

DIGITAL SKILLS AND JOBS



A study conducted by



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Gianluca Coppola

President of the European Digital Learning Network ETS

This report presents the results of the research “Digital skills and jobs”, a survey promoted by the European Digital Learning Network ETS - DLEARN - over the past months to collect data on the specific digital skills (based on the European DigComp Framework) required by employers in rapidly changing labour markets and societies.

It will also analyse the current level of digital knowledge in the workforce, as well as the level of existing training offers and preparedness for the digital and green transition.

We collected more than 3000 ad-hoc questionnaires from 3 key professional clusters in the EU labour market, i.e., Company Managers, Human Resource (HR) Managers and Entrepreneurs, with the aim to obtain a clear overview of the link between the “world of work” and “digital skills” at European level nowadays.

DLEARN – European Digital Learning Network ETS - is indeed a young reality, but still its journey until today has been outstanding and full of satisfactions.

The wide experiences, know-how and strong relations of the involved members – which are actively committed to strengthen the voice of the network – have allowed us to become an acknowledged and influential player in the field of Digital Education & Training.

European authorities and institutions, together with relevant sectorial organisations, look at us as a reliable and competent partner.

We are at the front line when it comes to raise awareness on the key role assumed by digital knowledge, a critical component today for the creation of a competitive economy and of a truly inclusive society. We strongly believe in the educational opportunities brought by digital technologies.

Therefore, we created the network, and this is why we keep on working so hard: to produce – and offer – know-how, contents, models and solutions which will shape the future education at all the levels.

I am proud of our accomplishments, and even more confident for the future progress of our work.

I invite you to analyse this report and to contact us if you wish to comment and give us your feedback.

To know more about our network, visit our website www.dlearn.eu.

A handwritten signature in blue ink, appearing to read 'J. Luotola', is positioned at the bottom right of the page.

Executive Summary



This report presents the results of the research “Digital skills and jobs”, a survey promoted by the European Digital Learning Network ETS – DLEARN within the **DigitEdu 2023 project** (Promoting cooperation and research to address the digital needs in the area of education and training in Europe – Year 1).

It is a project funded by the European Union under the Erasmus+ programme, Civil Society Cooperation in the fields of Youth, Education and Training.

This survey is designed to **collect data on the specific digital skills** (based on the EU DigComp Framework) **required by employers in rapidly changing labour markets and societies.**

Over the past few months, we have circulated the online and paper survey both within the DLEARN network and outside, to gather opinions and views on the subject, and we have collected more than 3000 questionnaires from people with expertise in the world of work across Europe. This research has allowed us to construct what you will see in the following pages, i.e., **a clear overview of the link between the “world of work” and “digital skills” at European level**, built from the responses of the industry experts who took part in the survey. 3 key professional clusters in the EU labor market, i.e., Company Managers, Human Resource (HR) Managers and Entrepreneurs were asked to give their views on this fundamental topic, which has increasingly become crucial for both the world of work and the education and training system, that are not always aligned.

Thus, analysing the current level of digital literacy in the workforce, as well as the level of existing educational offers and preparation for the digital and green transition are all key factors for improving activities and offers in this regard.

This final report will be shared and discussed with the European Commission, and it is freely available to all on our website ¹ and social media ².

1. www.dlearn.eu

2. Facebook: <https://www.facebook.com/dlearneuETS/>;
LinkedIn: <https://www.linkedin.com/company/european-digital-learning-network/>;
Instagram: <https://www.instagram.com/dlearneu?hl=en>

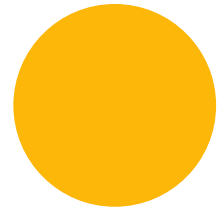


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Terms & Abbreviation	Definition
CVET	Continuing Vocational Education and Training
DigComp	The Digital Competence Framework for Citizens provides a common understanding of what digital competence is. DigComp identifies the key components of digital competence in the 5 areas and 21 specific competences summarised in the figures above. The framework also describes 8 proficiency levels, examples of knowledge, skills and attitudes, and use cases in education and employment contexts ³ .
EACEA	European Education and Culture Executive Agency. It manages funding for education, culture, audiovisual, sport, citizenship and volunteering ⁴ .
EU Commission DGs	The Commission is organised into policy departments, known as Directorates-General (DGs), which are responsible for different policy areas ⁵ .
Green Revolution	Generically defined as <i>"the introduction of high-yielding seeds and modern agricultural techniques in developing countries"</i> ⁶ .
HE	Higher Education. It concerns the level of education qualifications one can receive after the age of 18.
ICT	Information and Communications Technology (or technologies).
IVET	Initial Vocational Education and Training, which more specifically refers to <i>"general or vocational education carried out in the initial education system, usually before entering working life"</i> ⁷ .
STEM	Science, Technology, Engineering, and Mathematics. STEM is <i>"a grouping of four overlapping disciplines: Science, Technology, Engineering, and Math. The acronym is commonly used to summarize the education approach that unites the disciplines into one structured program"</i> ⁸ .

3. <https://joint-research-centre.ec.europa.eu/digcomp%en#:text=The%20Digital%20Competence%20Framework%20for%20of%20what%20digital%20competence%20is>

4. <https://www.eacea.ec.europa.eu/index%en>

5. <https://commission.europa.eu/about-european-commission/organisational-structure/how-commission-organised%en>

6. <https://www.collinsdictionary.com/dictionary/english/green-revolution>

7. <https://unevoc.unesco.org/home/TVETipedia+Glossary/show=term/term=Initial+vocational+education+and+training#start>

8. <https://www.create-learn.us/blog/stem-meaning-and-definition/>

1. INTRODUCTION TO THE RESEARCH

1.1 About the organiser/promoter



The European Digital Learning Network ETS – DLEARN – aims to **embrace the challenges brought by the digital transformation in terms of digital skills mismatch and digital learning opportunities**. The 47% of Europeans is not properly digitally skilled, yet in the near future 90% of jobs will require some level of digital skills.

We believe in the value of SHARING, CONNECTING, MULTIPLYING and ENHANCING the potential of our members, local territories and people.

Constant changes in economy and society have been urging governments to emphasize the contribution of education to a wide range of newly required skills and competencies. 21st Century skills are considered to be key enablers of responsible citizenship in an ICT-based economy.

A successful education and training in our knowledge society depends increasingly on the confident, competent and innovative use of ICT.

DLEARN wants to bring closer the experiences and voices of local territories and people to EU policies. Nowadays this process is hindered by the presence of bigger interests, notably big corporations or umbrella organizations. With our activities and through our network we want to minimize this gap, through the promotion of bottom-up initiatives, such as:

- Closer cooperation and enhancement of our activities to a higher level through periodic project labs;
- Tight networking activities and lobbying to achieve a fruitful accreditation of local needs to the relevant EU Commission DGs;
- Improving existing experiences and knowledge of digital learning through sharing of practices and creation of efficient business opportunities.

DLEARN is a **network made of members based all over Europe**, related to the field of Education & Training and ICT. In the framework of our activities, DLEARN – in cooperation with some of the most influent stakeholders in Europe in the sector of education and training – promoted a survey to collect data on the specific digital skills (based on the EU DigComp Framework⁹) required by employers in rapidly changing labour markets and societies. Every professional acting in the EU's key industry sectors has been invited to take up the survey to share their point of view through a bottom-up approach, and this report aims to share their ideas among all EU countries and institutions.

With the survey “**Digital Skills and Jobs**”, our objective is not only to **collect data on the specific digital skills required by the European labour market**, but also to analyse the current level of digital knowledge in the workforce, as well as the level of existing training offers and preparedness for the digital and green transition.

This survey was conducted as part of the Digit Eed 2023 project, funded by the European Education and Culture Executive Agency (EACEA), among whose goals is the will to raise awareness about and contribute to the achievement of the European Education Area and the Digital Education Plan and to contribute to policy development at EU level on the topic of digital skills and digital transformation. This final report will be shared and discussed with the European Commission and freely available for everyone from DLEARN's website.¹⁰

9. <https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>

10. <http://dlearn.eu/news/2023/08/digit-edu-2023/>

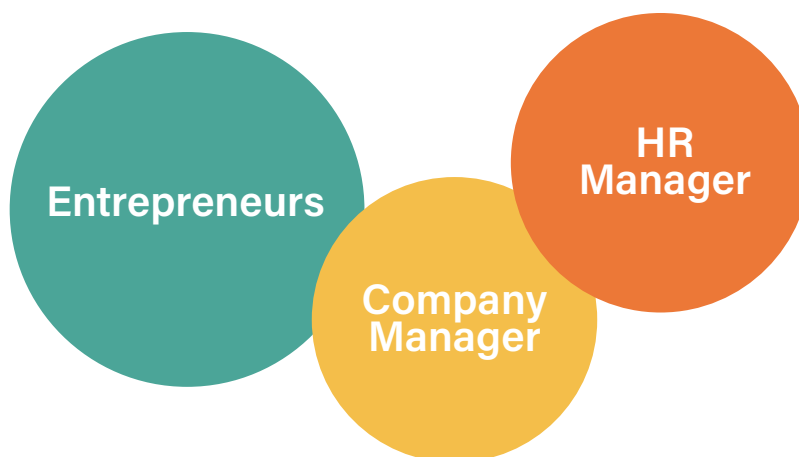
1.2 Methodology

The survey was promoted to collect data on the specific digital skills required by the European labour market. In particular, to analyse the current level of digital knowledge in the workforce, as well as the level of existing training offers and preparedness for the digital and green transition.

Moreover, the survey investigated the relationship between digital skills and inclusivity of women and people with disability in order to define the related gaps. The questionnaire investigated these different issues which are influencing the situation nowadays.

To better understand this situation within the world of work, we decided to circumscribe the addressees of this research to **3 key figures** who could give us an overall view of the labour market.

The investigation, therefore, interested these 3 main groups:



By obtaining EU-wide responses from these three groups of respondents, we were able to get a snapshot of the world of work today. That is, of the state of the art the world of work is in right now with respect to the digital skills we investigated in this research and the needs required by the labour market. This allowed us to construct a useful and effective Report on which to base valid and applicable educational and training policies and activities within the European Union.

The questionnaire was structured in different sections, so that questions were collected according to their content.

To be focused on 3 main topics:

1 State of the art, digital readiness and gaps

2 Training needs and education/training/lifelong learning opportunities

3 Digital skills and green and inclusivity

The first part “General information” asks general questions allowing us to understand the respondent group in general (age, gender, nationality, etc.).

In Section 1: “State of the art, digital readiness and gaps” we collected questions that could help us to understand the current state of the workforce, in particular by analysing what the state of digital skills knowledge and gaps are.

In Section 2: “Training needs and education/training/lifelong learning opportunities” were questions related to the education and training systems in respondents’ countries, to understand whether these systems are prepared to provide the necessary digital skills needed by workers in the world of work, what they are doing to close digital gaps and whether companies offer retraining courses for workers.

In Section 3: “Digital skills and green and inclusivity” questions were collected regarding fragile groups such as women and people with disabilities and the level of discrimination they may or may not face in the workplace and a central theme such as the green revolution.

Each respondent had the possibility to answer questions specifically related to their experience, position and knowledge, allowing for an in-depth insight of the current situation of digital skills and jobs.

Ultimately, our aim was to deliver a comprehensive picture of the situation of digital skills and jobs related to the 3 topics above-mentioned, so to understand the needs, problems, practices and possible improvements. The statistical results, both from a qualitative and quantitative point of view, have been analysed with the purpose of drafting recommendations. The recommendations, together with the analysis of the results, will be addressed to the relevant stakeholders.

1.3 Data gathering

The European Digital Learning Network ETS - DLEARN, supported by its members in the framework of Digit Edu 2023 project, as described above, has promoted the survey through different channels. The most used have been:

- Social Media, such as Facebook, Instagram and LinkedIn
- Newsletters
- Blog Posts
- Website¹¹
- E-Communication

The contacts used are those of the network. DLEARN’s members were invited to spread the project and its research through their formal and informal networks. Moreover, DLEARN had the opportunity to launch the survey, by sharing some of its paper copies, during public events and meetings. This approach allowed the survey to be spread all over Europe and **the total number of respondents is 3872.**

The research was promoted throughout the European Union and made available **in all the 24 official languages of the European Union**, so that everyone could also respond using their mother tongue, even those who are not fluent in English.

In the following table, you can see the count of respondents from different European Countries that participated in the research and the percentage reached.

¹¹ <http://dlearn.eu/news/2023/08/digit-edu-2023/>

Countries	Count	%
Austria	22	0,57
Belgium	162	4,18
Bulgaria	37	0,96
Croatia	46	1,19
Cyprus	29	0,75
Czechia	18	0,46
Denmark	31	0,80
Estonia	17	0,44
Finland	16	0,41
France	271	7,00
Germany	193	4,98
Greece	349	9,01
Hungary	445	11,49
Ireland	13	0,34
Italy	752	19,42
Latvia	159	4,11
Lithuania	17	0,44
Luxembourg	18	0,46
Malta	32	0,83
Netherlands	67	1,73
Poland	112	2,89
Portugal	245	6,33
Romania	332	8,57
Slovakia	23	0,59
Slovenia	47	1,21
Spain	326	8,42
Sweden	81	2,09
Other	12	0,31
Total	3872	100,00

Table 1 - Countries of origin of the respondents

The countries which participated the most to the survey were: Italy 19,42%, Hungary 11,49%, Greece 9,01%, Romania 8,57%, Spain 8,42%, France 7%, Portugal 6,33%, Germany 4,98%, Belgium 4,18%, Latvia 4,11%, etc. Other countries participated on the survey in smaller amount (0,31%).

2. ANALYSIS OF THE RESULTS

2.1 Profile of the interviewed

The questionnaire started investigating some **demographic data** of the respondents.

The **gender** of the participants was composed as followed:

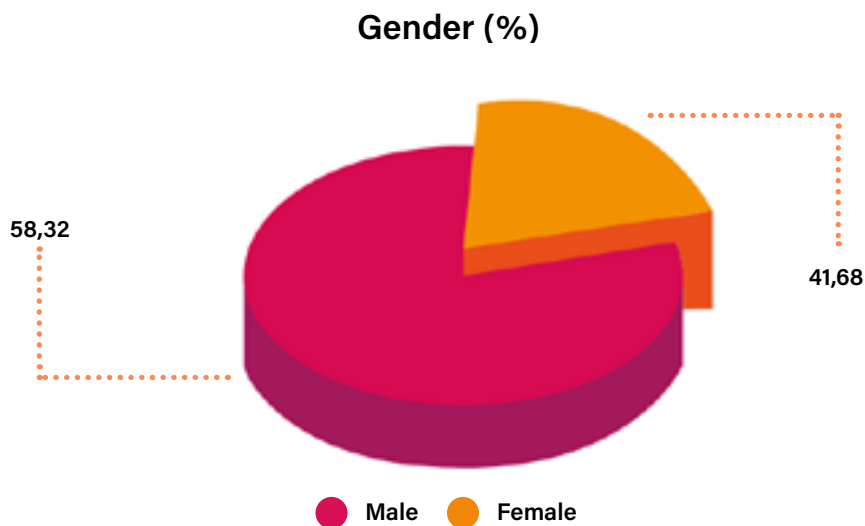


Figure 1 - Gender of the participants

The biggest part belongs to female participants (2258 women, 58,32%), followed by male respondents (1614 men, 41,68%). No one chose "Other" as an option.

Regarding their **age**, the biggest group is within the 36-50 years with 1775 people (45,84%). A smaller group is the participants over 50 years of age (1452 people, 37,50%). The smallest number of respondents belongs to the group of the participants of the age of 26-36 years (645 people, 16,66%). No respondent from the group of age 18-25.

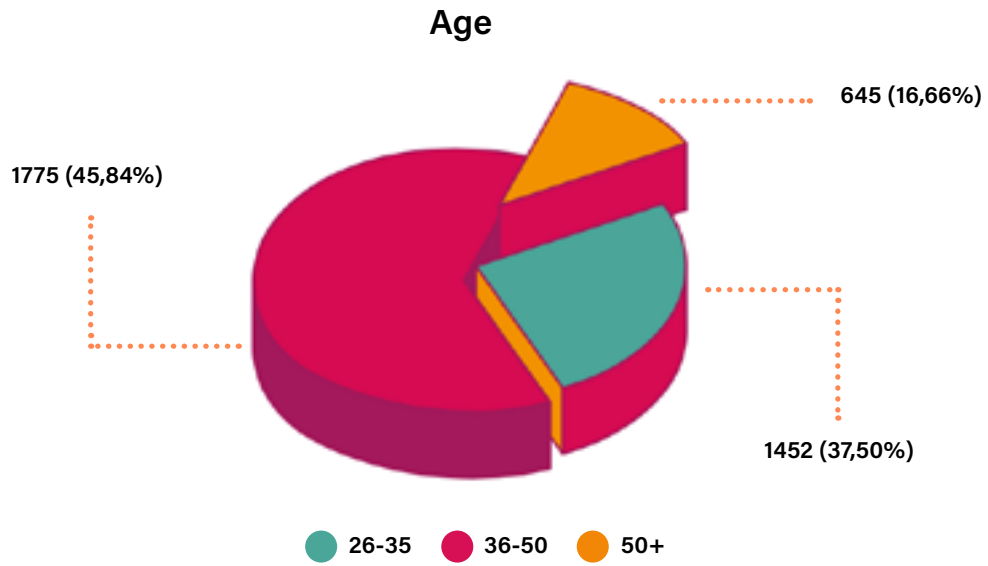


Figure 2 - Age of the participants

3 groups of the respondents, who participated this survey, were these:

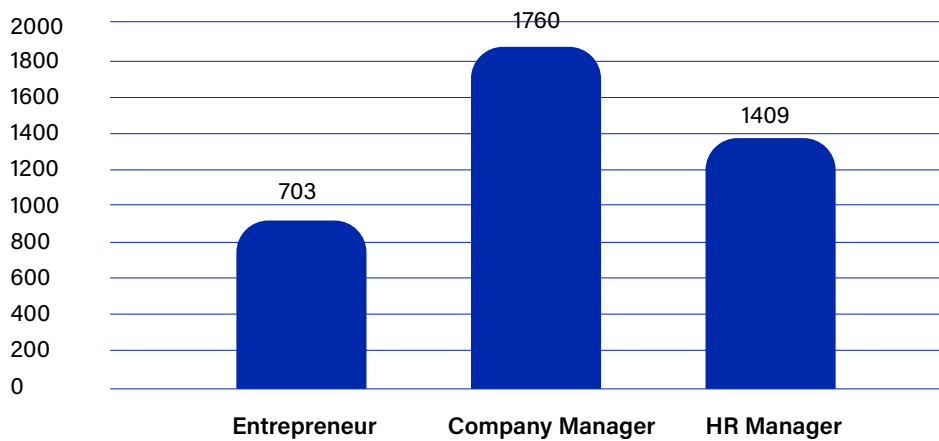


Figure 3 - Category of the participants

As we can see in the chart, the majority of participants (1760 persons, 45,45%) are in the positions of Company Manager. Human Resource Managers represent the 36,39% (1409 people), while the remaining ones (703 people, 18,16%) are entrepreneurs.

We asked the participants also to which **European key industry sector they belong to**.

EU Key industry sectors

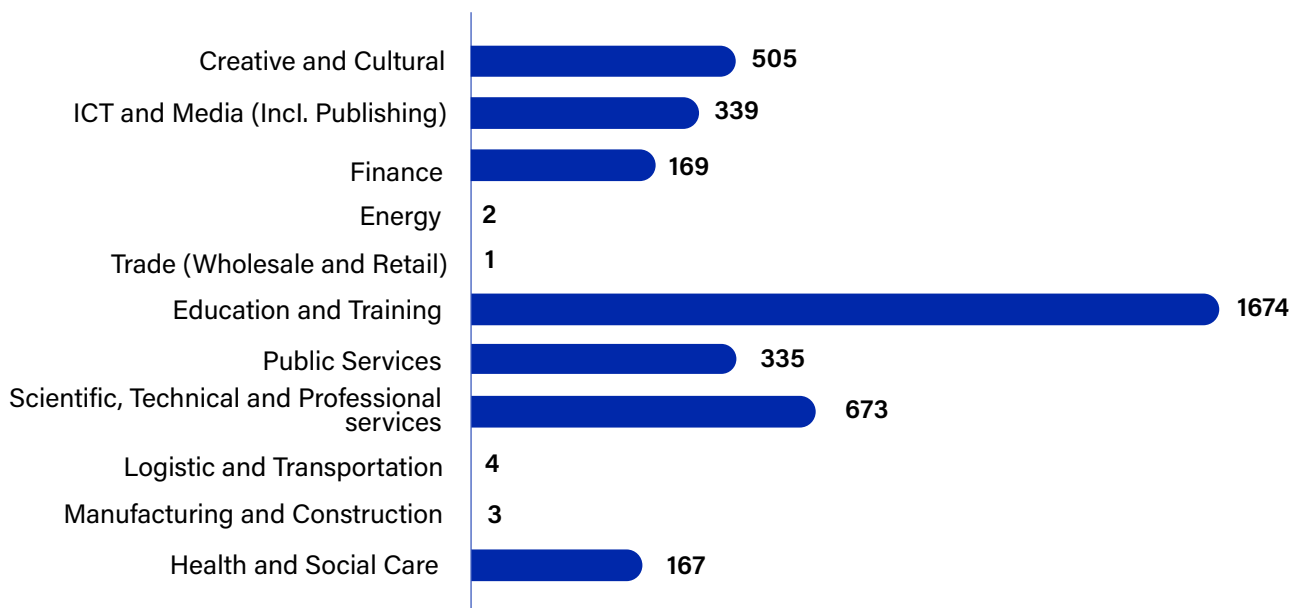


Figure 4 - Industrial sectors of the participants

The answers showed that majority of participants comes from the “Education and Training” sector (1674 people, 43,23%). Respondents from “Scientific, Technical and Professional Services” sector are 673 (17,38%), while 505 participants belong to the “Cultural and Creative” sector (13,04%). Quite close are the “ICT and Media (including Publishing)” sector and the one related to “Public Services”: the first one count 339 (8,76%), while the second one 335 (8,65%). Even the “Finance” and “Health and Social care” sectors are close in terms of representatives: people from the first one are 169 (4,37%), while from the second one are 167 (4,31%). Fewer representatives from “Logistic and Transportation” (4 people, 0,10%), “Manufacturing and Construction” (3 people, 0,08%), “Energy” (2 people, 0,05%), and “Trade (Wholesale and Retail)” (1 person, 0,03%).

2.2 State of the art, digital readiness and gaps

The first section of the survey (from question 6 to question 9) was aimed to investigate the current state of the art of digital skills in labour market, in particular to better understand its digital readiness and the potential gaps to be filled in with training and new initiatives and the related challenges.

Question 6 - Do you think that your current workforce is equipped to handle the digital transformation?

This question aimed to understand the general perceptions of the participants regarding the level of equipment of their current workforce (in terms of knowledge, abilities and skills) in facing on the digital transformation, which penetrate the labour market and the civil society.

Equipment to handle digital transformation

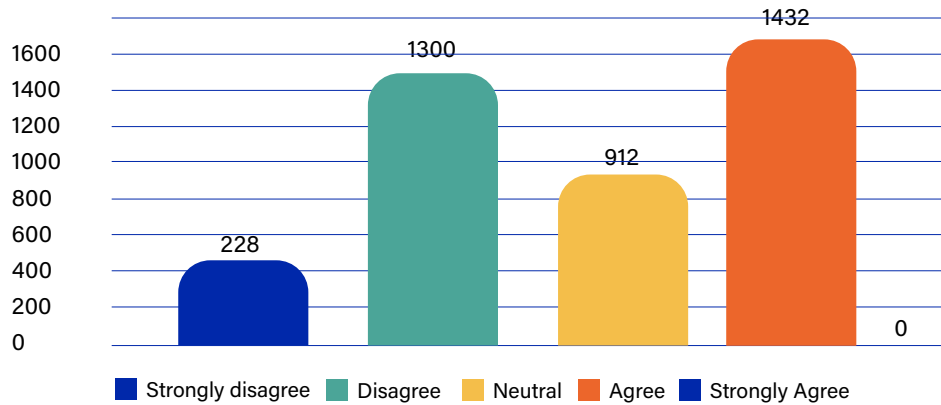


Figure 5 - Level of equipment of the current workforce to handle digital transformation

As we can see in the chart (Fig.5), a slight majority of participants thinks that their current workforce **has all the knowledge and skills to handle the digital transformation at work** ("Agree" was voted by 1432 people, 36,99%). But quite close to this level, the opposite opinion ("Disagree") was voted by 1300 people (33,57%), as proof that a good part of the interviewees does not consider their collaborators/workers/employees to have the proper background that allows them to effectively manage the digital transformation. This position/perception seems to be confirmed by 228 people (5,89%), who do not believe this statement to be true at all: indeed, they "Strongly disagree", so they consider their workforce not equipped to handle this phenomenon at all. Lastly, 912 people (23,55%) was "Neutral", while nobody thinks that its workforce is fully equipped with all those skills to handle it, since 0 people voted "Strongly agree".

The audience of interviewees seems to be totally divided position on the issue, but if we add up the numbers of people who disagree and strongly disagree with the statement that their workforce is equipped to handle the digital transformation, it turned out that the majority of the participants believe that they are not equipped enough. Therefore, there is still a lot of margins to work to equip one's workforce with the right skills.

Question 7 - What are the biggest challenges in closing the digital skills gap?

Through this question we tried to investigate the participants' opinions regarding the biggest challenges they are facing on in closing the digital skills gaps in their working settings.

Challenges in closing the digital skills gaps (%)

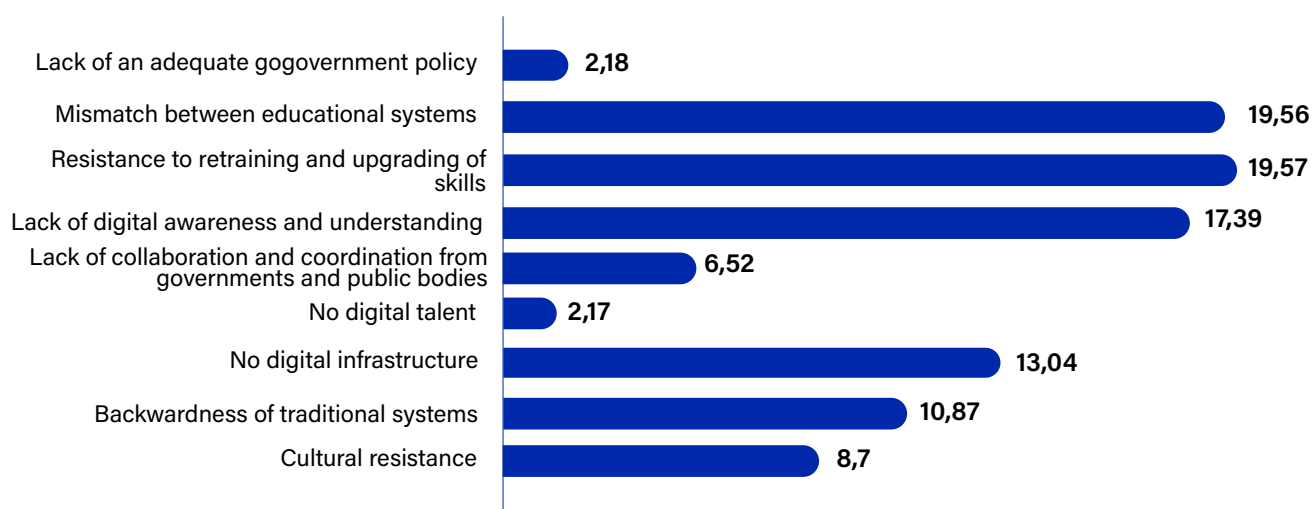


Figure 6 - The biggest challenges in closing the digital skills gaps

This graph (Fig.6) shows the percentages that correspond to the answers obtained for each possibility.

The 3 statements that have been considered as having the greatest impact and which therefore, as such, are recognized as real challenges for the sectors are the following:

- **Mismatch between educational systems and the needs of the working world (19,57%)**
- **Resistance to retraining and upgrading of skills (19,56%)**
- **Lack of digital awareness and understanding (17,39%)**

While the first refers to a discrepancy between the labour market and the educational systems, which are not always able to detect and fill company needs with the right training offers, the last two ("Resistance to retraining and upgrading of skills" and "Lack of digital awareness and understanding") refer directly to the worker/collaborator/employee: in the first case ("Resistance to retraining and upgrading of skills") a sort of resistance and closure in being retrained and/or upgraded is attributable to him/her, the second ("Lack of digital awareness and understanding") notes his/her objective lack of digital awareness and its understanding.

A very high response rate has also been attributed to phenomena such as:

- No digital infrastructure (13,04%) in the companies, which clearly represents a lack which, if not filled, precludes the possibility of approaching digital transformation at all.
- Backwardness of traditional systems (10,87%), systems totally extraneous to digital which, if continuously used and followed, consequently entails a reduced propensity for all that is digital.
- Cultural resistance (8,70%), both of middle management and of the workforce, which clearly affects the possibility of developing upskilling and reskilling solutions to improve digital capabilities and their real results.

Significantly lower response rates attributed to:

- Lack of collaboration and coordination from governments and public bodies (6,52%)
- Lack of an adequate government policy (2,18%)
- No digital talent (2,17%)

Question 8 - What digital skills gap is affecting your current workforce?

Based on the skills and the 5 competence areas of the **Digital Competence Framework for Citizens (DigComp)**, the European framework which provides a common understanding of what digital competences are, this question aimed to collect participants' opinions regarding the digital skills lacking in their companies.

Since these are complex details to analyse, we start by highlighting the percentage weights (aggregate data) of the areas of competence of the DigComp Framework selected as deficient in the workforce of the interviewees.

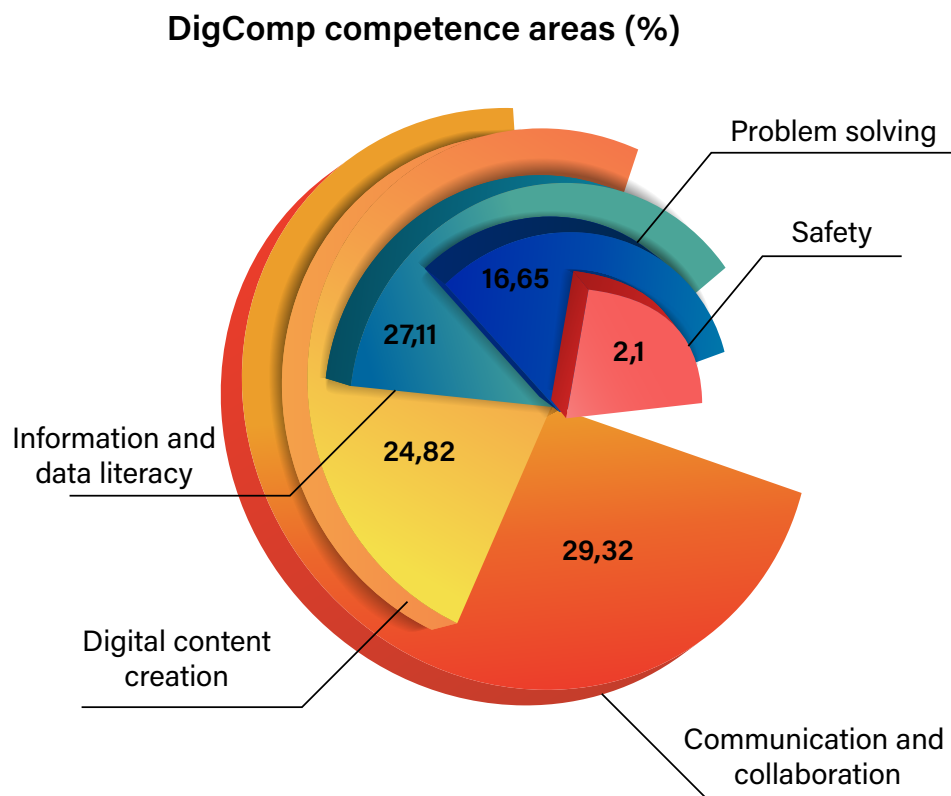


Figure 7 - Percentages per DigComp competence areas

As can be seen from Fig.7, the areas of competence of **“Communication and collaboration”**, **“Information and data literacy”**, and **“Digital content creation”** are all around similar percentages: 29,32% (“Communication and collaboration”), 27,11% (“Information and data literacy”), and 24,82% (“Digital content creation”). A slight detachment characterizes the “Problem solving” competence area, considered as problematic in terms of gaps only by 16,65% of respondents. While the “Safety” area of competence is declared as an area not affected by the gap in the workforce of the interviewees (only 2,1%).

More details below regarding the percentage per each single competence.

Area	Competence	%
Information and data literacy	Browsing, searching and filtering data, information and digital content	6,28
	Evaluating data, information and digital content	12,5
	Managing data, information and digital content	8,33
Communication and collaboration	Interacting through digital technologies	4,21
	Sharing through digital technologies	4,2
	Engaging in citizenship through digital technologies	4,22
	Collaborating through digital technologies	4,17
	Netiquette	4,18
	Managing digital identity	8,34
	Developing digital content	10,42
Digital content creation	Integrating and re-elaborating digital content	6,2
	Copyright and licences	4,2
	Programming	4
	Protecting devices	0
Safety	Protecting personal data and privacy	2,1
	Protecting health and well-being	0
	Protecting the environment	0
	Solving technical problems	6,27
Problem solving	Identifying needs and technological responses	2,06
	Creatively using digital technologies	6,25
	Identifying digital competence gaps	2,07
	Total	100

Table 2 - Competences as digital skills gaps

Regarding the "Information and data literacy" area, it is interesting to notice that the "Evaluating data, information and digital content" skill is the one considered more impactful in terms of gaps (12,5%), while a little further down there are "Managing data, information and digital content" skill (8,33%) and "Browsing, searching and filtering data, information and digital content" (6,28%).

In the "Communication and collaboration" area, a leading position is recognized for "Managing digital identity" (8,34%), while all the other skills attest to values around 4%, considered relevant in a homogeneous way, as follows:

- Engaging in citizenship through digital technologies (4,22%)
- Interacting through digital technologies (4,21%)
- Sharing through digital technologies (4,2%)
- Netiquette (4,18%)
- Collaborating through digital technologies (4,17%)

The most voted competence in the area of "Digital content creation" is the "Developing digital content" (10,42%), which refers to a very common transversal working activity in business nowadays. The remaining ones attest to homogeneous values such as:

- Integrating and re-elaborating digital content (6,2%)
- Copyright and licences (4,2%)
- Programming (4%)

In the "Safety" area only the "Protecting personal data and privacy" competence has been voted, with a very low percentage (2,1%), while the other skills ("Protecting devices", "Protecting health and well-being", and "Protecting the environment") received no votes at all (0%).

In the last area of "Problem solving", the 4 skills have been collected the following results:

- Solving technical problems (6,27%)
- Creatively using digital technologies (6,25%)
- Identifying digital competence gaps (2,07%)
- Identifying needs and technological responses (2,06%)

Question 9 - What digital skills gap will affect your workforce in the coming years (4 years)?

Question 9 is similar to the previous one, since its answer options are the same (both based on the digital skills included in the DigComp Framework), but the questions are slightly different. While the question number 8 referred to the current situation (actual digital skills gap affecting labour market), the number 9 tries **to investigate the digital skills gap which will affect the workforce in a closer future, and in particular in 4 years**. Doing so, the survey tries to draw a trend for the European industrial sector in terms of digital skills needs.

Here as follows the percentage allocation of the collected answers per DigComp areas:

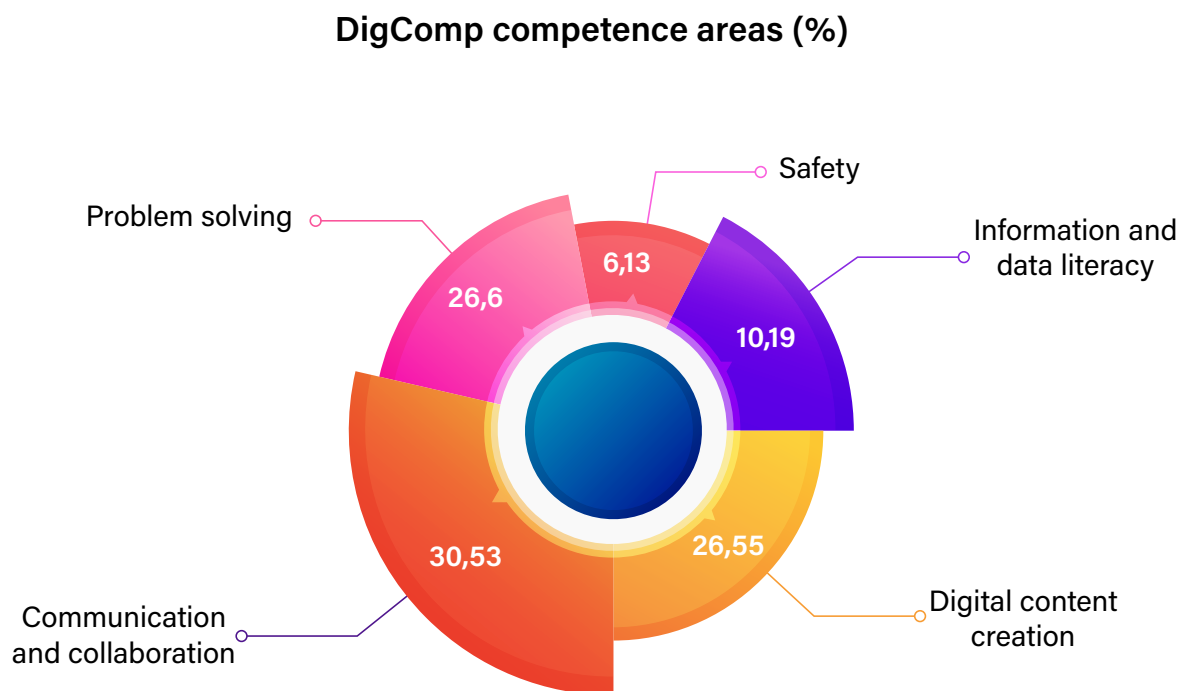


Figure 8 - Percentages per Digcomp competence areas

As Fig.8 shows, the areas of competence of “Communication and collaboration”, “Problem solving” and “Digital content creation” areas are the ones most voted by the respondents (30,53% the first one, 26,60% the second and 26,55% the third), highlighting the fact that the participants think that by 2027 the labour market (and its workforce) will need to acquire new and more knowledge and the skills in this competence areas. The 2 remaining ones are considered less relevant since their values are around 10% or lower:

- Information and data literacy (10,19%)
- Safety (6,13%)

Now, more details regarding the percentage per each single competence:

Area	Competence	%
Information and data literacy	Browsing, searching and filtering data, information and digital content	2
	Evaluating data, information and digital content	4,09
	Managing data, information and digital content	4,1
Communication and collaboration	Interacting through digital technologies	2,04
	Sharing through digital technologies	4,08
	Engaging in citizenship through digital technologies	2,04
	Collaborating through digital technologies	10,2
	Netiquette	4,07
	Managing digital identity	8,1
	Developing digital content	8,16
Digital content creation	Integrating and re-elaborating digital content	8,22
	Copyright and licences	4,03
	Programming	6,14
	Protecting devices	0
Safety	Protecting personal data and privacy	6,13
	Protecting health and well-being	0
	Protecting the environment	0
	Solving technical problems	12,24
Problem solving	Identifying needs and technological responses	6,12
	Creatively using digital technologies	4,1
	Identifying digital competence gaps	4,14
	Total	100

Table 3 - Competences as digital skills gaps

Regardless of the areas of competence, the following two digital skills are the ones that have garnered the most success, so the ones which will be mostly affected by the digital skills gaps in the next 4 years:

- Solving technical problems (12,24%), from "Problem solving" area
- Collaborating through digital technologies (10,20%), from "Communication and collaboration" area

Around 8%, the following ones, two of which share the same reference area:

- Integrating and re-elaborating digital content (8,22%), from "Digital content creation" area
- Developing digital content (8,16%), from "Digital content creation" area
- Managing digital identity (8,10%), from "Communication and collaboration"

The skills that have been reported as relevant from now to the next 4 years, amounting to around 6%, pertain to totally different areas:

- Programming (6,14%), from "Digital content creation" area
- Protecting personal data and privacy (6,13%), from "Safety" area
- Identifying needs and technological responses (6,12%), from "Problem solving" area

Going down around the percentage of 4%, we find the following skills:

- Identifying digital competence gaps (4,14%), from "Problem solving" area
- Managing data, information and digital content (4,10%), from "Information and data literacy" area
- Creatively using digital technologies (4,10%), from "Problem solving" area
- Evaluating data, information and digital content (4,09%), from "Information and data literacy" area
- Sharing through digital technologies (4,08%), from "Communication and collaboration" area
- Netiquette (4,07%), from "Communication and collaboration" area
- Copyright and licences (4,03%), from "Digital content creation" area

Only 3 digital skills got a preference around 2%:

- Interacting through digital technologies (2,04%), from "Communication and collaboration" area
- Engaging in citizenship through digital technologies (2,04%), from "Communication and collaboration" area
- Browsing, searching and filtering data, information and digital content (2%), from "Information and data literacy" area

Lastly, the 3 skills that have not obtained any preference (0%) are all part of the "Safety" area, demonstrating that this area is not perceived as problematic in the future:

- Protecting devices
- Protecting health and well-being
- Protecting the environment

2.3 Training needs and education/training/lifelong learning opportunities

The second section of the survey (questions 10 to 14) aimed to investigate the relationship between digital skills and the world of education and training, with a focus on investigating whether the education system is sufficiently prepared to offer the necessary e-skills required by the world of work.

Question 10 - What is the level of understanding of your national education system's (Higher Education - HE, Initial Vocational Education Training - IVET and Continuing Vocational Education Training - CVET) about the digital skills needs requested by the labour market?

The first question in this section, as well as question number 10 of the questionnaire, invites respondents to give their opinion on the level of **understanding of their national education system** (Higher Education - HE, Initial Vocational Training - IVET and Continuing Vocational Training - CVET) **regarding the digital skills needs of the labour market.**

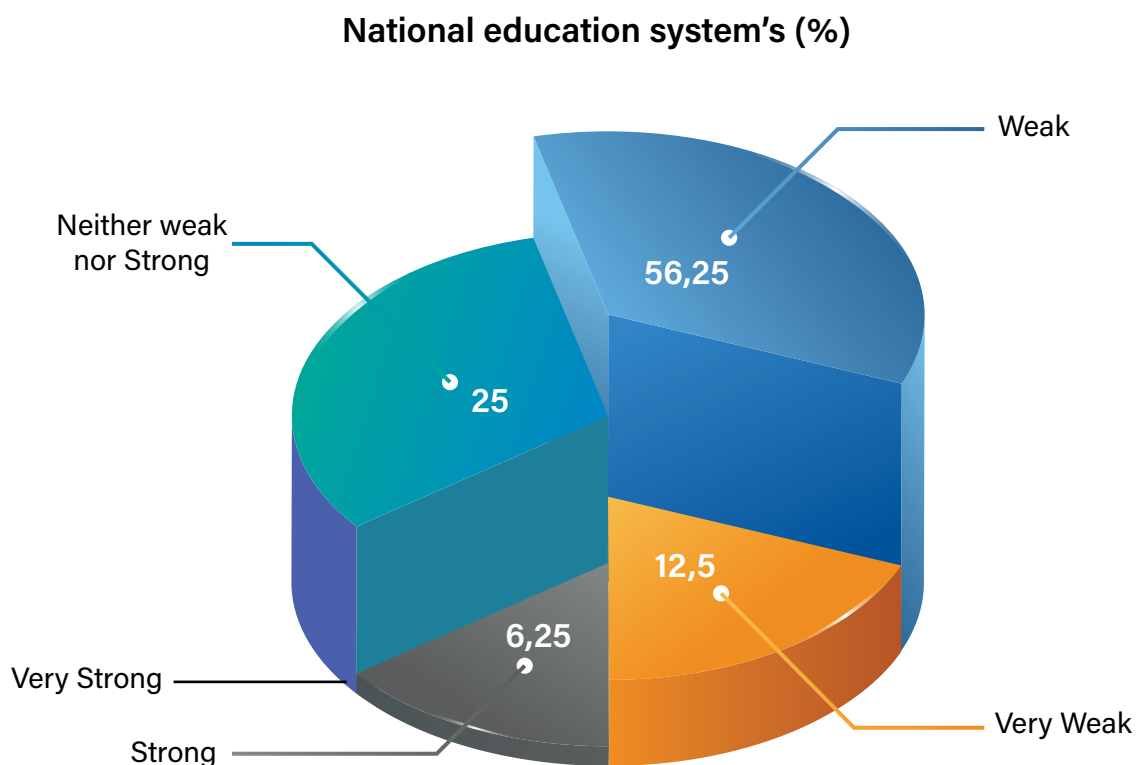


Figure 9 - Level of understanding of your national education system's

As shown in the previous graph (Fig.9), the majority of respondents (56,25% of the total), believe that the system is “weak” in the level of understanding compared to the real demand for digital skills in the world of work. 25% answered “neither weak nor strong”, probably not having a clear opinion on this question or thinking that the system is sufficient but neither strong nor weak knowledge prevails. A neutral response could be due to a system that is neither positively nor negatively unbalanced, but which is deficient to some degree.

12,25% believe that the education system is “very weak” with respect to knowledge and understanding of the digital skills that are required in the world of work. Finally, only 6,5% of the respondents believe that their educational system is “strong”, i.e., adequate in knowledge of this topic.

These data reveal that although to a certain measure, **the education and training system is trying to adapt to the digital skills that are demanded of workers in the labour market**, there is still much to be done in terms of improvement and efficiency.

Question 11 - What is the level of commitment of your national HE system in closing the digital skills gap?

While the previous question investigated whether the education and training system is aware of the adequate digital skills required in the world of work, question 11 moves on to the next step. With this question we want to investigate the degree of responsiveness of national Higher Education systems in bridging the digital-skills gap.

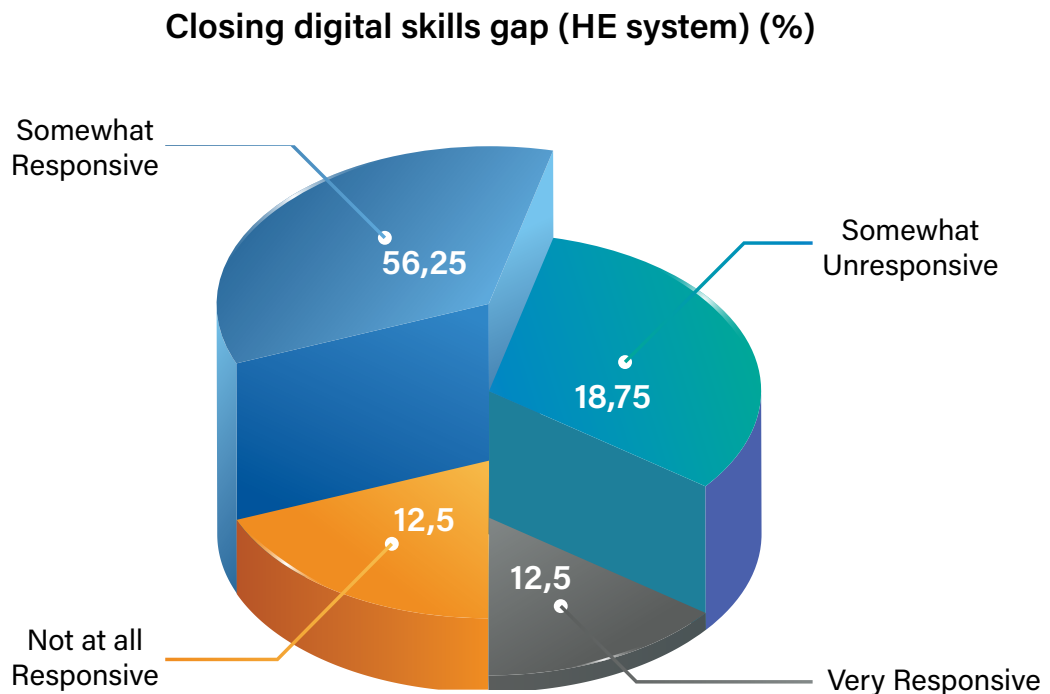


Figure 10 - Level of commitment of your national HE system in closing the digital skills gap

As can be seen in the graph in point (Fig.10), 56,25% of the respondents (2178 out of 3872) answered "Somewhat Responsive" to question 11. The majority of respondents considered therefore that in some way their national HE system responds to the need to close the digital skills gap.

Analysing the other data, it can be seen that the second highest number of responses is the 18,75% who answered, "somewhat unresponsive". 726 out of 3872 respondents considered their national HE system inadequate to take action to close the digital skills gap. The answers "not at all responsive" and "very responsive" were tied at 12,5% of the respondents.

It can therefore be seen from the answers that the respondents believe that to some extent the national HE system has implemented ways to close the digital skills gap but that, nevertheless, there is still a lot of margins for improvement.

Question 12 - What is the level of commitment of your national IVET and CVET system in closing the digital skills gap, especially regarding the lifelong learning opportunities?

Question 11, just analysed, and question 12, now under consideration, both aim to investigate the responsiveness of educational systems to a digital competence gap. They are therefore very similar, what changes is the subject under examination, whereas in the previous question, the national HE system was examined, in this one the systems IVEC and CVET.

Therefore, with this question (question 12), we want to investigate the degree of responsiveness that the national IVEC and CVET systems possess in bridging the digital skills gap and in particular those related to lifelong learning.

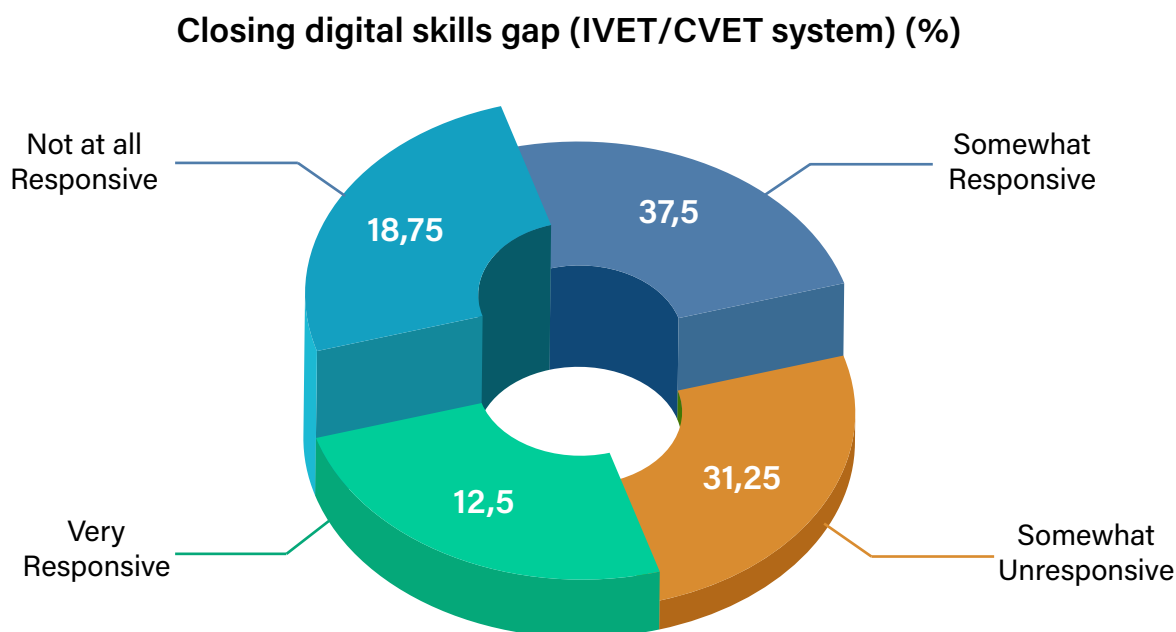


Figure 11 - Level of commitment of your national IVET and CVET system in closing the digital skills gap

As can be seen in the graph (Fig. 11), 37,5% of the respondents considered the level of commitment of the national IVET and CVET system in bridging the digital skills gap to be "somewhat responsive".

At a small percentage distance (31,25%) are those who consider the national IVET and CVET system to be "somewhat unresponsive": 18,75% of the respondents declare that they consider their national IVET and CVET system to be "not at all responsive", while 12,5%, the lowest percentage of respondents, declare their national IVET and CVET system to be "very responsive".

Although the highest percentage of survey participants stated that their national IVET and CVET system is "somewhat responsive" in bridging the digital skills gap, it is not such a high percentage to consider the level sufficiently adequate.

Therefore, it is still important to support the IVET and CVET system to improve its actions to close this gap. Also, by virtue of a considerable percentage of people responding with "Somewhat unresponsive".

Question 13 - In your opinion, is the level of digital competences offered by educational systems (HE, VET, CVET) adequate to the needs of your company?

In question 13, respondents are asked whether the level of digital skills offered by educational systems (HE, VET, CVET) is adequate for their company's needs. The objective is to understand whether or not the level of digital competences offered by the educational system, in a general sense, is adequate for the world of work.

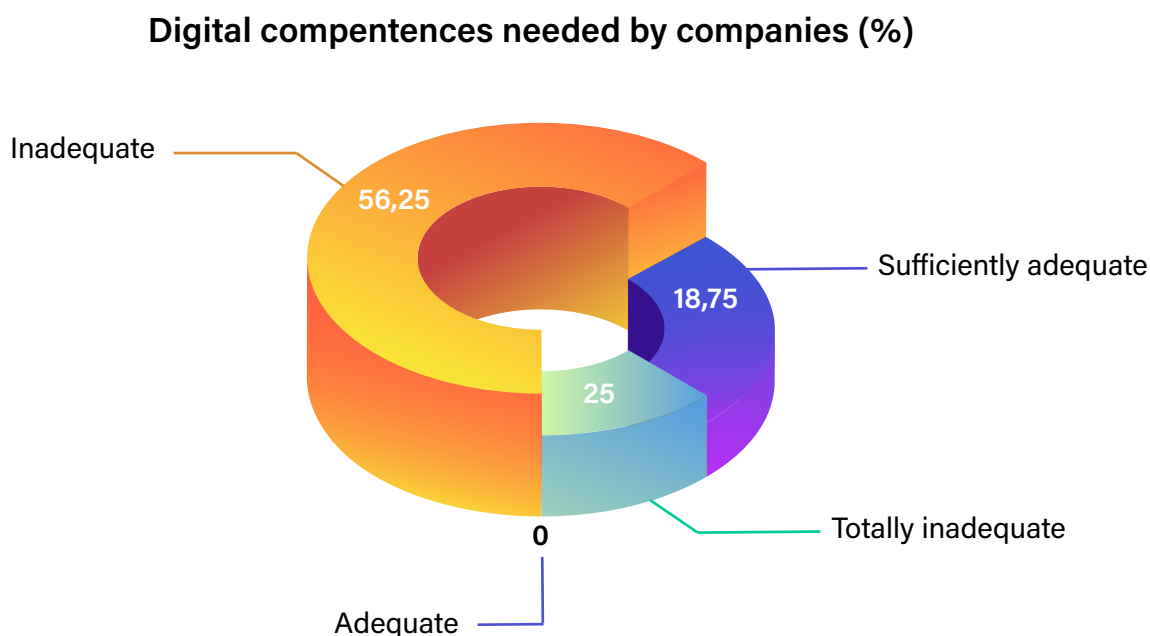


Figure 12 - Level of digital competences offered by educational systems related to the needs of the companies

56,25% of the respondents felt that the level of e-skills offered by educational systems (HE, VET, CVET) was "inadequate" for their company's needs. This reveals a gap, therefore, between the skills that companies require from their workers and those that the education system is able to provide for its students. 18,75% even state that the level is "totally inadequate", while only 25% consider the education system to be sufficiently adequate.

These data show a strong crisis situation in which the world of work and the educational world should be in greater contact in order to be able to intercept needs and understand what skills are needed in the world of work.

Question 14 - Does your organisation offer upskilling and reskilling opportunities for your current workforce?

In question 14, respondents were asked whether their organisation offers further training and retraining opportunities to workers, in order to investigate whether there are ongoing training and retraining offers for those who are already working.

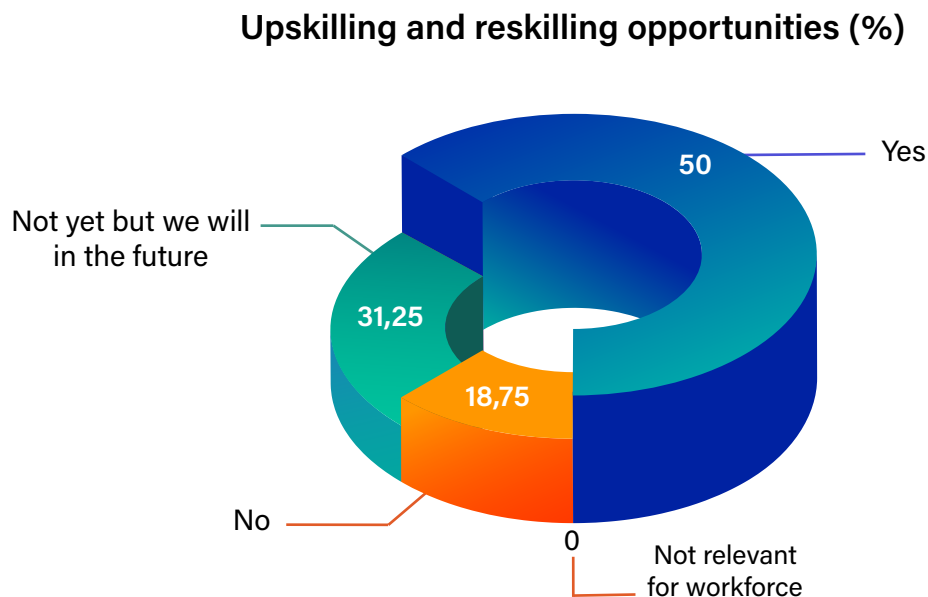


Figure 13 - Level of opportunities for upskilling and retraining for workers

2178 respondents, i.e., 50%, as shown in the graph above, believe that their company offers training and retraining opportunities to their workers. 31,25% replied that **their organisation does not have training and retraining opportunities at the moment but will probably provide them in the future**. Only 18,75% responded that they do not have such opportunities within their organisation.

It can be seen, therefore, that the position with respect to a type of re-skilling and retraining training is good for the respondents and even among those who do not already benefit from this type of opportunity, there is a willingness to offer it to workers in the future. Only a small percentage of workers, on the other hand, do not see a concrete possibility of such training in their work environment.

2.4 Digital skills and green and inclusivity

The third section of the survey (questions 15 to 10) aimed to investigate the level of digital skills in some notoriously disadvantaged groups in the world of work, namely women and people with disabilities, and the relationship between skills and green, which must become a crucial aspect for today's companies.

Question 15 - In your opinion, do you think that in the STEM (Science, Technology, Engineering, and Mathematics) sector women are affected by a gender gap?

The first question (number 15) of this last section concerns the relationship between women and the STEM sector, which is the acronym used to refer to Science, Technology, Engineering, and Mathematics.

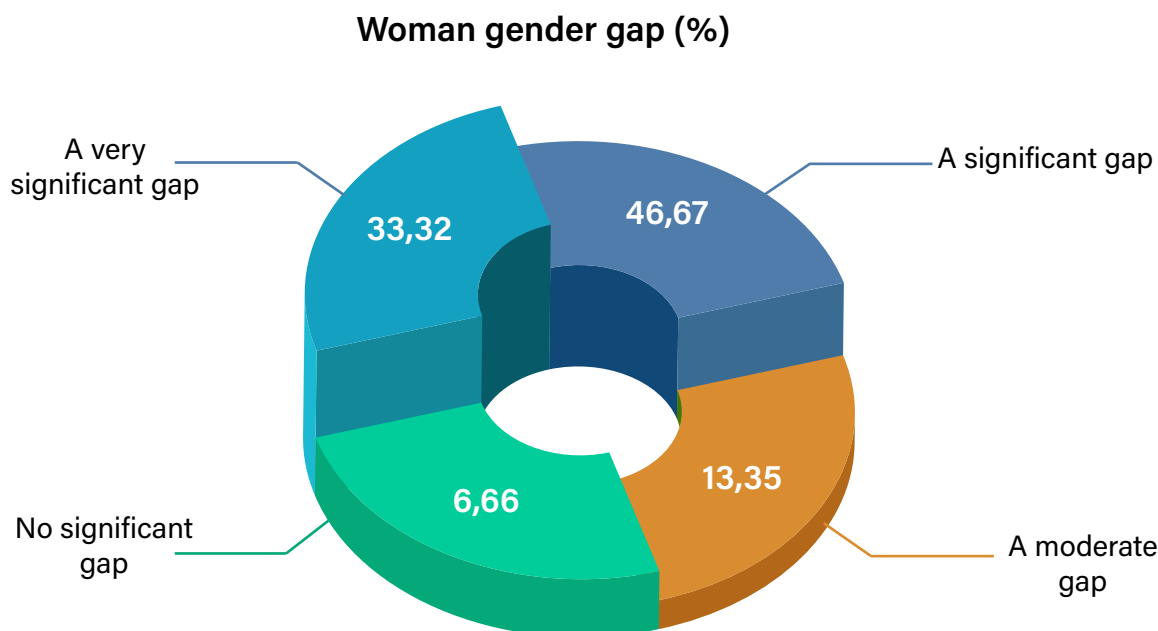


Figure 14 - Level of gender gap in the STEM field

Analysing the data in the graph (Fig.14), we can see that **the situation described by the respondents is very clear**. In fact, 46,67% answered that there is a "significant gap" and 33,32% that there is a "truly significant gap". This means that more than half of the respondents point out that the STEM sector has a significant gap towards women. Only a smaller proportion of the respondents (13,35%) state that there is only "a moderate gap" and very few of the total, i.e., 6,66% state that there is "no significant gap". This figure is fully in line with the European data that complain of discrimination against women in the STEM sector, both during their university education and during their professional career. It is therefore necessary **to promote policies and activities that can make this sector more inclusive for women**, in order to balance this negative trend.

Question 16 - What of the following digital skills are most lacking in women education/training opportunities? (Skills from EU DigComp Framework)

As already mentioned in some questions in previous sections, question 16 concerns digital competences and the five competence areas of the Digital Competence Framework for Citizens (DigComp), the European framework providing a common understanding of digital competences.

In particular, this question aimed to gather participants' opinions on the digital competences most lacking in women's education and training opportunities.

Digital skills in women's education/training (%)



Figure 15 - Lack of digital skills in women's education/training opportunities

Analysing the data in the graph (Fig.15), we can see that some competences stand out more than others, thus concluding that, according to the participants, there are some DigComp competences that women most lack in terms of opportunities in their training and education.

The digital skills most lacking in women's education and training opportunities for survey respondents are:

- Programming (21,62%), from "Digital content creation" area
- Solving technical problems (16,55%), from "Problem solving" area

Above 10% we have only these statistics, which are nevertheless relevant because they concern two of the most technical digital competences areas of DigComp. This reflects the negative trend that women have less training in the more specific digital skills, such as "programming" and "solving technical problems".

These statistics are followed by:

- Protecting personal data and privacy (9,25%), from "Safety" area
- Creatively using digital technologies (6,95%), from "Problem solving" area
- Managing digital identity (6,9%), from "Communication and collaboration" area
- Copyright and licences (5,79%), from "Digital Content Creation" area
- Managing data, information and digital content (5,04%), from "Information and data literacy" area

Among the lowest digital competences, however, it is possible to note:

- Browsing, searching and filtering data, information and digital content (0,13%), from "Information and data literacy" area
- Protecting the environment (0,21%), from "Safety" area

It is noticeable that the **more complex and specific the skills are, the less the gap is recorded by survey respondents**. As all those very general skills such as Internet browsing turn out to have very low values, respondents therefore state that these types of skills are more familiar to women. If we also look at the following table, with the skills divided by areas, we can see that the skills with the lowest percentages, i.e. those most known by women, are also those that are more transversal and are therefore more likely to be present in courses of study and training of various kinds. Whereas the more specific skills, where respondents found a greater gap, are very specific skills that belong to courses of study in the area of STEM subjects, precisely where discrimination against women is highest.

Now, more details regarding the percentage per each single competence divided by each area:

Area	Competence	%
Information and data literacy	Browsing, searching and filtering data, information and digital content	0,13
	Evaluating data, information and digital content	2,51
	Managing data, information and digital content	5,04
Communication and collaboration	Interacting through digital technologies	2,3
	Sharing through digital technologies	0,41
	Engaging in citizenship through digital technologies	0,23
	Collaborating through digital technologies	4,73
	Netiquette	2,53
	Managing digital identity	6,9
	Developing digital content	4,88
Digital content creation	Integrating and re-elaborating digital content	2,53
	Copyright and licences	5,79
	Programming	21,62
	Protecting devices	0,28
Safety	Protecting personal data and privacy	9,25
	Protecting health and well-being	0,31
	Protecting the environment	0,21
	Solving technical problems	16,55
Problem solving	Identifying needs and technological responses	2,61
	Creatively using digital technologies	6,95
	Identifying digital competence gaps	4,26
	Total	100

Table 4 - Competences as digital skills gaps

Question 17 - In your opinion, do you think that in the STEM (Science, Technology, Engineering and Mathematics) sector in your country, there is a gap in the representativeness of people with disabilities?

Question 17 aims to investigate a potential gap of people with disabilities in the STEM field, which, as mentioned earlier, stands for science, technology, engineering and mathematics.

As can be seen from the graph below, the views of respondents regarding the **gap of people with disabilities in the STEM sector** are quite clear.

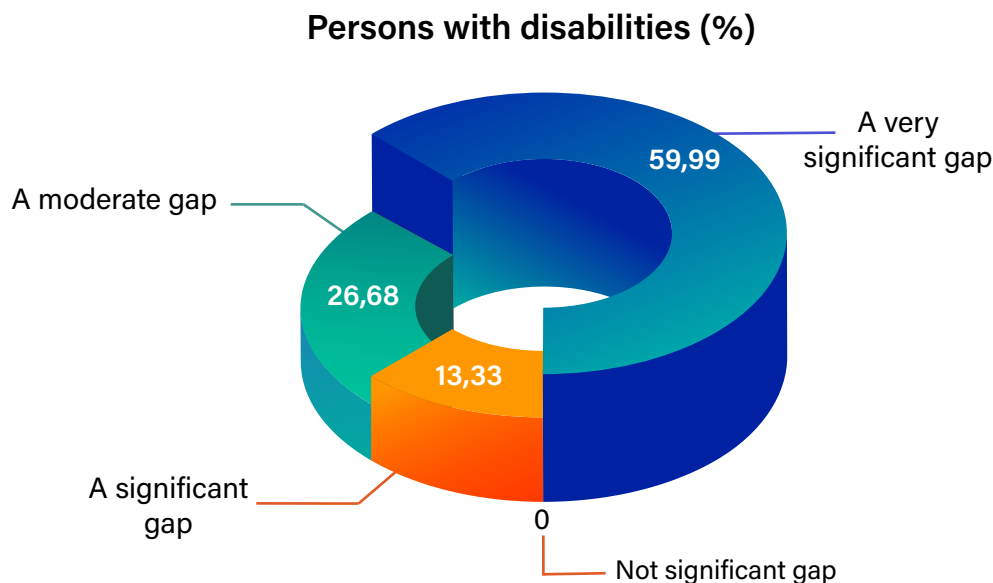


Figure 16 - Gap level in the representation of persons with disabilities in the STEM field

26,68% answered that this gap is "moderate", while only 13,33% answered that there is a "significant gap". Almost 60% of the respondents (more precisely 59,99%) report that there is a "very significant gap" of people with disabilities in the STEM sector. 2323 respondents out of a total of 3872 who took part in the research, thus points to a negative trend that needs to be acted upon. **People with disabilities must have equal rights and equal educational and employment opportunities as the rest of the European citizens** and therefore it is necessary to be alarmed by this data and to promote activities and policies that put their protection at the centre. No one in this survey answered that there is no gap of people with disabilities in the STEM sector. It is therefore noteworthy that out of the total of 3872 people all, to a greater or lesser extent, acknowledge that there is a gap. This figure is thought-provoking because it is totally unbalanced on one side, indicating that the problem is real and evident to all.

Question 18 - What of the following digital skills are most lacking in education/training opportunities for people with disability? (Skills from EU DigComp Framework)

Question 18 aims to investigate which of the following digital competences, based on digital competences taken from the European DigComp Framework, are most lacking in education/training opportunities for people with disabilities.

Analysing the data in the graph, although there are **no digital skills that prevail as strongly** as there were for the same question in relation to women, we can nevertheless see that some skills scored higher than others, which leads us to the conclusion that, according to the participants, **there are certain DigComp skills that are most lacking for people with disabilities in terms of opportunities in their training and education.**

Lack of e-skills in education/training opportunities for people with disabilities (%)



Figure 17 - Lack of e-skills in education/training opportunities for people with disabilities

The digital skills most lacking in education and training opportunities for people with disabilities according to the respondents are:

- Evaluating data, information and digital content (11,57%), from “Information and data literacy” area
- Managing digital identity (9,19%), from “Communication and collaboration” area

Comparing the graph with the one on women's digital skills, (question 16) we can see that compared to that one, where discrimination and lack in more technical digital skills were evident, this one shows a different picture. Respondents pointed out that people with **disabilities lack more digital skills that are considered more "basic" than those indicated for women**, but equally important. In fact, the skills indicated concern people's online behavior and their ability to use data critically. These aspects are fundamental in the digital world because a deficiency in knowledge of these aspects makes a person fragile and defenseless against the dangers online.

Following in percentage points are:

- Browsing, searching and filtering data, information and digital content (6,9%), from "Information and data literacy" area
- Protecting personal data and privacy (6,82%), from "Safety" area
- Interacting through digital technologies (6,82%), from "Communication and collaboration" area

Once again, a lack of basic and fundamental digital skills for people is highlighted. Not being able to search online and filter information, interact through digital media and protect one's data online is extremely dangerous and exposes this already fragile group of people to potential damages.

Following the data that emerged in this question, **there is a need to rethink digital skills training and education for people with disabilities**, who need to build a solid foundation first in order to progress with more complex digital skills later. Having basic digital skills is crucial for living in our society, communicating and entering the world of work, which requires increasingly specific digital skills.

All competencies are listed below with their percentage responses, divided by each area of the DigComp, so that a more complete look at this response can be taken:

Area	Competence	%
Information and data literacy	Browsing, searching and filtering data, information and digital content	6,9
	Evaluating data, information and digital content	11,57
	Managing data, information and digital content	4,55
Communication and collaboration	Interacting through digital technologies	6,82
	Sharing through digital technologies	4,55
	Engaging in citizenship through digital technologies	4,67
	Collaborating through digital technologies	5,71
	Netiquette	4,24
	Managing digital identity	9,19
	Developing digital content	3,51
Digital content creation	Integrating and re-elaborating digital content	2,3
	Copyright and licences	3,98
	Programming	1,58
	Protecting devices	4,8
Safety	Protecting personal data and privacy	6,82
	Protecting health and well-being	2,01
	Protecting the environment	3,33
	Solving technical problems	6,38
Problem solving	Identifying needs and technological responses	1,7
	Creatively using digital technologies	0,31
	Identifying digital competence gaps	5,09
	Total	100

Table 5 - Competences as digital skills gaps

Question 19 - What of the following digital skills are intersectionally relevant for supporting the green revolution? (skills from EU DigComp Framework)

Question 19 is the last of this survey and aims to investigate the relationship between digital skills and the green revolution. In particular, this question investigated the extent to which digital skills are intersectionally relevant to support the green revolution.

Having a quick look at the graph, it is evident that there are some values that were most emphasized by the respondents.

Green revolution (%)



Figure 18 - Link between digital and the green revolution

According to the respondents, the digital competences most relevant across sectors to support the green revolution are:

- Engaging in citizenship through digital technologies (11,94%), from "Communication and collaboration" area
- Developing digital content (11,63%), from "Digital content creation" area

These two answers are the only ones that reached a percentage value above 10% and were the ones most voted by the survey respondents. In their opinion, therefore, these skills are the most important ones to develop in order to facilitate and promote the green revolution, which must be an important goal for everyone: citizens, governments and companies. This question has been included in this survey precisely because **the green revolution can no longer and must no longer be neglected but must be among the most important elements when it comes to strategies and policies**, not only on a European but on a global level. Digital skills play a key role in our century and are increasingly able to lead us to new opportunities for growth and improvement. They are also a great ally in the green revolution, but it is important to know what the key digital skills can be to accelerate this revolution.

Looking again at the data, just below the percentage level 10 can be observed:

- Interacting through digital technologies (9,35%), from "Communication and collaboration" area
- Managing data, information and digital content (8,99%), from "Information and data literacy" area
- Protecting the environment (7,26%), from "Safety" area

These competences also received many responses and are therefore to be taken into account if one plans to implement activities and policies to promote e-skills in relation to the green revolution.

Among the lower percentage values, it is possible to find instead:

- Netiquette (0,54%), from "Communication and collaboration" area
- Identifying digital competence gaps (0,49%), from "Problem Solving" area

Listed below are all the digital competences divided by area following DigComp's division with the percentage values obtained from survey respondents:

Area	Competence	%
Information and data literacy	Browsing, searching and filtering data, information and digital content	4,83
	Evaluating data, information and digital content	4,37
	Managing data, information and digital content	8,99
Communication and collaboration	Interacting through digital technologies	9,35
	Sharing through digital technologies	2,3
	Engaging in citizenship through digital technologies	11,94
	Collaborating through digital technologies	4,94
	Netiquette	0,54
	Managing digital identity	2,02
	Developing digital content	11,63
Digital content creation	Integrating and re-elaborating digital content	2,79
	Copyright and licences	4,6
	Programming	5,19
	Protecting devices	4,68
Safety	Protecting personal data and privacy	2,4
	Protecting health and well-being	2,25
	Protecting the environment	7,26
	Solving technical problems	2,09
Problem solving	Identifying needs and technological responses	1,94
	Creatively using digital technologies	5,45
	Identifying digital competence gaps	0,49
	Total	100

Table 6 - Competences as digital skills gaps

3. CONCLUSIONS AND RECOMMENDATIONS

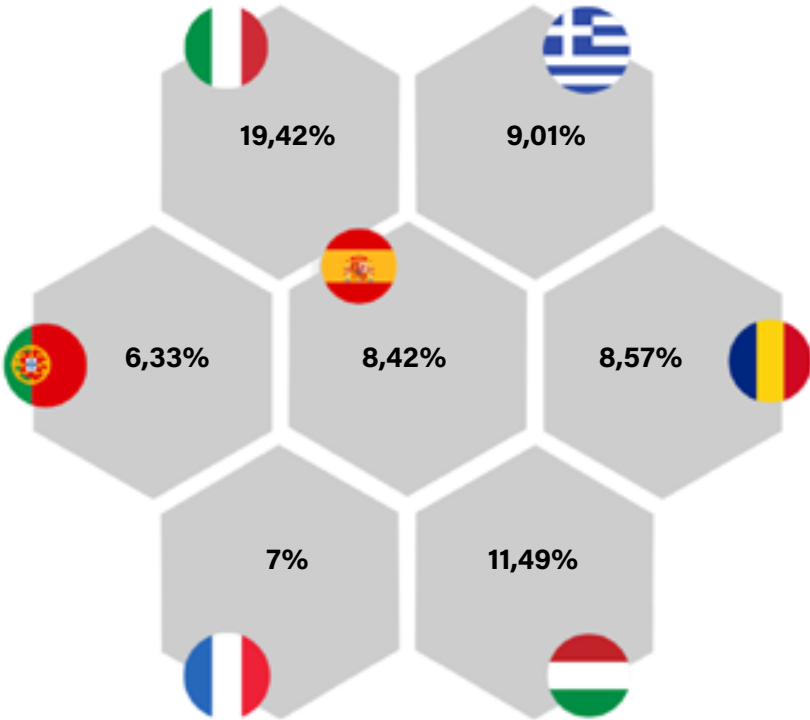
In the previous sections we have analyzed in detail the results of the survey, both for the demographic part and for the ones addressing the specific sectors. In this last section, we will try to draw the conclusions on the base of a cross analysis and finally formulate our recommendations.

3872 people (2258 women, 58,32%, and 1614 men, 41,68%) **from all EU countries** (especially from Italy 19,42%, Hungary 11,49%, Greece 9,01%, Romania 8,57%, Spain 8,42%, France 7% and Portugal 6,33%) attended the survey, replying and sharing

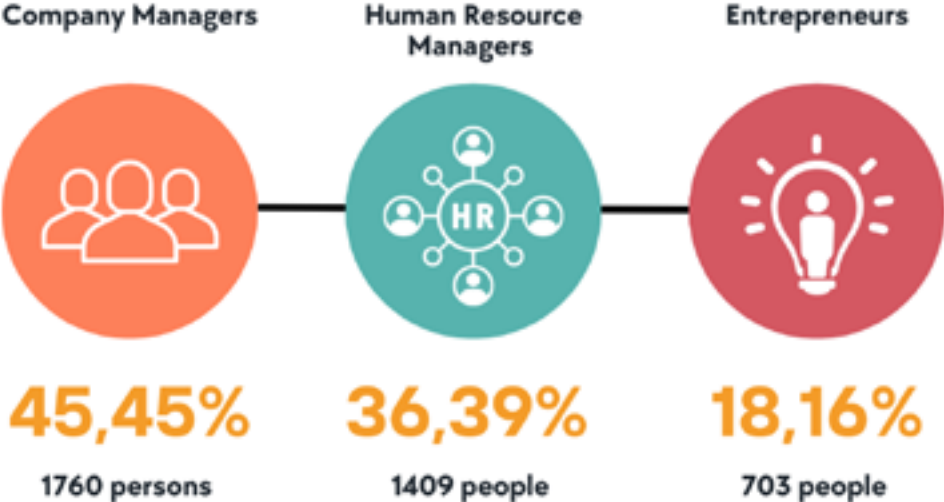
their thoughts about **digital skills required by the European labour market** to analyse the current level of digital knowledge in the workforce, as well as **the level of existing training offers** and **the preparedness for the digital and green transition**.

Survey Participation Rates by Country:

Analyzing Percentages of Respondents



The respondents were part of the **3 key professional clusters in the EU labour market**, thus able to give an effective overview on this topic:



and they belonged to some of the European key industry sectors, such as:



The **FIRST SECTION** of the survey (“State of the art, digital readiness and gaps”) was aimed to investigate the **current state of the art of digital skills in labour market** to better understand its digital readiness and the potential gaps to be filled in with training and new initiatives and the related challenges.

Interviewed: 3872 people



Digital Transformation Challenges:

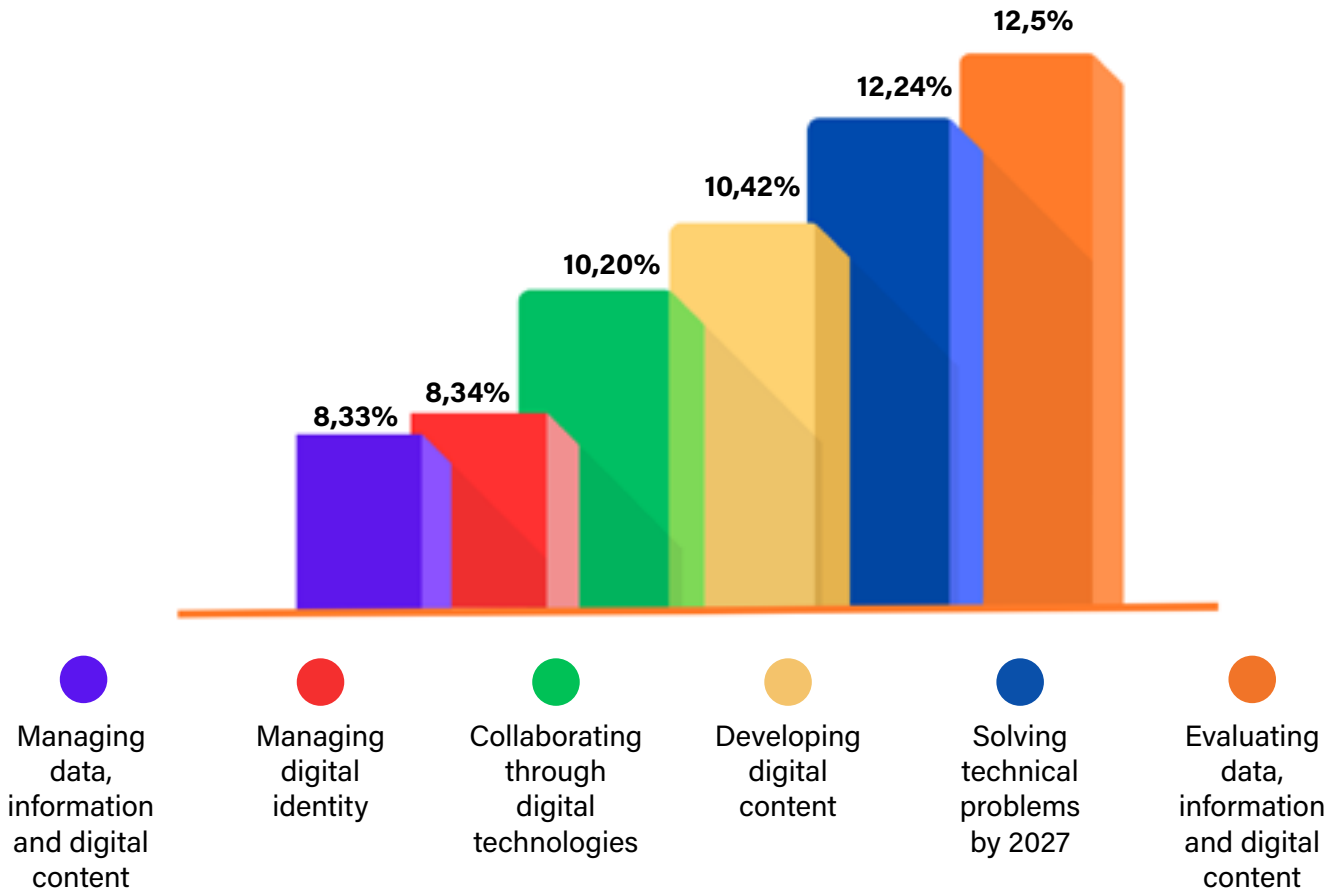


In terms of the **digital skills most required by the labour market**, it is very interesting the transversal analysis in a future perspective that emerges from the 2 questions aimed to discover these gaps nowadays (Question 8) and in the next 4 years (Question 9).

While most of the current gaps refers to the **DigComp Areas** of "Communication and collaboration" (29,32%), "Information and data literacy" (27,11%), and "Digital content creation" (24,82%), the ones defined as crucial in the future are in the areas of "Communication and collaboration" (30,53%), (26,60%) and "Digital content creation" (26,55%). 2 areas out of 3, such as "Communication and collaboration" and "Digital content creation",

are confirmed and recognized as relevant both nowadays and in the future, while one area considered relevant today ("Information and data literacy") then gives way to another ("Problem solving"), a sign that the level of maturity in the digital approach between today and the next few years will change relatively from a less expert level to a more proficiency one.

The most relevant skills recognized in 2023



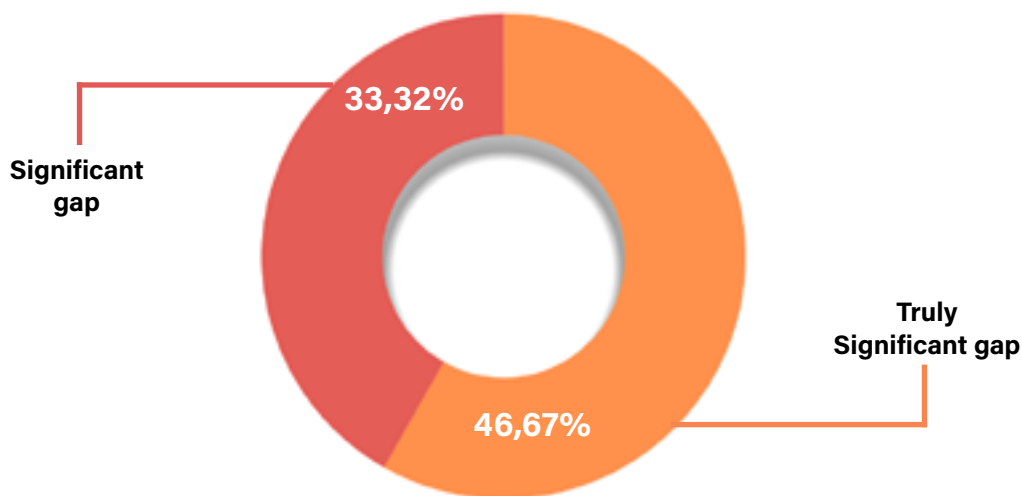
The SECOND SECTION of the survey (“Training needs and education/training/lifelong learning opportunities”) was aimed to investigate the **relationship between digital skills and the world of education and training**, with a focus on **investigating whether the education system is sufficiently prepared to offer the necessary e-skills required by the world of work.**

The majority of respondents (56,25% of the total) believes that the **national education systems** (Higher Education - HE, Initial Vocational Training - IVET and Continuing Vocational Training - CVET) **are quite “weak” in their level of understanding compared to the real demand for digital skills in the world of work**, but it is very interesting to note that, at least in terms of degree of **responsiveness of national Higher Education systems in bridging the digital-skills gap**, the 56,25% of the respondents considers that in some way their national HE system concretely responds to the need to close the digital skills gap, revealing that there is still much to be done in terms of their improvement and efficiency but that something is starting working. Lower percentage (50%) are recognized to the

VET systems (both the Initial one and to Continuous one) for their responsiveness, leaving more margin for improvements in this area. In terms of the adequacy level of digital skills offered by educational systems (HE, VET, CVET) for their company’s needs, the 56,25% of the respondents felt that this level is inadequate, revealing a problematic situation in which the world of work and the educational system should be closer in intercepting business needs. While, regarding the offers of On-the-Job Training (OJT), the majority of the respondents (50%) believe that their company offers training and retraining opportunities to their workers, while the 31,25% replied that their organisation does not have training and retraining opportunities at the moment but will probably provide them in the future.

The THIRD SECTION of the survey (“Digital skills and green and inclusivity”) was aimed to investigate the level of e-skills in some notoriously disadvantaged groups in the world of work, namely **women and people with disabilities** and **the relationship between skills and green revolution**, which must become a crucial aspect for today’s companies.

Regarding the **relationship between women and the STEM sector**, we can see that the situation described by the respondents is very clear and fully in line with the European data that complain of discrimination against women: 46,67% answered that there is a “significant gap” and 33,32% that there is a “truly significant gap”. The digital skills most lacking in women’s education and training opportunities for survey respondents are “Programming” (21,62%) and “Solving technical problems” (16,55%).

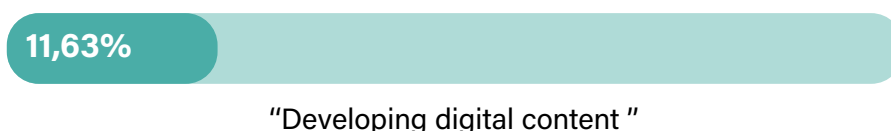
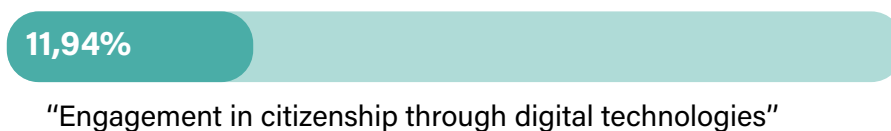


Concerning **the gap of people with disabilities in the STEM field**, 2323 respondents out of 3872 (59,99%) point to a negative trend that needs to be acted upon and no one answered that there is no gap: it is therefore noteworthy that out of the total of 3872 people all, to a greater or lesser extent, acknowledge that there is a gap.

The digital skills most lacking in education and training opportunities for people with disabilities according to the respondents are:



Lastly, the extent to which **digital skills are intersectionally relevant to support the green revolution** highlights that the digital competences most relevant across sectors to support this phenomenon are related to:



From these conclusions and through the analysis of the quantitative results of the 3 sections we draw the following recommendations, which have been categorised as:

**Transversal, i.e,
true for all the sections**

**Specific, i.e, true for a
certain sector (education
sector o labour market)**

TRANSVERSAL RECOMMENDATIONS



SPECIFIC RECOMMENDATIONS



Recommendations for the European/national/regional education





SPECIFIC RECOMMENDATIONS



Recommendations for the world of work:

01

Continue to offer opportunities for workers to update and retrain in order to remain flexible and competent.

SPECIFIC RECOMMENDATIONS



Recommendations for the STEM sector (both educational and work related):

02

Promote policies and activities that can make this sector more inclusive for women.



03

Promote policies and activities that can make this sector more inclusive for people with disabilities.

4. ANNEXES

4.1 Survey questions

The following is the paper version of the research shared in both formats depending on the need and the addresses:



Digital Skills and Jobs

The survey is designed to collect data on the specific digital skills (based on the EU DigComp Framework) required by employers in rapidly changing labour markets and societies. It will also analyse the current level of digital knowledge in the workforce, as well as the level of existing training offers and preparedness for the digital and green transition. This survey was conducted as part of the DIGIT EDU 2023 project, the final report will be shared and discussed with the EC and freely available for everyone. This research is run by DLEARN - European Digital Learning Network ETS.

Section: GENERAL INFORMATION

01. GENDER: Male Female Other

02. HOW OLD ARE YOU? 18-25 26-35 36-50 50+

03. FROM WHICH EU COUNTRY ARE YOU COME FROM?

04. WHICH OF THE FOLLOWING CATEGORIES DO YOU BELONG TO? Entrepreneur Company Manager HR Manager

05. TO WHICH OF THE FOLLOWING EU'S KEY INDUSTRY SECTORS DO YOU BELONG?

Health & Social Care Manufacturing & Construction Logistic & Transportation

Scientific, Technical & Professional Services Public Services Education & Training

Trade (Wholesale & Retail) Energy Finance ICT & Media (Incl. Publishing)

Creative & Cultural

Section: STATE OF THE ART, DIGITAL READINESS AND GAPS

06. DO YOU THINK THAT YOUR CURRENT WORKFORCE IS EQUIPPED TO HANDLE THE DIGITAL TRANSFORMATION? Strongly disagree disagree Neutral Agree Strongly agree

07. WHAT ARE THE BIGGEST CHALLENGES IN CLOSING THE DIGITAL SKILLS GAP? TICK MAX 3 OPTIONS

- Cultural Resistance Backwardness of traditional systems
- No digital infrastructure No digital talent
- Lack of collaboration and coordination from governments and public bodies
- Lack of digital awareness & understanding
- Resistance to retraining and upgrading of skills
- Mismatch between educational systems and the needs of the working world
- Lack of an adequate government policy

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**08. WHAT DIGITAL SKILLS GAP IS AFFECTING YOUR CURRENT WORKFORCE?
(SKILLS FROM EU DIGCOMP FRAMEWORK) - TICK MAX 3 OPTIONS**

INFORMATION AND DATA LITERACY	COMMUNICATION & COLLABORATION	DIGITAL CONTENT CREATION	SAFETY	PROBLEM SOLVING
<ul style="list-style-type: none"> <input type="radio"/> Browsing, searching and filtering data, information and digital content <input type="radio"/> Evaluating data, information and digital content <input type="radio"/> Managing data, information and digital content 	<ul style="list-style-type: none"> <input type="radio"/> Interacting through digital technologies <input type="radio"/> Sharing through digital technologies <input type="radio"/> Engaging in citizenship through digital technologies <input type="radio"/> Collaborating through digital technologies <input type="radio"/> Netiquette <input type="radio"/> Managing digital identity 	<ul style="list-style-type: none"> <input type="radio"/> Developing digital content <input type="radio"/> Integrating and re-elaborating digital content <input type="radio"/> Copyright and licences <input type="radio"/> Programming 	<ul style="list-style-type: none"> <input type="radio"/> Protecting devices <input type="radio"/> Protecting personal data and privacy <input type="radio"/> Protecting health and well-being <input type="radio"/> Protecting the environment 	<ul style="list-style-type: none"> <input type="radio"/> Solving technical problems <input type="radio"/> Identifying needs and technological responses <input type="radio"/> Creatively using digital technologies <input type="radio"/> Identifying digital competence gaps

09. WHAT DIGITAL SKILLS GAP WILL AFFECT YOUR WORKFORCE IN THE COMING YEARS (4 YEARS)? (SKILLS FROM EU DIGCOMP FRAMEWORK) - TICK MAX 3 OPTIONS

INFORMATION AND DATA LITERACY	COMMUNICATION & COLLABORATION	DIGITAL CONTENT CREATION	SAFETY	PROBLEM SOLVING
<ul style="list-style-type: none"> <input type="radio"/> Browsing, searching and filtering data, information and digital content <input type="radio"/> Evaluating data, information and digital content <input type="radio"/> Managing data, information and digital content 	<ul style="list-style-type: none"> <input type="radio"/> Interacting through digital technologies <input type="radio"/> Sharing through digital technologies <input type="radio"/> Engaging in citizenship through digital technologies <input type="radio"/> Collaborating through digital technologies <input type="radio"/> Netiquette <input type="radio"/> Managing digital identity 	<ul style="list-style-type: none"> <input type="radio"/> Developing digital content <input type="radio"/> Integrating and re-elaborating digital content <input type="radio"/> Copyright and licences <input type="radio"/> Programming 	<ul style="list-style-type: none"> <input type="radio"/> Protecting devices <input type="radio"/> Protecting personal data and privacy <input type="radio"/> Protecting health and well-being <input type="radio"/> Protecting the environment 	<ul style="list-style-type: none"> <input type="radio"/> Solving technical problems <input type="radio"/> Identifying needs and technological responses <input type="radio"/> Creatively using digital technologies <input type="radio"/> Identifying digital competence gaps

Section: TRAINING NEEDS AND EDUCATION/TRAINING/LIFELONG LEARNING OPPORTUNITIES

10. WHAT IS THE LEVEL OF UNDERSTANDING OF YOUR NATIONAL EDUCATION SYSTEM'S (HIGHER EDUCATION - HE, INITIAL VOCATIONAL EDUCATION TRAINING - IVET AND CONTINUING VOCATIONAL EDUCATION TRAINING - CVET) ABOUT THE DIGITAL SKILLS NEEDS REQUESTED BY THE LABOUR MARKET?
- Very Weak Weak Neither Weak nor Strong Strong Very Strong
11. WHAT IS THE LEVEL OF COMMITMENT OF YOUR NATIONAL HE SYSTEM IN CLOSING THE DIGITAL SKILLS GAP?
- Not at all Responsive Somewhat Unresponsive Somewhat Responsive Very Responsive
12. WHAT IS THE LEVEL OF COMMITMENT OF YOUR NATIONAL IVET AND CVET SYSTEM IN CLOSING THE DIGITAL SKILLS GAP, ESPECIALLY REGARDING THE LIFELONG LEARNING OPPORTUNITIES?
- Not at all Responsive Somewhat Unresponsive Somewhat Responsive Very Responsive
13. IN YOUR OPINION, IS THE LEVEL OF DIGITAL COMPETENCES OFFERED BY EDUCATIONAL SYSTEMS (HE, VET, CVET) ADEQUATE TO THE NEEDS OF YOUR COMPANY?
- Totally inadequate Inadequate Sufficiently adequate Adequate
14. DOES YOUR ORGANISATION OFFER UPSKILLING AND RESKILLING OPPORTUNITIES FOR YOUR CURRENT WORKFORCE?
- Yes No Not yet but we will in the future Not relevant for workforce

Section: DIGITAL SKILLS AND GREEN AND INCLUSIVITY

15. IN YOUR OPINION, DO YOU THINK THAT IN THE STEM (SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS) SECTOR WOMEN ARE AFFECTED BY A GENDER GAP?
- A very significant gap A significant gap A moderate gap No significant gap
16. WHAT OF THE FOLLOWING DIGITAL SKILLS ARE MOST LACKING IN WOMEN EDUCATION/TRAINING OPPORTUNITIES? (SKILLS FROM EU DIGCOMP FRAMEWORK) - TICK MAX 3 OPTIONS

INFORMATION AND DATA LITERACY	COMMUNICATION & COLLABORATION	DIGITAL CONTENT CREATION	SAFETY	PROBLEM SOLVING
<input type="radio"/> Browsing, searching and filtering data, information and digital content	<input type="radio"/> Interacting through digital technologies	<input type="radio"/> Developing digital content	<input type="radio"/> Protecting devices	<input type="radio"/> Solving technical problems
<input type="radio"/> Evaluating data, information and digital content	<input type="radio"/> Sharing through digital technologies	<input type="radio"/> Integrating and re-elaborating digital content	<input type="radio"/> Protecting personal data and privacy	<input type="radio"/> Identifying needs and technological responses
<input type="radio"/> Managing data, information and digital content	<input type="radio"/> Engaging in citizenship through digital technologies	<input type="radio"/> Copyright and licences	<input type="radio"/> Protecting health and well-being	<input type="radio"/> Creatively using digital technologies
	<input type="radio"/> Collaborating through digital technologies	<input type="radio"/> Programming	<input type="radio"/> Protecting the environment	<input type="radio"/> Identifying digital competence gaps
	<input type="radio"/> Netiquette			
	<input type="radio"/> Managing digital identity			

17. IN YOUR OPINION, DO YOU THINK THAT IN THE STEM (SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS) SECTOR IN YOUR COUNTRY, THERE IS A GAP IN THE REPRESENTATIVENESS OF PEOPLE WITH DISABILITIES?

- A very significant gap
 A significant gap
 A moderate gap
 No significant gap

18. WHAT OF THE FOLLOWING DIGITAL SKILLS ARE MOST LACKING IN EDUCATION/TRAINING OPPORTUNITIES FOR PEOPLE WITH DISABILITY? (SKILLS FROM EU DIGCOMP FRAMEWORK) - TICK MAX 3 OPTIONS

INFORMATION AND DATA LITERACY	COMMUNICATION & COLLABORATION	DIGITAL CONTENT CREATION	SAFETY	PROBLEM SOLVING
<input type="radio"/> Browsing, searching and filtering data, information and digital content	<input type="radio"/> Interacting through digital technologies	<input type="radio"/> Developing digital content	<input type="radio"/> Protecting devices	<input type="radio"/> Solving technical problems
<input type="radio"/> Evaluating data, information and digital content	<input type="radio"/> Sharing through digital technologies	<input type="radio"/> Integrating and re-elaborating digital content	<input type="radio"/> Protecting personal data and privacy	<input type="radio"/> Identifying needs and technological responses
<input type="radio"/> Managing data, information and digital content	<input type="radio"/> Engaging in citizenship through digital technologies	<input type="radio"/> Copyright and licences	<input type="radio"/> Protecting health and well-being	<input type="radio"/> Creatively using digital technologies
	<input type="radio"/> Collaborating through digital technologies	<input type="radio"/> Programming	<input type="radio"/> Protecting the environment	<input type="radio"/> Identifying digital competence gaps
	<input type="radio"/> Netiquette			
	<input type="radio"/> Managing digital identity			

19. WHAT OF THE FOLLOWING DIGITAL SKILLS ARE INTERSECTIONALLY RELEVANT FOR SUPPORTING THE GREEN REVOLUTION? (SKILLS FROM EU DIGCOMP FRAMEWORK) - TICK MAX 3 OPTIONS

INFORMATION AND DATA LITERACY	COMMUNICATION & COLLABORATION	DIGITAL CONTENT CREATION	SAFETY	PROBLEM SOLVING
<input type="radio"/> Browsing, searching and filtering data, information and digital content	<input type="radio"/> Interacting through digital technologies	<input type="radio"/> Developing digital content	<input type="radio"/> Protecting devices	<input type="radio"/> Solving technical problems
<input type="radio"/> Evaluating data, information and digital content	<input type="radio"/> Sharing through digital technologies	<input type="radio"/> Integrating and re-elaborating digital content	<input type="radio"/> Protecting personal data and privacy	<input type="radio"/> Identifying needs and technological responses
<input type="radio"/> Managing data, information and digital content	<input type="radio"/> Engaging in citizenship through digital technologies	<input type="radio"/> Copyright and licences	<input type="radio"/> Protecting health and well-being	<input type="radio"/> Creatively using digital technologies
	<input type="radio"/> Collaborating through digital technologies	<input type="radio"/> Programming	<input type="radio"/> Protecting the environment	<input type="radio"/> Identifying digital competence gaps
	<input type="radio"/> Netiquette			
	<input type="radio"/> Managing digital identity			

20. DO YOU HAVE ANY FURTHER COMMENTS OR IDEAS YOU'D LIKE TO SHARE?

.....
.....
.....
.....

IF YOU WOULD LIKE TO STAY INFORMED ABOUT THE RESEARCH AND ITS RESULT, PLEASE LEAVE HERE YOUR CONTACT:

NAME/FAMILY NAME

ORGANIZATION

COUNTRY

EMAIL ADDRESS

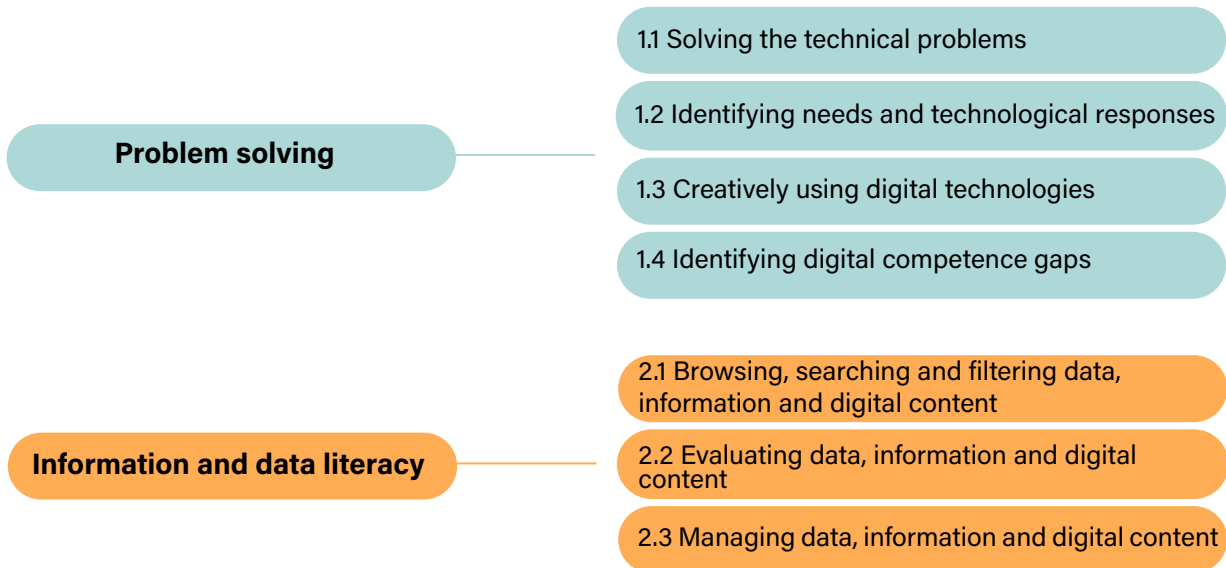
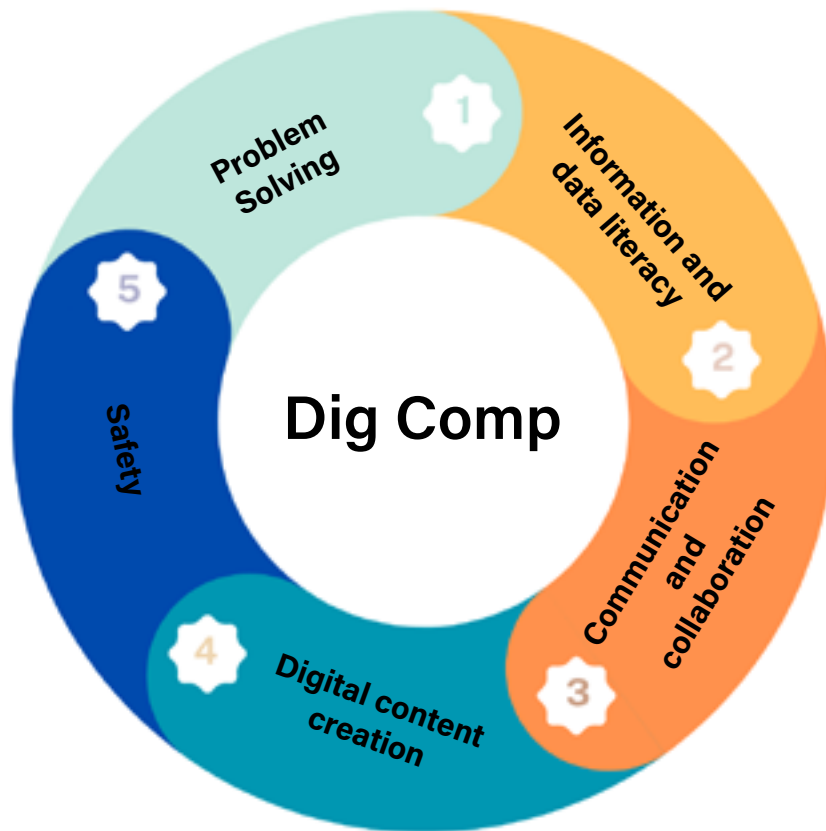
Your data will be only used to share information about this research and/or other topics related with the "digitalisation" of our society. It may be initiatives, conferences and other events, projects, news from Institutions and our members. In compliance with The Data Protection Directive (95/46/EC) we inform you that your personal data will be used and processed only in relation to the purpose for which they are collected. The data will be kept secure, kept only as much as they are needed for the purpose and held in a way to allow the subject of the information to see it on request. You will have the right to object, on legitimate grounds, to the processing of data relating to you.

If you agree with the processing of your data according to the above, please sign here/tick this box.

Thank you very much for answering the questionnaire!

4.2 DigComp Framework

Infographic of the **DigComp Framework**¹² divided by areas and containing all 21 competences.



¹². <https://joint-research-centre.ec.europa.eu/digcomp-en>

Communication and collaboration

3.1 Interacting through digital technologies

3.2 Sharing information and content through digital technologies

3.3 Engaging in citizenship through digital technologies

3.4 Collaborating through digital technologies

3.5 Netiquette

3.6 Managing digital identity

Digital content creation

4.1 Developing digital content

4.2 Integrating and re-elaborating digital content

4.3 Copyright and licences

4.4 Programming

Safety

5.1 Protecting devices

5.2 Protecting personal data and privacy

5.3 Protecting health and well-being

5.4 Protecting the environment

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