any of the following learning activities over the Internet for educational, professional or private purposes in the last 3 months?** *(tick all that apply)*	
	a) Doing an online course	
	b) Using online learning material other than a complete online course (e.g. video tutorials, webinars, electronic textbooks, learning apps or platforms)	
	c) Communicating with educators or learners using audio or video online tools (e.g. Zoom, MS Teams, Google Classroom, [national examples], etc.)	
	[-> go to B5]	
B5.*/**	(Only for respondents who ticked 'yes' to B4 a) or b) or c)) **What was the purpose of the learning activities you participated in the last 3 months?** (tick all that apply)	
	a) For formal education (e.g. school or university)	
	b) For professional/work-related purposes	
	c) For private purpose	
	[-> go to C1]	

Figure 47: Eurostat model questionnaire from 2011

F5 Where or how did you obtain your computer or internet skills?
(tick all that apply)
(for respondents who ticked at least one option (a to j) in question F3 or (a to h) in F4)

- **a)** Formal educational institution (school, college, university) ☐
  if yes to a) and if respondent aged <35 years: **(optional)**
  - **a1)** Primary or lower secondary schools ☐
  - **a2)** Upper secondary educational institution (schools for university entrance qualification or skilled posts) ☐
  - **a3)** Tertiary educational institution (e.g. university leading to BA, MA degrees, PhD) ☐
- **b)** Training courses in adult education center (but not on the initiative of your employer) ☐
- **c)** Vocational training courses (on the demand of the employer) ☐
- **d)** Self-study using books, cd-roms, online courses, wikis, online discussion forum etc. ☐
- **e)** Self-study in the sense of learning-by-doing ☐
- **f)** Informal assistance from colleagues, relatives, friends ☐
- **g)** Some other way ☐

[-> go to F6]

F6 Do you judge your current computer or internet skills to be sufficient?
(tick all that apply)
(for respondents who ticked at least one option (a to j) in question F3 or (a to h) in F4)

	Yes	No	Not applicable
a) If you were to look for a job or change job within a year	☐	☐	☐
b) To communicate with relatives, friends, colleagues over the internet	☐	☐	☐
c) To protect your personal data	☐	☐	☐
d) To protect your private computer from virus or other computer infection	☐	☐	☐

[-> go to G1]

Source: Eurostat

Office of the Director
International Telecommunication Union (ITU)
Telecommunication Development Bureau (BDT)
Place des Nations
CH-1211 Geneva 20
Switzerland

Email: bdtdirector@itu.int
Tel.: +41 22 730 5035/5435
Fax: +41 22 730 5484

Office of Deputy Director and Regional Presence
Field Operations Coordination Department (DDR)
Place des Nations
CH-1211 Geneva 20
Switzerland

Email: bdtdeputydir@itu.int
Tel.: +41 22 730 5131
Fax: +41 22 730 5484

Digital Networks and Society (DNS)
Email: bdt-dns@itu.int
Tel.: +41 22 730 5421
Fax: +41 22 730 5484

Digital Knowledge Hub Department (DKH)
Email: bdt-dkh@itu.int
Tel.: +41 22 730 5900
Fax: +41 22 730 5484

Partnerships for Digital Development Department (PDD)
Email: bdt-pdd@itu.int
Tel.: +41 22 730 5447
Fax: +41 22 730 5484

Africa

Ethiopia
International Telecommunication Union (ITU) Regional Office
Gambia Road
Leghar Ethio Telecom Bldg. 3rd floor
P.O. Box 60 005
Addis Ababa
Ethiopia

Email: itu-ro-africa@itu.int
Tel.: +251 11 551 4977
Tel.: +251 11 551 4855
Tel.: +251 11 551 8328
Fax: +251 11 551 7299

Cameroon
Union internationale des télécommunications (UIT)
Bureau de zone
Immeuble CAMPOST, 3e étage
Boulevard du 20 mai
Boîte postale 11017
Yaoundé
Cameroon

Email: itu-yaounde@itu.int
Tel.: + 237 22 22 9292
Tel.: + 237 22 22 9291
Fax: + 237 22 22 9297

Senegal
Union internationale des télécommunications (UIT)
Bureau de zone
8, Route du Méridien Président
Immeuble Rokhaya, 3e étage
Boîte postale 29471
Dakar - Yoff
Senegal

Email: itu-dakar@itu.int
Tel.: +221 33 859 7010
Tel.: +221 33 859 7021
Fax: +221 33 868 6386

Zimbabwe
International Telecommunication Union (ITU) Area Office
USAF POTRAZ Building
877 Endeavour Crescent
Mount Pleasant Business Park
Harare
Zimbabwe

Email: itu-harare@itu.int
Tel.: +263 242 369015
Tel.: +263 242 369016

Americas

Brazil
União Internacional de Telecomunicações (UIT)
Escritório Regional
SAUS Quadra 6 Ed. Luis Eduardo Magalhães,
Bloco "E", 10º andar, Ala Sul (Anatel)
CEP 70070-940 Brasilia - DF
Brazil

Email: itubrasilia@itu.int
Tel.: +55 61 2312 2730-1
Tel.: +55 61 2312 2733-5
Fax: +55 61 2312 2738

Barbados
International Telecommunication Union (ITU) Area Office
United Nations House
Marine Gardens
Hastings, Christ Church
P.O. Box 1047
Bridgetown
Barbados

Email: itubridgetown@itu.int
Tel.: +1 246 431 0343
Fax: +1 246 437 7403

Chile
Unión Internacional de Telecomunicaciones (UIT)
Oficina de Representación de Área
Merced 753, Piso 4
Santiago de Chile
Chile

Email: itusantiago@itu.int
Tel.: +56 2 632 6134/6147
Fax: +56 2 632 6154

Honduras
Unión Internacional de Telecomunicaciones (UIT)
Oficina de Representación de Área
Colonia Altos de Miramontes
Calle principal, Edificio No. 1583
Frente a Santos y Cía
Apartado Postal 976
Tegucigalpa
Honduras

Email: itutegucigalpa@itu.int
Tel.: +504 2235 5470
Fax: +504 2235 5471

Arab States

Egypt
International Telecommunication Union (ITU) Regional Office
Smart Village, Building B 147,
3rd floor
Km 28 Cairo
Alexandria Desert Road
Giza Governorate
Cairo
Egypt

Email: itu-ro-arabstates@itu.int
Tel.: +202 3537 1777
Fax: +202 3537 1888

Asia-Pacific

Thailand
International Telecommunication Union (ITU) Regional Office
4th floor NBTC Region 1 Building
101 Chaengwattana Road
Laksi,
Bangkok 10210,
Thailand

Email: itu-ro-asiapacific@itu.int
Tel.: +66 2 574 9326 – 8
+66 2 575 0055

Indonesia
International Telecommunication Union (ITU) Area Office
Gedung Sapta Pesona
13th floor
Jl. Merdeka Barat No. 17
Jakarta 10110
Indonesia

Email: bdt-ao-jakarta@itu.int
Tel.: +62 21 380 2322

India
International Telecommunication Union (ITU) Area Office and Innovation Centre
C-DOT Campus
Mandi Road
Chhatarpur, Mehrauli
New Delhi 110030
India

Email:
Area Office: itu-ao-southasia@itu.int
Innovation Centre: itu-ic-southasia@itu.int
Website: ITU Innovation Centre in New Delhi, India

CIS

Russian Federation
International Telecommunication Union (ITU) Regional Office
4, Building 1
Sergiy Radonezhsky Str.
Moscow 105120
Russian Federation
Email: itu-ro-cis@itu.int
Tel.: +7 495 926 6070

Europe

Switzerland
International Telecommunication Union (ITU) Office for Europe
Place des Nations
CH-1211 Geneva 20
Switzerland

Email: eurregion@itu.int
Tel.: +41 22 730 5467
Fax: +41 22 730 5484

International Telecommunication Union
Telecommunication Development Bureau
Place des Nations
CH-1211 Geneva 20
Switzerland

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