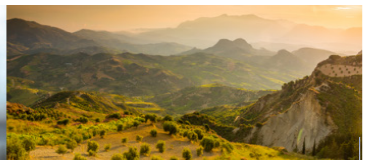
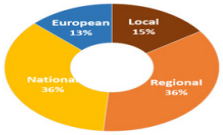
BRIEFING

Pre-legislative synthesis

European Parliament

Digital in education and skills



This briefing offers a pre-legislative synthesis of the positions of national, regional and local governmental organisations on the European Commission's forthcoming initiative, 'digital in education and skills'. It forms part of an EPRS series offering a summary of the pre-legislative state of play and advance consultation on a range of key European Commission priorities during its 5-year term in office. It seeks to present the current state of affairs, examine how existing policy is working on the ground, and identify best practice and ideas for the future on the part of governmental organisations at all levels of the European system of multilevel governance.

Summary of findings

EPRS analysis of the positions of partner organisations at European Union (EU), national, regional and local levels suggests that they would like the following main considerations to be reflected in the discussion on the forthcoming European initiative on 'digital in education and skills'.

- As part of the digitalisation of education and skills, a number of innovative learning tools and platforms have been devised in many European States and regions. Still the search to improve the digital experience in skills education through better provision of online services and material is ongoing. Digital skills innovation and the creation of new online material is necessary in order to avoid 'digital fatigue'.
- Issues of digital divide arise in terms of age, gender, disability, social strata, wealth and ethnic background. These divisions require attention and action as they create a two-tier society and cause further social exclusion.
- The digital divide also has a territorial element. Certain EU regions with particular geographic characteristics, such as peripheral, insular and cross-border areas, and mountainous and depopulated regions are lagging behind in both broadband provision and digital skills development. The growing digital divide between urban and rural areas is another challenge.
- A lack of qualified personnel with digital skills remains a hindrance to further digitalisation. Additional resources need to be invested in various sectors to train IT personnel, and school and university staff, to create new teaching material and online platforms. It is important to promote broadband connectivity, train all sections of the population and provide vocational training.
- The EU has an important role generating policies and developing strategies in digital affairs. EU funds also contribute significantly to the development of the digital dimension in education and skills.

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1. Current state of play

Background

Education and training is one of the key principles of the European pillar of social rights. Education and training is essential to ensure equal opportunities and access to the labour market. Therefore, all EU citizens should have the right to quality and inclusive education, training and life-long learning opportunities, in order to maintain and acquire new skills that enable them to participate fully in society and manage transitions in the labour market successfully. The **COVID-19 pandemic** has disrupted education and training. However, this disruption has presented opportunities for innovation, in particular the acceleration of the use of digital technologies in teaching and learning. Conversely, the pandemic also exposed and in some cases amplified existing weaknesses, and inequalities of education and training systems, which affected learning processes negatively and in some cases student well-being.

Most Member States had to increase investment linked to online and blended learning during the pandemic. Funding and assistance for students to acquire the appropriate information technology (IT) equipment was also necessary in several Member States. The Recovery and Resilience Facility (RRF) together with the European structural and investment funds were used to top up the additional investment needs from the rapid shift of teaching from classrooms to the online environment. In a post-pandemic world, digital skills are ever more important, not only for the education and training sector, but also for all citizens. Digital skills have become a prerequisite for participation in learning, working and socialising, thereby accelerating the digital transition.

The data show a **diverse situation of digital education across Member States**. Evidence from the OECD's PISA exercise in 2018 showed that many low-income homes had no access to computers. Eurostat figures show that in 2021 the share of EU households with internet access rose to 92 %. The highest proportion (99 %) of households with internet access in 2021 was recorded in Luxembourg and in the Netherlands, while Finland, Ireland, Denmark, Spain and Austria also reported that 95 % or more of households had internet access. The lowest rate of internet access among EU Member States was observed in Bulgaria (84 %). However, Bulgaria – together with Cyprus, Romania, Greece, Slovenia and Lithuania – had recorded rapid expansion in the proportion of households with internet access. According to Digital Economy and Society Index DESI 2022 data, 54 % of EU individuals have only basic digital skills and only 26 % possess above basic digital skills. Having an internet connection and using the internet are enabling factors, but they must be matched with the provision of appropriate skills to take advantage of the opportunities brought by digitalisation, in particular in the education and training sectors. According to the 2030 Digital compass, the EU aims to equip at least 80 % of people with at least basic digital skills and increase the number of information and communications technology (ICT) specialists to 20 million (around 10 % of total employment), with convergence between men and women by 2030.

An EPRS STOA study on technology options for learning and teaching found that EU education ecosystems are facing a challenging situation, not least compared with China and other Asian economies, both in terms of average score and in the percentage of low performing students. The EU is lagging behind in terms of education performance, and there are indications that education is not helping to address social inequality. The study also found a strong relationship between education performance and macro-economic indicators, such as GDP, and that the quantity of technology that schools possess has little impact on school performance. What matters is how the technology is used. A 2022 EPRS report identified the lack of digital skills as one of the key barriers to a successful digital transformation. Rising demand for digital skills also carries the potential risk of exacerbating existing social inequalities, including gender inequality. Access to digitally skilled workers remains a key factor of success for small and medium-sized enterprises (SMEs).

The **Council** conclusions on digital education in Europe's knowledge societies highlight that digital education is a prerequisite for helping to shape the digital transformation, pursuing continuing

education and training and lifelong learning, and enabling high-quality and inclusive education and training for all. The Council supports digital education as part of high-quality and inclusive education and training, and believes it contributes to better accessibility of educational content and learning material, greater social inclusion, and better acquisition of competences, promoting educational success for all.

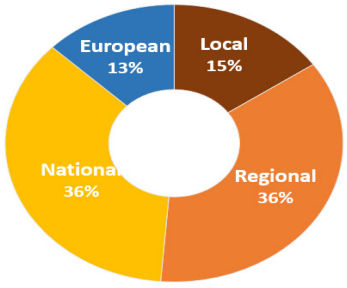
The **Commission's** Digital Education Action Plan 2021-2027 sets out the vision for digital education in Europe to support Member States in their transition towards the digitalisation of education systems. The Action Plan calls for enhanced cooperation between Member States on digital education to address the challenges and opportunities of the COVID-19 pandemic. It contributes to the Commission's priority of 'A Europe fit for the Digital Age and to the Next Generation EU instrument. The Action Plan also supports the Recovery and Resilience Facility and mentions the Commission's intention to propose measures to facilitate and promote digital skills in schools and higher education. The Commission is preparing two Council recommendations, the first on improving the provision of digital skills in education and training and the second on enabling factors for digital education. Council recommendations are expected to be adopted in 2023. Furthermore, the Commission has adopted a proposal to make 2023 the European Year of Skills.

The March 2021 **European Parliament** resolution on shaping digital education policy acknowledges the revised Digital Education Plan, and highlights that the European Pillar of Social Rights must be the guiding principle in digital education policy to ensure that the right to inclusive and quality education is upheld. Parliament proposes digital education be linked to other policy areas to promote a more inclusive, gender-balanced, innovative and greener society. It points to the importance of the 'Connect' and 'Reskill and upskill' investment priorities in the RRF for driving the digital education agenda and encourages Member States to dedicate at least 10 % of the Facility's funding to education. It underlines the value of pilot projects and preparatory actions initiated by Parliament to ensure more Union-wide cooperation to tackle the educational gaps between Member States, regions and rural and urban areas. Parliament urges the Commission to increase the role and profile of education, including digital education, in the European Semester and include references to the economic impact of education.

Methodology

The data sources for this briefing were obtained through **requests** for input from governmental organisations at all levels of government and **proactive desk research**, aiming to obtain additional relevant input.

Table 1 – Percentage of governmental organisations, whose input is analysed in this briefing



Source: EPRS.

First, requests for input on key European Commission priorities were sent to all the governmental organisations that are part of the Linking the Levels Unit network in EPRS. This was carried out through the monthly newsletter *The Link*,[1] with calls sent each month between February and July 2022 to an expanding network, reaching over 1 300 contacts by the end of that period. Second, targeted emails were sent between February and July 2022 to various LINK partners containing a questionnaire in order to attract more input. The European Commission opened two consultations on the topic: digital education – enabling factors for success and digital skills – improving their provision. Feedback submitted from public authority bodies to the European Commission on the two relevant consultations were also taken into account.

Sources also include documents from various EU-wide public authority-related umbrella organisations and EU advisory bodies that have conducted work on the topics covered by this initiative. Figure 1 shows in percentages the input obtained according to the level of government from which the documents originate. Furthermore, pro-active desk research was carried out to

gather further information from other governmental organisations online. This process took place from February to November 2022, with a view to closing identified analytical gaps. This outreach strategy garnered **160** documents from governmental organisations, which were taken into consideration in order to draw conclusions in this briefing. The documents' main findings are grouped around several major themes that emerged from the analysis of the documents.

2. Positions of governmental organisations and advisory bodies to date

COVID-19 pandemic as a catalyst of digital acceleration

New digital technologies are reshaping the way people live, work and learn. This trajectory of change has been further accelerated by the COVID-19 pandemic. All EU Member States are investing more in digital skills in education and training. In the more centralised EU Member States, the task of digitalising education and skills is a national prerogative exercised chiefly by national ministries. In EU states with more federal or decentralised powers (e.g. Germany, Belgium. Spain), regions have also taken an active role in supporting digital projects in education and skills. Notwithstanding their powers, most local/regional entities have strategies aimed at **widening** opportunities (e.g. by providing more educational programmes for the wider population, or extending broadband connectivity) as well as **deepening** existing digital skills (enriching online material, promoting labour force reskilling or upskilling, providing online training for the unemployed and supporting the overall population with digital skills). Another priority for the public authorities is to find ways to **maintain online interest** and **avoid drop out** from online teaching and training activities. A multitude of players within both the private sector and public authorities are taking part in digital strategies and projects.

For some EU Member States that were lagging behind in digitalisation, the COVID-19 pandemic has highlighted the already known existing problems and difficulties, and pushed administrations to further digitalise their services. However, even for Member States who were digital pioneers, the pandemic has highlighted a number of problems and issues that have required action. In addition, as digitalisation in education came in a rush in response to new COVID-19 conditions, there was no time for extensive testing of digital programmes that had to be run quickly in order to address the urgent education and training needs of populations living under strict confinement rules. These COVID-19 limitations came on top of various other social and geographical and technological limitations that will be further mentioned in the briefing.

Promoting digitalisation in education and skills

Member States and their regions and municipalities have been active on various fronts. In primary, secondary and tertiary education, a number of initiatives have been taken to encourage digitalisation in the field of education, by offering online courses and developing new materials and teaching platforms. All over the EU **new platforms, training courses, manuals and education materials** were promoted to tackle education needs in the COVID-19 era. A number of **technical support tools** (e.g. tablets, computers, broadband connections) were also provided. **Educating teachers, educators and staff** to use online content and share it was also a common task of Member States and their regional and local authorities. This 'digitalisation wave' in all areas of life generated a number of **innovative teaching tools** and material, including online platforms and learning material.

For instance, Ireland is promoting the delivery of digital skills through more and diverse pathways in higher education (HE) and further education and training (FET) including the development of targeted short-cycle tertiary programmes and flexible modular programmes. There will be a move to a tertiary education system comprising FET, HE, research and innovation, enabling the broadening of opportunities and enterprise engagement and finally the delivery of digital skills for

the entire labour market across all sectors, also embedding lifelong learning, transversal skills development, managerial leadership and capacity, support for the transition of workers, public service leadership and early stage foundations. The aim of the Irish strategy is to increase the numbers of learners graduating with higher-level digital skills, and increase the share of adults with at least basic digital skills to 80 % by 2030. Another aim is for all young people to leave school with the digital skills required for everyday life and further studies. Digital skills will be included at an early stage, ensuring knowledge through applications in the curriculum from early years to post-primary and teacher education programmes. An appropriate digital skills level for the general population, to enable all cohorts regardless of age or background to engage with and benefit from digitalisation, is crucial in ensuring the digital transition is inclusive and positive for wider society.

In France, a reference framework for digital skills (CRCN) has been developed, inspired by the European framework (DigComp) and valid from primary school to university. This linking of national and European reference systems aims to facilitate the mobility of pupils, students and professionals in Europe. Organised into 5 domains and 16 digital skills, it offers 8 levels of progressive mastery of these skills, useful for students in school education, for students in higher education and in an adult training context. Pix is an online public service, open to everyone: middle school students from fifth grade, high school students, students, professionals from all sectors and all citizens. Articulating evaluation, development and certification of digital skills, it aims to support the raising of the general level of digital skills throughout life. Each school student is eligible for a Pix account that follows them throughout their schooling. The student or adult will thus be able to gradually build their digital skills profile and prepare for certification.

Figure 1 – All EU Member States are investing in the digitalisation of education and skills

Diverse education shoot.
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The French Ministry of Culture is funding the Micro-Folie project which revolves around the transferable setting up of a digital museum, in collaboration with 12 founding national cultural establishments. Depending on the place chosen to host the Micro-Folie, the project is designed for and with the inhabitants. Several additional modules can complete the digital museum: a virtual reality space, a library or even a space for interaction. The objective is to create a multi-purpose space for accessible educational activities.

In **Germany**, resources have been allocated for laptops to be loaned out to pupils, for digital devices for teaching staff, and for the training and financing of IT administrators. The German federaL states (*Länder*) have developed numerous continuing education courses for teachers, multipliers, continuing education instructors and school administrators. The *Länder* have also initiated several joint projects to advance digital content and promote teacher training programmes, and are working on the integration of or have already implemented various online learning platforms and learning management systems as a support system for regular offline lessons. A number of innovative digital initiatives have been developed in the field of education and skills. The DigitalPakt helps to bring digital equipment into the classroom (digital infrastructure, interactive whiteboards, beamers, laptops/tables, etc.) and funds platforms at State level. Media technology standards have been established in many schools that support teaching and learning. The Haus der kleinen Forscher (Little Scientists' House) programme is Germany's largest early childhood education initiative in the fields of science, technology, engineering or computer science, and mathematics (STEM). Furthermore, teachers have access to the Mundo platform a joint media platform/educational media library that enables legally secure access to teaching content.

Offering skills to wider segments of the population

In the field of staff and vocational training, new online platforms and courses have been established to equip employees with new skills. Skills development is needed for industrial transition and entrepreneurship. Skills gaps and mismatches hinder productivity, technological diffusion and growth and affect Member States' resilience to economic shocks. Digital skills have also become part of the training curricula of various schemes for people seeking employment. In addition, as the pandemic has continued, a number of online platforms and training courses have been offered to citizens with a view to boosting the general digital skills of the population but also alerting them to the possibilities and threats of digitalisation. Educating for upskilling, reskilling, conducting digital unemployment schemes as well as helping the wider public upgrade their digital skills has been a common strategy of many EU Member States and regional authorities. Even EU countries and regions that score high in digital knowledge technologies indicators, such as the Netherlands, have set up targets and priorities in order to spread digitalisation further to wider sections of society.

Figure 2 – Digital skills are of vital importance to our societies

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In **Portugal**, National Digital Competences Initiative e.2030, Portugal INCoDe.2030 emphasises the need both to qualify the young population and requalify human resources. Portugal has established a set of goals covering factors such as social inclusion and digital literacy, and physical and cognitive access to digital services for the entire population, analytical capacity in the context of big data, production and dissemination of information, privacy and security, intensive use of ICT in the process of lifelong learning, and research and development aimed at the production of knowledge and advanced forms of scientific computing.

Harnessing Digital – The Digital Ireland Framework involves securing expertise for the economy by developing high-level digital skills; supporting appropriate levels of digital skills for the labour force as a whole; ensuring digital skills for the general population, to enable all cohorts to engage fully in society and benefit from digital transformation. Embedding lifelong learning in the workforce will enable upskilling or reskilling throughout the whole of peoples' working lives, with a particular focus on low-skilled workers who are more likely to be exposed to the risk of automation; prioritising transversal skills development through the education system and lifelong learning. Support is being given to the transition of vulnerable workers to become more occupationally mobile and adaptable.

In **Germany**, the VHS Learning Portal, the country's central digital learning platform for basic education and German as a second language has around 950 000 learners. A new learning area, digital basic education, is currently being developed. With the funding of 35 innovative projects as part of the INVITE innovation competition, the Federal Ministry of Education and Research is making it easier to search for suitable further education possibilities. It has strengthened the user orientation of further education platforms and increased the range of artificial intelligence-supported further education courses. The aim of the Stadt-Land-DatenFluss app is to teach people of all ages to become confident data users. A national central online entry portal for labour market-oriented, vocational further training (the NOW platform) is to be set up to offer all citizens easier access to funding, advice, information on occupations and further training,

Public libraries have been at the forefront of support for digital skills in many EU Member States. The Irish Public Library network has become a community hub where users can access online resources, take digital training courses, learn how to use new technologies and creative learning tools. In addition, the Broadband Connection Points are public locations selected to receive high-speed connectivity as part of the Irish National Broadband Plan. These locations have been selected by local authorities and include public areas such as community halls, libraries, sports facilities, enterprise hubs, tourist locations etc. Public libraries in Belgium and the Netherlands have also been

exploring digitalisation techniques, including providing more online services (e.g. e-books, online resources) and numerous digital training sessions for the general population to support the spread of digital skills.

In **Central Denmark** a Technology Pact between businesses, educational establishments and local and regional authorities seeks to ensure an interest among young people in STEM subjects and align educational opportunities with labour market needs. In addition, the region is working to map the need for future competences and work out how to ensure these are addressed in the education systems. The **Belgian regions** have established a number of innovative courses and platforms for online training. All three regional employment offices (VDAB, FOREM and Actiris) provide both online and in-person courses on digital skills. Brulingua, which is a free platform run by the Employment Office of the Brussels Region (Actiris), provides the possibility to learn 24 languages, including English, Dutch, French and German and offers free online language training for all Brussels residents. In Wallonia, the Wallangues platform provides online teaching for the four national languages. **Flanders** has its own strategy to develop digital transformation and so does Wallonia, with both regions paying particular attention to the digitalisation of education and skills. The **Community of Madrid** offers teacher training as well as a number of projects and robotics/computational activities at school level for students. **Catalonia**'s 2020-2023 digital education plan aims to contribute to the development of digital citizenship and seeks to improve the digital competence of students, teachers and schools in the framework of the needs of a 21st century education. Its objective is to ensure that primary and secondary school students are digitally competent by the end of their mandatory education.

Addressing the societal digital divide: Age, gender, disability, social stratum

Issues relating to the digital divide in terms of age, gender, disability, social strata, age and ethnic background are mentioned in many documents that formed part of our research. EU Member States and regional and local authorities raise the issue of the different categories of social exclusion that continue to hinder the potential of digitalisation in European societies. Digital skills are not equally distributed across the labour force and higher demand for digital skills in male-dominated professions risks worsening the gender gap. Low-skilled people of working-age have lower levels of digital skills and children from less well-off families run the risk of acquiring insufficient levels of digital skills. People with disabilities and immigrants also run the risk of digital exclusion. Specific attention needs to be paid to encouraging participation in digital skills for women, people and students from disadvantaged backgrounds, immigrants, people with special needs and the elderly.

The Italian national strategy for digital skills states that digital knowledge is not evenly spread among all sections of society, which causes problems of exclusion. How to achieve better digital skills for society as a whole remains a challenge. One of the aims of the Spanish digital strategy is to strengthen the digital skills of workers and citizens in general. Special emphasis will be placed on the needs of the labour market and on closing the digital divide in education. The goal is that by 2025, 80 % of people will have basic digital skills and that half of them will be women. The Greek digital strategy also claims that it is important to set up specially targeted training programmes for working women, mothers and the unemployed, seeking to include more women in the digital economy in order to avoid digital illiteracy and job losses as well as to promote possibilities for professional development through corresponding synergies with its public sector and social agencies. The report on education in Germany 2022 states that the chances of participation are still unequally distributed for adults and that language education is crucial for the integration of migrants and refugees. Elderly sections of the population may also lack digital competencies.

Poland's digital competence programme aims to provide for the development of universal digital competences among citizens, starting from pre-school and early school education to the elderly and people with disabilities. Czechia wants the EU to support the following thematic areas in the

provision of digital skills: development of teachers' digital skills, support of well-being in digital education, prevention of the digital divide due to insufficient internet connection, protection of personal data and increased interest and motivation in the development of digital competences in male and female students. Girls and women should be provided with sufficient opportunities to engage in technical fields and technical education from an early age. For children, the gender aspect of motivation for technical fields should be addressed. **Estonia**'s 2021-2035 education strategy insists on diverse learning opportunities and aspires to an education system that enables smooth transitions between levels and types of education. Estonia envisages an active role for educators, school owners, parents, learners, labour market participants, civil society, government and local authorities in order to implement its digital agenda.

The European Committee of the Regions (CoR) opinion on Digital Europe for all states that when designing digital services, public administrations and other organisations should cater for accessibility for people with some form of sensory disability or digital skills impairment. A focus is needed on the digital empowerment of the most vulnerable groups, such as older people, ensuring that they have at least some basic skills. Students from socioeconomically weak and educationally disadvantaged families have more difficulties in achieving digital competencies. The pandemic has increased social differences in parental homes and reduced disadvantaged children's chances of equal opportunities and educational participation. The opinion recommends that proper digital skills should become part of a lifelong learning curriculum in order to enable all EU citizens to benefit from the general right of access to the internet. The introduction of an EU certificate for digital skills should also be considered.

In an opinion on adult learning, the EESC recommends that Member States strengthen their policies on, and governance and funding of, adult learning, and step up implementation of the Council recommendation on upskilling pathways. Member States should also ensure equal access to lifelong learning for all adults, including those from disadvantaged socioeconomic backgrounds. Teachers, meanwhile, need to be provided with training on how to adapt lessons and online learning to make these accessible for all learners with disabilities and learning difficulties.

In its cities social trends paper, Eurocities calls on EU/national authorities to develop strategies on digital skills and to ensure that they are based on a long-term approach. Authorities should invest in digital skills forecasting at the local level and should reduce the digital gap by ensuring connectivity in the poorest areas. There is a need to ensure investment in human capital combined with investment in infrastructure. Investment in formal education should go hand in hand with investment in non-formal digital education in order to reach vulnerable groups such as the low skilled or low qualified more effectively. Authorities should also ensure that digital skills education begins from an early age, to promote digital inclusion for all. A report by Perspectives Brussels also states that differences in access to and use of technologies produce discriminatory effects in various areas of life (education, employment, and administrative and civic life), creating social exclusion. In terms of training and education, it is more than likely that inequalities will increase between those children, adolescents and young adults who have had the possibility to compensate for the interruption in their training caused by the pandemic by working at home and/or continuing to train remotely and those for whom this has not been possible (due to family conditions, the level of education of their parents, the lack of a computer at home, housing conditions, etc.).

Addressing the geographic digital divide: Rural, peripheral, insular, sparsely-populated and outermost regions

The digital divide also exists between EU regions. Certain peripheral, insular, cross-border, mountainous and depopulated regions, are lagging behind both in broadband provision and digital development skills. The growing digital divide between urban and rural areas is one of the major challenges faced by citizens and businesses in Europe. For instance, the Education in Germany 2022 report states that despite increasing digitalisation, regional inequalities must be taken into account.

In Spain, the national digital competencies plan states that the digital transition can be used for the territorial structure of the country, fighting the problem of the depopulated Spanish regions.

In its opinion 'A digital Europe for all', the CoR points out the difficulty in implementing digital infrastructure in the outermost regions, due to their constraints and their distance from the European mainland. It underlines the need to ensure that these regions, like other European regions including remote ones, have a full right to connectivity. Digital services and e-government services require high-speed, uninterrupted broadband, which should be available in areas where current commercial conditions do not support the building of connections. The CoR opinion on the Digital Education Action Plan 2021-2027 calls on the Commission and the Member States to use the RRF and the ESF to ensure that funding reduces the digital divide. This will involve investment in those regions that face demographic challenges and direct public funding aimed at the development of new teaching models and promoting 21st century skills at all education levels, from school to university. The opinion also refers to the need to further simplify the structure of EU funding programmes. It states that the Commission should support the creation of pan-European platforms for the broad dissemination of educational content and tools in an inclusive multilingual way, taking into account regional languages through the Erasmus+, Horizon Europe, and InvestEU programmes.

Figure 3 – Rural, insular, mountainous remote regions face greater digital challenges

Olive plantation in Crete.
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According to a Council of European Municipalities and Regions position paper, to achieve economic, social and territorial cohesion (Article 174 of the Treaty on the Functioning of the European Union), the EU should strive to ensure that citizens, companies and public administrations in every region and municipality have access to very high-capacity networks (i.e. fixed line and/or 5G or 6G). Local and regional governments are at the forefront of the digital transition and represent key players when it comes to facilitating the delivery of digital solutions for citizens, both as facilitators for local businesses and as providers of public services. It is essential to support the digitalisation of local and regional public administrations with appropriate funding opportunities, legislative measures, and policy tools. Strategic thinking and coordination across Member States is necessary.

Island authorities are developing digitalisation in education and skills in various ways. Among other measures, the Region of the South Aegean is working to strengthen the digital skills of people living below the poverty line, belonging to fragile and vulnerable groups, including remote islanders. The Canary Islands 2025 digital agenda puts special emphasis on the needs of the labour market and on closing the digital divide in education. One of the measures taken by the government of the Azores is a set of projects supporting digitalisation of schools and digital textbooks.

The cross-border, cross-regional dimension of cooperation through digital education is also mentioned by various regional authorities. A number of cross-border projects have been developed under the Interreg programme with elements of digitalisation in skills and education. ERUDITE aims at enhancing rural and urban digital innovation territories whereas Next2Met promotes the attractiveness of Next2Met regions with soft digitalisation measures. CARPE DIGEM is helping regions develop digital innovation ecosystems. TRINNO provides a business ecosystem for innovation whereas CD-ETA promotes the collaborative digitisation of natural and cultural Heritage. DEVISE promotes digital tech SMEs at the service of regional smart specialisation strategies, whereas DigiBEST works on Digital Business EcoSystem Transformation. FuturE.com is exploring digitalisation to increase B2B e-commerce.

Resources for digitalisation

To run digitalisation schemes, new resources must be invested in various sectors to acquire qualified IT personnel, train school and university staff, shape new teaching material, create online platforms, and promote broadband connectivity, etc. All these bring an additional layer of cost for local, regional and national administrations that needs to be addressed. The lack of qualified personnel and resources is often mentioned as a hindrance to digitalisation efforts. For instance, the Italian national digital strategy mentions that Italy ranks last for internet use and lists the considerable shortage of ICT specialists as a major issue. The Slovak national strategy also raises the issue of a lack of qualified personnel and resources.

In an opinion on the updated skills agenda, the EESC states that the European Semester and the digital education action plan should address support for schools, teachers, parents and students to improve digital skills and invest in the necessary equipment. In another opinion on blended learning, the EESC calls on Member States to ensure that blended learning is not detrimental to the social value of education or to the relevance of face-to-face teaching. As lack of access to broadband and IT tools, inadequate teacher-student interaction and lack of appropriate learning environments during the pandemic contributed to higher drop-outs, it is important that blended learning is carefully designed and deployed to ensure an inclusive learning environment for all children.

According to the Association of German Cities, Deutscher Staedtetag, continuing the digital pact for schools by 2030 is an important signal for schools. Funding must be extended to include operation and support, and the financing of this complex and dynamic task must be secured in the long term. Faster access to funds, with less red tape, in a digital pact 2.0 for schools is expressly welcomed.

The added value of the EU

A number of public authorities took part in the two European Commission consultations on the forthcoming initiative on the topic of digital in education and skills. Czechia sees the Commission initiative on provision of digital skills as a means of accessing comparative analysis of different approaches in Europe, sharing good practice between Member States and deepening the dialogue with the private sector on the identification and updating of new and emerging skills needs in accordance with the new European skills agenda. Furthermore, given the ongoing changes in the labour market, it welcomes the plan to support the further education of teaching staff teaching professionals, who need to have an overview of current changes in the labour market in order to prepare pupils in line with the requirements of new competency models.

The city of Gothenburg claims that in order to run digitalisation schemes, new resources must be invested in various sectors of education. All these additional needs bring considerable additional layers of costs for local, regional and national administrations that need to be addressed. In order for students to be able to access digital infrastructure, continuous support, development and maintenance of competence for teaching staff is required. There should be a clear digital perspective for teachers in their university education. Gothenburg considers the creation of guidelines and regulations for the use and shaping of digital tools to be beneficial. Today's suppliers in the Ed Tech industry have a great deal of control over the shaping of the digital tools. Through guidelines, the users' perspective and benefit can be raised to a greater degree. It also mentions the challenge of personal data management in digital services, which makes all work with digitisation in the field of education more difficult and expensive. It considers that EU-level guidance can help with schools' acquisition of digital tools and support the work of service providers in living up to personal data management requirements.

For the Municipality of Plovdiv, there is a need for unified platforms and digital services for educational systems across the EU. In addition, it is of great importance to provide access to high quality digital education content that is engaging, interactive and inspiring for students. In order to improve education quality and equity, it is essential to focus on the enhancement of early education, strengthening teacher training, improving education financing, and monitoring performance.

Digitalisation of both the environment and pedagogies applied should include primary, secondary, and tertiary education, as well as vocational education and training.

In the field of digitalisation in education and skills, a number of EU policies, indicators and funds are usually mentioned in the documents analysed. The EU is perceived as an important contributor in terms of resources but also in terms of ideas and strategies. Regional documents tend to emphasise the funding they receive from cohesion policy instruments as a major instrument for digitalisation. The European Regional Development Fund is a common point of reference for many regional strategies. Reference is also made to ESF+ provisions in terms of digital training (e.g. programmes of the federal government and the *Länder*, platforms of Belgian Regional Offices of Employment, etc.). The RRF represents an opportunity to invest in their own digital transformation and to contribute collectively to increasing the Union's resilience. Recipients of EU funds and participants in EU projects highly value the strengthening of a European digital dimension under various forms. Standardisation in the field of learning technologies is important and should be continuously addressed. Fostering exchange between research and politics to include up-to date knowledge in policy-making processes, schools and municipalities across the EU to further mutual understanding and learning is also a dimension. Data protection is also mentioned as a field of EU action.

Various EU indicators and EU-wide projects are mentioned extensively by both national and regional administrations. The Digital Economy and Society Index (DESI), which summarises indicators on Europe's digital performance and tracks EU countries' progress, is mentioned in various national documents (e.g. Italy, Spain, Greece and Germany). The European Framework for the Digital Competence of Educators (DigCompEdu) is a scientifically sound framework describing what it means for educators to be digitally competent. It provides a general frame of reference to support the development of educator-specific digital competences in Europe. DigCompEdu is directed at educators in all levels of education, from early childhood to higher and adult education, including general and vocational education and training, special needs education, and non-formal learning contexts. SELFIE (Self-reflection on effective learning by fostering the use of innovative educational technologies) is another free European tool designed to help schools embed digital technologies into teaching, learning and assessment and it is also mentioned widely as a point of reference in national and regional documents. Various EU Member States and regions are asking for further development of DigCompEdu and SELFIE.

Promoting exchange and learning on good practice in digital aspects of education and skills is an important element for many of the regional and national authorities that took part in our targeted survey. Fostering exchanges between different education authorities, improving teacher exchange opportunities on matters of digitalisation, working groups and networking on various digital themes, sharing best practice in the content of digital competence frameworks, skills identification and improving teacher exchange opportunities on matters of digitalisation cooperation in funding programmes are all valued positive dimensions of EU activities. The need for additional EU support in the area of qualifications for highly skilled ICT professionals is also seen as vital. Numerous activities and campaigns combating online hate speech and misinformation also figure in many national and regional documents. Other elements that emerged from our targeted questionnaire was the wish to support education and training institutes with know-how and expertise on how to adopt and digitalise in an inclusive manner as well as support the development of innovative teaching and learning material. Developing a European digital skills certificate that is recognised and accepted by all EU Member States, supporting schools' gigabit connectivity and using Erasmus cooperation projects to support digital education and skills were also widely mentioned.

3. Analysis of governmental organisations' positions

The trajectory of digital transformation in the field of education and skills has been further accelerated by the COVID-19 pandemic and the trend towards digitalising education and skills is likely to continue. New digital technologies are reshaping the way people live, work and learn in a

number of ways. Nevertheless, documents collected from national, local and regional public authority institutions mention a number of challenges that require EU attention and possible action.

All EU Member States are investing more in digital skills in education and training. The COVID-19 pandemic gave an impetus to Member States and regions that were lagging behind in digitalisation of education and skills, to accelerate the digitalisation process. Even for the more developed Member States, the pandemic shone light on problems and bottlenecks in the digitalisation process.

As part of the digitalisation of education and skills, a number of innovative learning tools and platforms have been invented all over Europe. Nevertheless, the bid to improve the digital skills experience in education and training through the provision of better tools is ongoing. The search for highly skilled personnel and innovative teaching material will continue. After the first COVID-19 digital experiences, the quest is not only to widen and deepen participation but also to find ways to maintain online interest and avoid drop out. Signs of 'digital fatigue' are evident.

Several social challenges have emerged that require urgent attention. The digital divide in terms of age, gender, disability, social strata, age and ethnic background appear in many documents that formed part of our research. EU Member States and regional, local authorities raise the issue of these multiple exclusions that continue to hinder the potential of digitalisation and create a two-tier division in European societies.

The digital divide is also evident between various types of EU territory. Certain peripheral, insular and cross-border, mountainous and depopulated regions are lagging behind in both broadband provision and digital skills development. The growing digital divide between urban and rural areas is one of the major challenges faced by citizens and businesses in Europe.

In the field of digitalisation in education and skills, the added value of Europe is clear. A number of EU policies, indicators and EU funds are mentioned in our selected documents. The EU has an important role as it generates policies and develops strategies in digital affairs. EU funds also contribute significantly to the development of the digital dimension in education and skills.

EXPERT READING ON THE TOPIC

Lomba N., Jančová L and Fernandes M., Digital transformation: Cost of Non-Europe report, EPRS, European Parliament, January 2022.

Negreiro M., Path to the digital decade programme, EPRS, European Parliament, November 2022.

ENDNOTE

[1] Governmental organisations wishing to subscribe to '*The LINK*' newsletter can write to EPRS LinkingLevels@europarl.europa.eu.

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