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MEDIA Digi

ANALYSIS OF CURRENT SITUATION WITH MEDIA LITERACY OF YOUTH IN THE PARTNER COUNTRIES

„Education for Media Literacy in Digital Environment“ project

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Background

The intellectual output titled Analysis of current situation with media literacy of youth in the partner countries is inception initiative to the Erasmus+ project "Education for Media Literacy in Digital Environment", Acronym: Medi@Digi, for screening the current state of media literacy in the partner countries.

The goal of this research is to emphasize the importance of media literacy, which should be recognized not only by the students and media, but also by the authorities, so that it may be incorporated and promoted in all spheres of society. This analysis will contain an explanation of the term media literacy, not only from a traditional perspective – how the citizens are expected to manage the abundance of information and perceive them critically, but it also will include a contemporary understanding of this concept – using the media as a mean for active citizenship.

The research will focus on two segments:

1. Media literacy within the secondary education in partner countries, and
2. Media literacy and the media.

This approach in research is due to the need to answer the questions – to what extent and how media literacy is practiced in the educational process, how much and how do the media understand and promote media literacy and how much and in what way media recognize the concept of media literacy as a prerequisite for education and encouraging active participation by the students.

The findings from this research will help to set the goals of the forthcoming connection and networking of schools, student organizations and the media, which will act as a Media Literacy Partnerships, Coalitions, Alliances, Networks and will implement various initiatives based on the fundamental principles in this sphere: access, analysis, evaluation of media contents, as well as creating clear, visible and powerful information, through which they will be able to instigate changes in society.

The main impact of this Analysis of current situation with media literacy of youth in the partner countries will be focused toward:

- development of a culture of critical thinking via education of teachers and students
- impact of media literacy in modern society and democracy values;
- building capacities of schools via joint engagement with state institutions; for improving the media literacy levels
- encouragements for the media to create educational resources that will support the students to overcome the digital gap and be able to take maximum advantage of the benefits from using the new media.
- encouragements for educational authorities to create new curricula that will contain tools for development of media literacy skills for the teachers and students.
- encouragements for educational policy maker bodies in collaboration with media, to create new instruments and evaluation tools for measurement of media literacy skills of the students.

Applied methodology

Preparation of the Analysis of current situation with media literacy of youth in the partner countries was based on Evidence-Based Policy Research (EBPR) methodology.
The policy research was built on existing efforts, both international and national, covering aspects of critical thinking and media literacy that have been neglected so far, producing large pool of evidence and data that will inspire public debate and influence policy making beyond the lifespan of the project.
The evidence based recommendations will significantly contribute to an increased credibility of the action among the project partners and policy making community and wider among the general public.
The research will encompass a comprehensive document analysis of relevant documents, literature review, consisting of reports and other materials relating to the: status quo of media literacy and critical thinking, student's positions on news media and media literacy.
The EBPR methodology will entail the preparation for the implementation of all research tools envisioned for the research part of the project. The Methodology EBPR will take place in first period of the research, depending on the upcoming need for implementation of the research tools. Due to shifting focus of research target groups during the project lifetime, the focus will be put on youth, educators of youth, educational program for media literacy, relations of the educational authorities towards media literacy and media professionals-journalists.

1. Development of a culture of critical thinking via education of teachers and students

The aim of Critical Thinking[1] is to promote independent thinking, personal autonomy and reasoned judgment in thought and action. This involves two related dimensions:

1. the ability to reason well and
2. the disposition to do so.

Critical thinking involves logic as well as creativity. It may involve inductive and deductive reasoning, analysis and problem-solving as well as creative, innovative and complex approaches to the resolution of issues and challenges.

One of the significant aims of education is to produce learners who are well informed, that is to say, learners should understand ideas that are important, useful, beautiful and powerful. Another is to create learners who have the appetite the appetite to think analytically and critically, to use what they know to enhance their own lives and also to contribute to their society, culture and civilization.

These two aims for education as a vehicle to promote critical thinking are based on certain assumptions.

1. Brains are biological. Minds are created. Curriculum is thus a mind-altering device. This raises the moral requirement to treat learners as independent centres of consciousness with the fundamental ability to determine the contours of their own minds and lives.
2. Education should seek to prepare learners for self-direction and not pre-conceived roles. It is, therefore, essential that learners be prepared for thinking their way through the maze of challenges that life will present independently.
3. Education systems usually induct the neophyte into the forms-of-representation and realms of meaning which humans have created thus far.
4. Careful analysis, clear thinking, and reasoned deliberation are fundamental to democracy and democratic life.

On the basis of these considerations the capacity for critical assessment and analysis emerges as fundamental for enjoying a good quality of life.

2. Impact of media literacy in modern society and democracy values

Modern societies could not be imagined without mass communication. Television, newspapers, the radio and the internet are the main sources of information for citizens all around the globe. But what does this mean for the functioning of political systems and processes? Few would doubt that mass media in authoritarian regimes – which are typically controlled tightly by the state – serve to maintain the existing power structure. One only has to think of the pervasive state propaganda disseminated by North Korean media to keep the country's citizens in line. There is also broad agreement that mass media contribute to democratisation processes, as seen for example in Eastern Europe during and after the Soviet Union's collapse.

[1] https://sta.uwi.edu/ct/ctande.asp

By contrast, there is a great deal of controversy when it comes to the issue of whether free mass media serve or harm democracy once it has been established. On the one hand, adherents of what is often referred to as the 'media malaise' theory claim that because mass media in established democracies mostly operate according to market principles, they disregard their democratic duties. This is alleged to have serious repercussions for democracy, causing apathy, cynicism and ignorance with regard to politics among citizens.
On the other hand, supporters of what might be termed the 'mobilisation' perspective (who appear to be in the minority) hold that the expectations imposed on both the media and citizens by media malaise theorists are too high. In what they perceive to be a more realistic assessment, mobilisation theorists conclude that media sources provide enough information for citizens to recognise when their interests are in danger, and that media consumption actually increases civic engagement.
First, mass media should disseminate politically relevant information to as many citizens as possible and thereby act as a public watchdog ('vertical function'). Second, mass media should provide a public forum that reflects the diversity of the society ('horizontal function').
Based on this two-dimensional concept, I identify indicators to measure media performance on two different levels of analysis: the structural or media system level, and the content or media coverage level. While the structural analysis comprises media market statistics for 47 countries – including most of Europe – from 1990 to 2008, the content level focuses on data from a content analysis of 50 newspapers from ten countries during the year 2008.

How does media performance differ across countries?

The comparison of democratic media performance reveals a considerable variation across the 10 to 47 countries examined, and different patterns can be identified. Although some countries may be ascribed a higher overall degree of media performance than others, none of them score particularly highly on both the vertical and the horizontal functions. It therefore seems that optimising both media functions at the same time is only feasible up to a certain point. Countries either perform badly or moderately on both functions, or outstandingly on just one of the functions.
In a nutshell, while the younger democracies within the sample generally lag behind (especially the Eastern European, Asian and Latin American cases, but also some Southern European countries), different patterns of media performance can be observed with respect to the more mature democracies. The vertical function – the degree to which media provide political information – seems to be best guaranteed in Anglo-Saxon and Scandinavian countries as well as in Japan. This includes the United States, often considered a worst case in terms of media performance. In contrast, the horizontal function – the capacity for the media to act as a representative public forum – is found to be much stronger in central-western European countries, such as Austria, Germany and Switzerland.
These patterns are observed with regard to both the structural and the content level. Further evidence shows that a country's performance on the structural level has an impact on its performance on the content level, thereby suggesting that the two levels are not independent of each other. The systemic conditions that media outlets operate in also appear to influence their news coverage.

Does media quality actually affect the quality of democracy?

Do these differences in media performance according to the vertical and horizontal functions actually have an effect on how well democracy works in the respective countries? As it happens, countries with a higher degree of media performance show higher levels of political participation and less corruption. They also tend to have a more lively civil society, and elected representatives seem to reflect the preferences of citizens more adequately. These findings illustrate that media performance is clearly related to at least some aspects of the functioning of a democratic regime. Therefore, given its relevance for democracy, it can be concluded that the discussion over whether media fall short of or fulfil the normative demands imposed on them is highly significant.
My findings also question the general and sweeping assumptions that both the 'media malaise' and the 'mobilization theories' make about the state of media and democracy. Ultimately, both perspectives could benefit from considering comparative empirical evidence that distinguishes between different aspects of media performance and their influence on different elements of democracy.

Media Literacy in different countries

Media literacy is an important segment in both formal education and non-formal education. States should have a national strategy for making a particular contribution to the implementation of these policies as well as online safety. It is also necessary to raise awareness among students when using new media. The table attached at the end of this document compares three countries and how media literacy is being implemented.

3. Building capacities of schools via joint engagement with state institutions; for improving the media literacy levels

European Commission has adopted a Digital Education Action Plan[2] which includes 11 actions to support technology-use and digital competence development in education. Education and training are the best investments in Europe's future. They play a vital role in boosting growth, innovation and job creation. Europe's education and training systems need to give people the forward-looking knowledge, skills and competences they need to innovate and prosper. They also have an important role to play in creating a European identity, building on common values and cultures. Education should help empower young people to articulate and engage, participate and shape the future of a Europe characterized by democracy, solidarity and inclusion. Digital technology enriches learning in a variety of ways and offers learning opportunities, which must be accessible to all. It opens up access to a wealth of information and resources.
In the Rome Declaration of March 2017, EU Member States stressed their commitment to providing young people with the 'best education and training'. The October 2017 European

Communication from the commission to the European parliament, the council, the European economic and social committee and the committee of the regions on the digital education action plan {swd(2018) 12 final}

Council called for training and education systems to be 'fit for the digital age'[3] . At the November 2017 Gothenburg Summit, the Parliament, the Council and the Commission proclaimed the European Pillar of Social Rights, which enshrines the right to quality and inclusive education, training and life-long learning. The Communication 'Strengthening European Identity through Education and Culture[4] , the Commission's contribution to the EU Leader's Agenda discussion on education and culture at the Gothenburg Summit, sets out a vision for a European Education Area and announced a dedicated Digital Education Action Plan. The Commission has hosted the first European Education Summit in January 2018 with a broad theme of 'Laying the foundations of the European Education Area: for an innovative, inclusive and values-based education'. As part of delivering on the New Skills Agenda for Europe[5] , the Commission has proposed a revised European Reference Framework of Key Competences for Lifelong Learning[6] that sets out the knowledge, skills and attitudes people need for life, including digital competence. This Action Plan sets out how education and training systems can make better use of innovation and digital technology and support the development of relevant digital competences needed for life and work in an age of rapid digital change. The Action Plan has a specific focus on initial education and training systems and covers schools, vocational education and training (VET) and higher education.

Challenges and opportunities of digital transformation for education

Europe's digital transformation will accelerate with the rapid advance of new technologies like artificial intelligence, robotics, cloud computing and block chain. Like previous major technological advances, digitisation affects how people live, interact, study and work. Some jobs will disappear, others will be replaced, new jobs will be created, many jobs and industries will be transformed and new activities will emerge[7] . This makes investing in one's digital skills throughout life of the utmost importance.

While there are many opportunities arising from digital transformation, the biggest risk today is of a society ill-prepared for the future. If education is to be the backbone of growth and inclusion in the EU, a key task is preparing citizens to make the most of the opportunities and meet the challenges of a fast-moving, globalised and interconnected world.

Reform efforts continue every year, yet a persistent divide exists between and within EU Member States, in particular regarding digital infrastructure and skills, all of which hinders inclusive growth. Vulnerable groups are particularly affected by this situation. In addition, the lack of interest among girls to pursue studies information and communication technologies (ICT) and science, technology, engineering and mathematics (STEM) remains a clear problem. This leads to lost social and economic opportunities and risks reinforcing gender inequality.

Education can benefit from opening classrooms, real-life experiences and projects, and from new learning tools, materials and open educational resources. Learners can be empowered by online collaboration. Access to and the use of digital technologies can help reduce the learning gap

[3] EUCO 14/17: European Council conclusions of 19 October 2017.
[4] COM(2017) 673: Strengthening European Identity through Education and Culture.
[5] COM(2016) 381: A New Skills Agenda for Europe.
[6] COM(2018) 24: Proposal for a Council Recommendation on Key Competences for Lifelong Learning.
[7] European Commission (2017): A concept paper on digitisation, employability and inclusiveness. The role of Europe, http://ec.europa.eu/newsroom/document.cfm?doc_id=44515 .

between students from high and low socioeconomic backgrounds. Personalised teaching can result in increased motivation by focusing on individual learners. However progress on integrating technology in education remains limited.

More than 80 % of young people in Europe use the internet for social activities[8] . Mobile access to the internet significantly increased over the last years[9] . But use of technology for educational purposes lags behind. Not all primary and secondary schools in the EU have broadband connections and not all educators have the competences and confidence to use digital tools to support their teaching[10] . A recent study showed that in 2015 an estimated 18 % of primary and secondary schools in the EU were not connected to broadband[11].

Innovation in education systems, understood as the adoption of new services, technologies, competences by education organisations, can help to improve learning outcomes, enhance equity and improve efficiency[12] . It is most effective and sustainable when embraced by well-trained teachers and embedded in clear teaching goals. More needs to be done on how to best use digital means to reach education objectives.

Digital advances also bring new challenges for Europe's pupils, students and teachers. Algorithms used by social media sites and news portals can be powerful amplifiers of bias or fake news, while data privacy has become a key concern in the digital society. Young people as well as adults are vulnerable to cyber bullying and harassment, predatory behaviour or disturbing online content. Everyday exposure to digital data driven largely by inscrutable algorithms creates clear risks and requires more than ever critical thinking and the ability to engage positively and competently in the digital environment. We face a constantly evolving need for media literacy and a wide mix of digital skills and competences including safety, security and privacy, but getting them to the wider population and more advanced professions and sectors remains a challenge.

4. The key role of EU-wide cooperation in scaling up innovation in EU Member States' education and training systems

EU-wide cooperation through exchange of best practice, peer learning and evidence sharing is a proven way to support EU Member States' education and training systems. Common frameworks help identify effective solutions while shared tools such as eTwinning increase efficiency and broaden impact. Innovative practices in education, in particular digital ones, are taking place across the EU. These take various forms and involve public, private and non-governmental actors. However, innovation in education systems is not an end it itself but a way to improve the quality and inclusiveness of education systems.

Evidence from the European Institute of Innovation and Technology (EIT) has shown that rather than waiting for change to happen, stakeholders are actively using digital opportunities to

[8] Eurostat (2015): Being young in Europe today - digital world, http://ec.europa.eu/eurostat/statistics-explained/index.php/Being_young_in_Europe_today_-_digital_world .

[9] Enders Analysis (2017): Children's changing video habits and implications for the content market.

[10] European Commission (2013): Survey of Schools: ICT in Education Benchmarking Access, Use and Attitudes to Technology in Europe's Schools, https://ec.europa.eu/digital-single-market/en/news/survey-schools-ict-education

[11] European Commission (2017): Satellite broadband for schools: Feasibility study, http://ec.europa.eu/newsroom/document.cfm?doc_id=46134 .

[12] OECD (2016): Innovating Education and Education for Innovation. The Power of Digital Technologies and Skills.

enhance teaching and learning[13] . Innovative and entrepreneurial spirit in education and training should be fostered and supported with clear political willingness and effort to make innovation work for everybody. There is a need to share, discuss and promote and, where possible, scale up innovative practice. Concepts, tools, methods, processes, systemic thinking and design thinking need to be more accessible to education professionals who are usually not fully aware of what is tried and tested elsewhere, sometimes even next door.

EU-level data and evidence contribute to better transparency, while measuring progress and learning from peers across EU Member States. There are many studies and surveys linked to the use of technology in schools. However, most are either partial, covering, say, a specific area such as connectivity, or are geographically limited, covering a particular country. The main sources of benchmarking at global level are the European Commission's surveys including the 2013 ICT in Education survey and the annual survey on ICT usage by households and individuals, and the OECD's Programme for International Student Assessment (PISA) and Survey of Adult Skills (PIAAC) studies. There is a need for more evidence and a coherent approach towards data collection.

The education and training stakeholders are the key players in making innovations mainstream. Recent public consultations stressed the need for more dedicated EU action to support the adoption of innovative approaches and digital technologies in education, and the development of digital competences, including digital media literacy and digital safety and well-being[14] . 68 % of respondents to the public consultation on Erasmus+ recognised that innovation is 'extremely relevant' for meeting the education sector's needs. There is also a clear need to: (i) boost entrepreneurial competences and an entrepreneurial mind-set; and (ii) support digital entrepreneurship, which embraces new ventures and the transformation of existing businesses through new and emerging digital technologies.

The Digital Education Action Plan builds on the two Communications adopted in May 2017: A renewed EU Agenda for Higher Education and School development and excellent teaching for a great start in life[15]. It supports the work on the Digital Single Market[16] and the New Skills Agenda for Europe.

The Action Plan takes further the call of the Reflection Paper on Harnessing Globalisation for society to become 'increasingly mobile and digital as well as […] providing the right blend of 'soft skills' as well as robust digital skills'. It called for education to help strengthen resilience in times of rapid technological change and globalisation. The Action Plan is aligned with the G-20 Digital Economy Ministerial Declaration in 2017 which shows a global recognition that 'all forms of education and lifelong learning may need to be adjusted to take advantage of new digital technologies'.

These documents outline a number of relevant policy objectives, which remain more valid than ever. These include:

- support for high-quality education;
- improving its relevance;

[13] European Commission (2017) 351: Commission Staff Working Document on the interim evaluation of the European Institute of Innovation and Technology.

[14] Public consultations for the Review of the Key Competences for Lifelong Learning and the Renewed EU Agenda for the Modernisation of Higher Education.

[15] COM (2017) 248: School development and excellent teaching for a great start in life and COM (2017) 247: A renewed higher education strategy.

[16] COM(2015) 192: A Digital Single Market Strategy for Europe.

- developing Europeans' digital skills and making them more visible;
- boosting innovation and digital competences in all education institutions;
- opening up education systems.

Priorities for action

The Action Plan focuses on implementation and the need to stimulate, support and scale up purposeful use of digital and innovative education practices. It will draw on a wide range of education and training stakeholders including business, research, NGOs, as well as, non-formal education where relevant. It has three priorities:

- **1: Making better use of digital technology for teaching and learning**
- **2: Developing relevant digital competences and skills for the digital transformation**
- **3: Improving education through better data analysis and foresight**

For each priority, the Action Plan sets out measures to help EU Member States address the challenges. These include: (i) providing tools to help educators and trainers make better use of technology including better internet connectivity; (ii) targeted action to develop relevant digital competences; (iii) reinforced and new efforts to improve education via better evidence and analysis. The Action Plan does not prejudge the forthcoming Commission proposal on the new Multiannual Financial Framework and the future funding programmes.

Priority 1: Making better use of digital technology for teaching and learning

Our society and economy are increasingly pervaded by digital technology. Technology in its various forms is a large part of our working environment and our lifestyles. However, there is a difference between using digital technology in everyday life and in education. Digital technology has huge, largely untapped potential for improving education.

A key part of digital education is ensuring equity and quality of access and infrastructure. The digital divide has many dimensions, but improving access to technology and connectivity for all children in education must be a starting point for reducing inequality and exclusion. We also need to address the varying quality of access and infrastructure, as high quality offers a more innovative and fulfilling learning experience.

Innovation in education and training depends greatly on empowering and connecting educators. Erasmus+ achieves this through peer learning. New expert-led training and practitioner workshops for both policymakers and educators, including the Platform of European Associations of VET Providers, will further strengthen connectedness by developing specific content in multiple languages and by utilising key EU platforms such as School Education Gateway and Teacher Academy. Blended mobility will be further promoted with new opportunities in Erasmus+ to support both online and face-to face learning and exchange for pupils in different countries.

Digital readiness in education requires knowhow and involves adaptation and change. Schools and training institutions in Europe are diverse, with equipment, teacher skills and approaches to technology use varying considerably. There are pockets of innovation in digital education throughout Europe. Yet innovative policies and practices need support to be scaled up.

To bring innovation and technology to the classroom, educators need the right environment, infrastructure, devices and leadership support. Making digital technology benefit students and

staff requires an approach that combines teacher training, curricula and educational materials that are fit for digitally-supported teaching models. This organisation-wide approach to implementing digital technologies for teaching and learning is reflected in the SELFIE self-assessment tool, which has been piloted in schools in 14 countries.

Mobility is an important part of education and digital technology is key for improving it further. Erasmus+ projects such as the European Student eCard and Erasmus without Papers will be scaled up and integrated with the work on authentication in projects under the Connecting Europe Facility[17] . The aims are to:

- enable students to identify themselves in a trusted manner, in line with the once-only principle[18] ;
- digitally connect higher education institutions' information systems;
- allow secure exchange and verification of student data and academic records;
- reduce administrative procedures;
- enable access to services students are entitled to when arriving in the host country.

The EU Student eCard initiative aims to improve the quality of student mobility in Europe. By 2025 all students in Erasmus+ mobility should be able to have their national identity and student status recognised automatically across EU Member States, including access to campus services when arriving abroad (e.g. course materials, enrolment services, libraries). 20 000 pupils and 4 000 teachers will receive support for school exchanges to complement and build on ongoing digital project work and collaboration.

The way forward:

1. Tackle the connectivity divide between EU Member States regarding the uptake of very high capacity broadband in all European schools by: (i) raising awareness of the benefits for schools and available funding opportunities[19] ; (ii) supporting connectivity i.e. through a voucher scheme focusing on disadvantaged areas and ensuring full implementation of the toolkit for rural areas[20] ; (iii) publishing data about progress.
2. Support the digital readiness of both general and vocational schools by strengthening their digital capacity and by making the SELFIE self-assessment tool reach one million teachers, trainers and learners by end of 2019 in all EU Member States and the Western Balkans; promote a mentoring scheme at national/regional level, supported by an EU-level awareness-raising platform.
3. Provide a framework for issuing digitally-certified qualifications and validating digitally-acquired skills that are trusted, multilingual and can be stored in professional profiles (CVs) such as Europass. The framework will be fully aligned with the European, Qualifications Framework for Lifelong Learning (EQF) and the European Classification of Skills, Competences, Qualifications and Occupations (ESCO).

[17]Connecting Europe Facility, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/CEF+Digital+Home .
[18]European Commission (2017), EU-wide digital Once-Only Principle, https://ec.europa.eu/digital-single-market/en/news/eu-wide-digital-once-only-principle-citizens-and-businesses-policy-options-and-their-impacts .
[19]Including via the recently created EU network of Broadband Competence Offices.
[20]European Commission (2017): European Commission joins forces to help bringing more broadband in rural areas, https://ec.europa.eu/digital-single-market/en/news/european-commission-joins-forces-help-bringing-more-broadband-rural-areas .

Priority 2: Developing relevant digital skills and competences for the digital transformation

To function and thrive in the digital society and overcome digital risks, citizens need competences that help them meet the challenges and seize the opportunities of digital transformation. Digital skills are a basic skill alongside literacy and numeracy, needed in all walks of life, yet too many citizens have limited or outdated digital competences. There is a need to go 'wide' as all citizens need to have an understanding, at different levels, of the different aspects of digital competence, and there is a need to go 'deep' for more specialised skills in informatics required in the ICT profession.

Digital competence is a part of the revised European Reference Framework of Key Competences for Lifelong Learning which all citizens should have. Digital competence means the confident and critical use of digital technology and covers the knowledge, skills and attitudes that all citizens need in a rapidly evolving digital society. The European Digital Competence Framework for Citizens[21] describes digital competence in five areas: information and data literacy; communication and collaboration; digital content and creation; safety and well-being; and problem-solving. The recently published European Digital Competence Framework for Educators[22] offers educators guidance in developing digital competence models. Taken together, these frameworks offer an in-depth and usable reference model to systematically promote digital competence.

The digital revolution will continue to dramatically change the way Europeans live, work and study. While this offers tremendous opportunities, there are also significant risks if digital competences are not developed. As part of the Skills Agenda, the Upskilling Pathways initiative recommends that Member States introduce coherent provision to improve the digital (and literacy and numeracy) skills of the many millions of low-skilled or low-qualified adults - the group in most urgent need. Moreover, an estimated 90 % of jobs nowadays require some level of digital skills[23] and one significant threat is that Europe will lose its most competitive edge — a highly-skilled and educated workforce — should we fail to teach digital competences to Europeans of all ages.

Acquiring digital skills needs to start at early age and carry on throughout life. This can happen as part of educational curricula or through after-school classes. Young Europeans are avid users of the web, apps and games but they also need to learn about underlying structures and basic algorithms, and become digital creators and leaders. An example of a successful grassroots movement is the EU codeweek.eu initiative, which reached nearly a million people around the world in 2016. Based on this experience, the initiative will be scaled up to encourage all schools in Europe to participate in EU Code Week by collaborating with authorities in EU Member States, Code Week ambassadors, the eTwinning network, the Digital Skills and Jobs Coalition[24] and related actions.

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[21] European Commission (2016): Digital Competence Framework for Citizens, https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework .

[22] European Commission (2017): Digital Competence Framework for Educators , https://ec.europa.eu/jrc/en/digcompedu .

[23] European Commission (2016): ICT for work: Digital skills in the work place, https://ec.europa.eu/digital-single-market/en/news/ict-work-digital-skills-workplace .

[24] For more information on the Digital Skills and Jobs Coalition see https://ec.europa.eu/digital-single-market/en/digital-skills-jobs-coalition .

Greater focus must be put on effectively tackling the challenges digital transformation creates for online safety and cyber hygiene. We need to strengthen children's and young people's critical thinking and media literacy, so they can judge and overcome the ever-present threats of fake news, cyber bullying, radicalisation, cybersecurity threats and fraud. Even the youngest children are in daily contact with digital technologies yet do not understand the risks, and parents worry about inappropriate content and risks but do not know how to address them. In parallel, Europol reports a growing rate of cyberattacks, data breaches and other illegal online activities. In its September Communication on cybersecurity[25] the Commission called on EU Member States to pledge to include cybersecurity in academic and vocational training curricula.

Closing the gender gap through digital and entrepreneurship education is vital if Europe is to fully embrace the benefits of the digital revolution. While both girls and boys have similar levels of interest and competence in digital technologies, fewer girls go on to develop this interest in their studies or for their career. Girls and young women require positive examples, role models and support to overcome stereotypes and realize that they too can embark on a fulfilling and successful career in ICT and STEM. Increasing female participation in these careers will help unleash Europe's digital potential and ensure that women take an equal place in shaping the digital world . In the EU fewer than one in five ICT professionals are female[26] .

Developing high-skilled ICT professionals is critical for competitiveness[27] . Advanced digital skills are important for supporting the next generation of analysts, researchers and innovators. Deep digital expertise is necessary for many professions, not just those working in ICT. For example, medical doctors analysing trends in the spread of illnesses need both medical expertise and a wide range of advanced digital competences. More generally, today three out of four researchers have no training in open access or open data management. Citizen-centered research and innovation focused on solving societal challenges should make more use of open data and collaborative digital technology tools and methods.
The way forward:

1. Create a Europe-wide platform for digital higher education and enhanced cooperation. The new platform, supported by Erasmus+, will serve as a one-stop -shop and offer: online learning, blended mobility, virtual campuses and exchange of best practices among higher education institutions at all levels (students, researchers, educators).

2. Strengthen open science and citizen science in Europe by piloting dedicated training, including continuous professional development courses on open science in higher education institutions at all levels (students, researchers, educators).

3. Bring coding classes to all schools in Europe, including by increasing schools' participation in EU Code Week.

[25] JOIN 2017 (450): Joint Communication of the European Commission and European External Action Service: Resilience, Deterrence and Defence: Building strong cybersecurity for the EU.
[26] 83.9 % of employed ICT specialists are male, 16.1% female (Eurostat, 2015).
[27] The European e-Competence Framework (e-CF) is a European standard and a reference for the competences required by ICT professionals. It is developed and maintained by the European Committee for Standardisation (CEN).

4. Tackle the challenges of digital transformation by launching: (i) an EU-wide awareness-raising campaign targeting educators, parents and learners to foster online safety, cyber hygiene and media literacy; and (ii) a cyber-security teaching initiative building on the Digital Competence Framework for Citizens, to empower people to use technology confidently and responsibly.

5. Support measures to further decrease the gender gap in the technology and entrepreneurial sector by promoting digital and entrepreneurial competences among girls; mobilise stakeholders (companies, NGOs) to equip girls with digital skills and inspirational models, building on the Digital Competence Framework for Citizens and the Entrepreneurship Competence Framework.

Priority 3: Improving education systems through better data analysis and foresight

Data is vital for education and training. Using technology creates data that can be exploited. The challenge is how to use this data to develop better insight and foresight that can improve education systems or solve current educational challenges. As technological trends like artificial intelligence, automation and robotics are global, EU-level cooperation can provide useful guidance for all EU Member States and help initiate collaboration and exchange on possible responses to emerging challenges that cross borders. Data collection through surveys and studies on digitization in education and training institutions and digital technologies in learning are vital inputs to policymaking. However, comparable comprehensive data on disseminating technologies in educational systems is often scarce, partial or not up-to-date. This calls for more efficient and effective data collection and coordination at EU and international (OECD) level. Data also helps to identify and address needs for evidence-based required policy measures, but comparative data especially is rarely used. Initiatives on digital education are seldom compared with other initiatives and available data, so little is known about which practices work in general or can benefit specific societal and education systems. Big data and learning analytics offer new opportunities to capture, analyses and use data to improve education. There are many initiatives in different EU Member States to move from a 'one-size-fits-all' teaching approach in subjects like mathematics to more personalized learning with scope for tailoring content to individual pupils' needs[28]. Learning analytics can improve personalized learning [29] , e.g. by identifying at-risk students, and can evaluate the impact of different teaching strategies. However, since learning analytics is still in its infancy in Europe, we need more pilot schemes to research and experiment in this field[30] .
User-driven innovation is key for early adoption of innovation solutions that tackle educational challenges. Education data and trends are generally collected in a top-down way, led by

[28] In Luxembourg, for instance, the Ministry of National Education, Children and Youth, in support of the ' Digital Lëtzebuerg ' strategy, launched the MathemaTIC national digital transformational project, which aims to enable students to interact with research-backed, engaging resources in mathematics that are tailored to students' specific needs and aligned to learning outcomes in the curriculum.
[29] COM(2013) 654: Opening up Education: Innovative teaching and learning for all through new Technologies and Open Educational Resources.
[30] Ferguson, R., Brasher, A., Clow, D., Cooper, A., Hillaire, G., Mittelmeier, J., Rienties, B., Ullmann, T., Vuorikari, R. (2016). Research Evidence on the Use of Learning Analytics — Implications for Education Policy. In: R. Vuorikari, J. Castaño Muñoz (Eds.). Joint Research Centre Science for Policy Report; EUR 28294 EN

international organisations and governments. The user's perspective is often not sufficiently considered, which could limit the possible solutions to a need. This is especially true in an age of user-driven innovation where individuals develop the solutions for problems they face. In this context, the Commission will explore ways of promoting citizen engagement and user-driven innovation through an annual EU-wide Education Hackathon to develop innovation solutions for key education and training challenges.

Foresight: from lagging behind to anticipating change. Education and training institutions are trying to catch up with technological developments. Foresight for education and training can reverse this trend and engage educators (from policymakers to practitioners) to lead upcoming change.

The way forward:

6. Build evidence on the uptake of ICT and digital skills in schools, by publishing a reference study assessing progress in mainstreaming ICT in education. It will cover the availability and usage of ICT infrastructure and digital tools and levels of digital skills. Together with the next round of the PIAAC survey, the results may feed into an update of the Digital Competence Framework . The Commission will also work with the OECD on the development of a new module in PISA on the use of technology in education, as well as explore the relevance and feasibility of proposing new Council benchmarks for digital competences and entrepreneurship.

7. Launch artificial intelligence and learning analytics pilots in education as of 2018 to make better use of the huge amount of data now available and thus help address specific problems and improve implementation and monitoring of education policy; develop relevant toolkit and guidance for Member States.

8. Initiate strategic foresight on key trends arising from digital transformation for the future of education systems, in close cooperation with Member State experts and making use of existing[31] and future channels of EU-wide cooperation on education and training.

The Action Plan outlines European initiatives that the Commission, in partnership with Member States, stakeholders and society, will implement by the end of 2020. It forms part of the Commission's broader ambition towards a European Education Area, complementing the Recommendations on Common Values and Key Competences. The Action Plan will be implemented as part of the European cooperation in education and training (ET2020) process. It will also support the European Semester, which is a key driver for reform through the education- and training related country-specific recommendations.

The Commission will launch dialogue with relevant stakeholders on how to implement the proposed actions. In the follow-up to implementation, the Commission will work with the ET2020 Group on Digital Skills and Competences. The Commission will also draw policy lessons from how the actions are implemented. This will contribute to the emerging discussion on future European cooperation in education and training.

[31] Such as the ET 2020 working groups and big data skills needs and trends as part of the Europass Framework.

Digital Education Action Plan

The action plan has three priorities, setting out measures to help EU Member States meet the challenges and opportunities of education in the digital age:
Priority 1: Making better use of digital technology for teaching and learning (Action 1 to 3)
Priority 2: Developing digital competences and skills (Action 4 to 8)
Priority 3: Improving education through better data analysis and foresight (Action 9 to 11)

Priority 1: Making better use of Digital Technology for Teaching and Learning (ACTION 1 TO 3)

Digital Education Action Plan - Action 1 Connectivity in Schools - Supporting the roll-out of higher-capacity broadband in schools
The action intends to raise awareness on the benefits of **high capacity broadband for schools** and to tackle the digital divide between and within EU countries by:

- Providing information on **financial support from the EU for connectivity**;
- Developing a **voucher scheme** for schools for improved connectivity.

Approximately **18% of schools** in the EU l**ack reliable broadband connections**.
Schools often rely on **1 single connection or subscription** to serve all students and teachers.
The EU broadband targets foresee that by **2025**, all schools should have access to Gigabit internet connectivity.
Being connected to the internet offers **many advantages to schools**: accessing up-to-date resources and specialised material; using platforms for collaboration and supporting active learning and project work. Schools are using more bandwidth-heavy applications such as video conferencing and video streaming, online software, cloud computing and virtual and augmented reality.
The action is centred on creating awareness, including through the EU network of Broadband Competence Offices, on **funding opportunities provided by the EU** for connectivity. This includes support from the European Regional and Development Fund (ERDF); the European Agricultural Fund for Rural Development (EAFRD) and the Connecting Europe Facility.
A voucher scheme will also be developed to support connectivity in schools by building on the experience with the Wifi4EU scheme.
Connectivity for a European gigabit Society, adopted by the commission in September 2016, sets a vision of Europe where availability and take-up of very high capacity networks enable the widespread use of products, services and applications in the **Digital Single Market**. Broadband Europe showcases more than 200 European broadband projects in a **database of good practice**. It also provides information and guidance on **investing in broadband development**, **technological solutions**, **business models**, **financing tools** and **measures to reduce the costs of broadband deployment**.
Schools or municipalities can get in touch with their **Broadband Competence Office (BCO)** for information on broadband developments and deployments in their country or region. BCOs provide technical and legal support to local and regional authorities on how to invest in broadband projects using European or other funds. See the Broadband in Member States page to find the BCO contact point in each country.

Digital Education Action Plan - Action 2 SELFiE self-reflection tool & mentoring scheme for schools - Supporting the digital capacity of schools

The action aims to support schools with the use of digital technologies for teaching and learning by:

- offering to any school in Europe the possibility of using SELFIE, a free, online self-reflection tool on the use of digital technologies;
- launching a mentoring scheme to scale up ICT-based innovative practice between schools at different stages of technology integration.

SELFIE is a **self-reflection tool** for primary, secondary and vocational schools. SELFIE helps schools assess, though a series of questions to teachers, students and school leaders, **where they stand with the use of digital technologies for teaching and learning**. Schools can **customise the tool** by adding or changing questions for their particular situation. The school gets a **tailor-made report** outlining strengths and areas for improvement. This report can be discussed within the school and can form the basis for an action plan.

The aim of the **mentoring scheme is to**:

- build an inclusive and sustainable network where teachers and schools can support each other and exchange experience on the use of digital technologies for teaching and learning;
- support the mainstreaming of ICT-based teaching practices through collaboration and peer-to-peer learning.

Only 20-25% of students are taught by teachers who are confident with technology use. Integrating digital technologies in a purposeful way is a challenge for school education. Actions that focus solely on providing infrastructure or devices yield mixed results. To improve how students learn, technology should be used in a holistic way, with a clear pedagogical focus and a whole school approach.

- By extending SELFIE to all countries in the EU and the W1estern Balkans.
- By engaging schools leaders and teachers in developing a whole school approach to implementing digital technologies for teaching and learning.

SElFiE is based on the Framework for Digitally competent Educational organisations (Digcomporg) developed by the European commission. More than 67,000 school leaders, teachers and students from 650 general and vocational schools in 14 European countries tested SELFIE's beta version in october 2017. The mentoring scheme is inspired by the **living School labs**, a project promoting whole school approaches in using digital technologies that ran from 2012 to 2014 and involved 12 ministries of education. Many examples of such peer-learning activities are taking place, for example under ireland's Digital Strategy for Schools 2015-2020.

- End of 2018: SELFIE available in all official EU languages.
- End of 2020: SELFIE used by one million students, teachers and school leaders across Europe and in the Western Balkans.
- 2020: mentoring scheme launched as part of the **Societal Challenge Programme**

Digital Education Action Plan - Action 3 Digitally Signed Qualifications - Storing and sharing qualifications online

Digitally-signed qualifications are **electronic documents** issued by education and training institutions to confirm the awarding of a qualification to a person. This document can be trusted by employers, education providers or other third parties.

Under this action, a common technical approach for issuing digitally-signed qualifications will be developed to ensure that certificates from one Member State can be understood and correctly interpreted in any other.
The approach will be based on open standards and integrated into the new **Europass platform**, where digitally-signed qualifications can be stored and shared.
The digitally-signed qualifications component of the new Europass platform will address a number of challenges faced by students, graduates, employers and educational institutions across Europe:

- Learning processes are diverse and there are different ways of capturing these outcomes.
- Employers, education providers and other bodies need to be able to check that certificates and other qualifications are valid and authentic.
- Learners increasingly need to be able to provide their certificates in electronic format to employers or education providers.

Europass has been used over 180 million times since its launch in 2004 and can provide a shared solution to address these challenges.
Millions of people will be able to store and share their digitally-signed qualifications on the new Europass platform or on any other electronic site, making it easier for education providers and employers to access reliable and trustworthy information on qualifications.

- The report **Blockchain in Education** (2017) explores the potential of using blockchain technology for digitally-certified qualifications.
- The commission analysed existing solutions, use cases and recommendations for the implementation of digitally-certified qualifications in the preparatory work for the new Europass platform.
- The Massachusetts institute of Technology (MiT) and learning Machine have developed the **Blockcerts**open standard for issuing and verifying digitally-signed qualifications on the blockchain.
- May 2018: adoption of the new Europass Decision
- Second half of 2018: analysis and development work
- End of 2019: Launch of the digitally-signed qualifications component in Europass

Awarding bodies are invited to take part in a pilot project with the Commission to test the issuing of digitally-signed qualifications.
A blockchain is a distributed ledger that allows information to be recorded and shared by a community. In this community, each member maintains his or her own copy of the information and all members must validate any updates collectively. Entries are permanent, transparent, and searchable, which makes it possible for community members to view transaction histories in their entirety. Each update is a new "block" added to the end of a "chain." A protocol manages how new edits or entries are initiated, validated, recorded, and distributed.

Priority 2: Developing Digital Competences and Skills (ACTION 4 TO 8)

Digital Education Action Plan - Action 4 Higher Education Hub - Creating an online platform for higher education
An **EU-wide online platform** will be created to support **Higher Education institutions (HEIs)** in using digital technologies to:

- improve the quality and relevance of learning and teaching;

- facilitate internationalisation;
- support greater cooperation between HEIs across Europe.

The platform will act as a hub for existing European, national and regional platforms dealing with online learning, blended/virtual mobility, online campuses and exchange of best practice. The platform will be supported through the Erasmus+ programme (call for proposals EACEA/28/2017).

Digital transformation can bring a range of benefits to HEIs:

- improving the quality and relevance of learning and teaching;
- making higher education more accessible to a wider range of students;
- creating links between higher education institutions, research institutions, employers and the wider community.

The online platform will be a **single access point** to existing online platforms and improve dissemination of best practice to all HEIs.

The platform will encourage international collaboration and co-creation of knowledge and content. The platform will provide HEIs with material on:

- training for academic staff on innovative pedagogies and curriculum design;
- exchange of material and best practices;
- blended and digital learning and blended mobility;
- collaboration between HEIs and employers.

Many national platforms on these topics can be found in the Member States; some have a national perspective, others more transnational. This action will scale-up these initiatives to European level.

- Pre-proposals deadline: 10 April 2018
- Full proposals deadline: 25 September 2018
- December 2018: Signature of grant agreement
- 1 January-28 February 2019: start of project activities

HEIs and other interested parties can contribute to this action by raising awareness of the online platform once it is launched.

Digital Education Action Plan - Action 5 Open Science Skills - Teaching, learning and assessing open science skills

The action aims to **foster digital competences and open science skills** in higher education. The objective is to engage, inform and train higher education students, teachers, researchers and staff. This will enable them to co-design and co-create programmes that tackle societal and technological challenges.

50% of the research community lacks open science skills including knowledge of citizen science.

3 out of 4 researchers have no training in open access or open data management.

- Open Science skills cover a broad span: from data management to legal aspects, including technical skills, such as data stewardship, data protection, scholarly communication and dissemination.
- The need for training in open science starts at primary school but becomes increasingly important at undergraduate level. Skills training targeting PhD programmes and researchers at all stages of their career is also vital.
- 2018: This initiative will be supported trough a call for proposal under the Erasmus+ programme (Forward Looking Cooperation projects) in the second semester 2018;

- 2019-2021: Projects funded under this call will run for a period of two to three years.

Training courses, and curricula for undergraduates will be developed on:

- open data, open access, open and FAIR management, analysis/use/reuse, publishing and dissemination;
- citizen science, including design, development processes, collection, analysis and communication of scientific data.

This training for undergraduates will provide a foundation for further embedded training at PhD level and beyond.

"Train the trainer" continuous professional development courses will be developed on open science for educators in higher education at all career levels.

The working groups on education and skills and rewards under open Science Policy Platform (OSPP) published two reports in 2017 for researchers:

- **Evaluation of Research careers fully acknowledging open Science Practices**
- **Providing researchers with the skills and competencies they need to practise open Science**

Both reports underlined the importance of integrating and streamlining open science skills and the need to raise awareness and understanding of open science at undergraduate and masters' level to PhD level training and professional development.

Digital Education Action Plan - Action 6 EU Code Week in schools - Getting more schools involved in EU Code Week

The action aims to encourage more primary, secondary and vocational schools to take part in EU Code Week.

EU Code Week is a grassroots movement run by volunteers across Europe. The week promotes computational thinking, coding and the creative and critical use of digital technologies.

1 out of 5 young people does not have basic digital skills.

90% of all jobs require at least basic digital skills today.

Coding fosters logical thinking, problem solving, and creativity.

EU Code Week celebrates creating with code. The idea is to make programming more visible, to show young, adults and elderly how you bring ideas to life with code, to demystify these skills and bring motivated people together to learn. The initiative was launched in 2013 by the Young Advisors for the Digital Agenda for Europe. Code Week gives every European the opportunity to discover coding and have fun with it. It promotes computational thinking and the ability to become creators rather than passive users of digital technologies.

Since 2013, participation in this initiative evolved as follows:

- in 2013: 10,000 people, 3,000 events in 26 countries;
- in 2014: 150,000 people, 4,200 events, 36 countries;
- in 2015: 580,000 people, 7,600 events, 46 countries;
- in 2016: 970,000 people, 20,000 events, +50 countries.

In 2017 Malta, Italy, Estonia and Poland had the most EU Code Week events per capita. In absolute numbers, Italy (+16,000) and Poland (2,400) had the most events with a high involvement of schools. Bringing Code week to schools in other countries could enhance much wider participation and provide most children with equal opportunities in developing a positive attitude towards coding, computational thinking, and STEM.

The goal is to encourage 50% of schools in Europe to take part in EU Code Week by 2020.

As part of the **Digital Single Market strategy**, the Commission supports EU Code Week and other independent initiatives which aim to boost digital skills, including programming, for a range of different target groups.
EU Code week takes place every year for two weeks. In 2018, EU Code week is from 6 to 21 October.
EU Code Week aims at celebrating coding and digital creativity and boosting interest in Science, Technology, Engineering and Maths. Everyone – schools, teachers, libraries, code clubs, businesses, public authorities – can organise a coding class or event and add it to the **CodeWeek.eu** map.
Digital Education Action Plan - Action 7 Cybersecurity in Education - Raising awareness of teachers and students
This action aims to **increase awareness** of the risks faced when being online and **to support capacity building of educators in online safety**. Two initiatives are foreseen:

- An EU-wide **awareness-raising campaign on cyber culture**, which will promote online safety, media literacy and 'cyber hygiene' for children, parents/carers and teachers.
- A blended course (online and face-to-face) for teachers on cybersecurity and pedagogical approaches **to teaching cybersecurity** in primary and secondary education.

1 in 3 internet users is a child.
Around half of **11-16** year-olds in the EU have encountered one or more of the most frequent internet risks.
51% of European citizens do not feel informed about how to deal with cyber threats.
There is an urgent need to raise public awareness of the potential risks of being online and to develop skills to act in safe and responsible ways.
A range of activities and events will take place in Europe and beyond, including on Safer Internet Day, to help raise awareness of online safety issues at home, school, work and in the community.
6,000 teachers at primary and secondary level will be trained on cybersecurity and on pedagogical approaches to cybersecurity.
The European Strategy for a Better internet for children combines financial support, legislation and self-regulation and involves Member States, industry and civil society. under this framework, the commission co-funds a pan-European network of Safer internet centres, coordinated at EU level by insafe and inHoPE. The betterinternetforkids.eu website serves as a single entry point for online tools and services for Eu citizens and the Safer internet community.
The **#SaferInternet4EU Campaign** was launched by Commissioner Gabriel on Safer Internet Day 2018 (6 February 2018) and will run throughout the year with a series of activities and events covering topics such as critical thinking, media literacy and digital skills.
In 2019 and 2020, a blended course on cyber-security targeting educators at primary and secondary level will be rolled out in 20 different locations in Europe.
The campaign will build on work by various stakeholders at EU and national level, including the EU network of Safer Internet Centres.
EU citizens, including young people, parents/carers, teachers, policy makers at EU and national level can become a **#SaferInternet4EU Ambassador** supporting the campaign through articles, blogs, tweets, sharing resources and engaging with other interested parties.
Digital Education Action Plan - Action 8 Training in digital and entrepreneurial skills for girls - Addressing the gender gap in digital and entrepreneurship sectors.

Developing **digital and entrepreneurial competences** is key for young people's participation in the jobs market and in society.
This action foresees a series of workshops on **digital and entrepreneurial skills** to be organised throughout Europe **for girls in primary and secondary education**.
These hands-on workshops aim to inspire female students to consider careers in **technology, entrepreneurship and innovation**. The courses will be run in close cooperation with partners from business, research and education. **Role models with careers and studies in technology, entrepreneurship and innovation** will also contribute to the workshops and share their experience.
52% of the European population are women.
Only **30%** of these are **entrepreneurs** and **32% economic leaders**.
Only **15% of tech sector workers in the EU are women**. Participation at senior management and board level is even lower.
Despite the growing demand for ICT skills, the percentage of Europeans with ICT-related education is decreasing. Although this is common for both genders, fewer women than men take up ICT-related jobs and education. **For every 1000 women, only 24 graduate in ICT-related fields**.
Europe's gender gap in the entrepreneurship, management and technology sectors is large and growing, because few female students choose subjects and careers linked to ICT and self-employment.
Education can help shape future (digital) entrepreneurs and leaders.
Promoting positive role models and enhancing digital and entrepreneurship skills among girls will help to **tackle the gender gap** and boost female participation in science, technology and business.
20,000 girls in primary and secondary education across Europe will take part in the workshops over the coming three years.
The Commission will complement the workshops with supporting actions addressing the root causes of the problem:

- Challenging stereotypes;
- Education and training in digital skills;
- Enhancing women's digital entrepreneurship.

Equality between women and men is a fundamental value of the Eu. Boosting the participation of women in the digital and entrepreneurship sectors are key policy priorities. The commission's work on this topic is based on the **Strategic Engagement for gender Equality 2016-2019** which focuses on five areas:

- increasing female labour-market participation
- Reducing the gender pay, earnings and pension gaps
- Promoting equality between women and men in decision-making
- combating gender-based violence and supporting victims
- Promoting gender equality and women's rights across the world

Workshops will take place across Europe from September 2018 to the end of 2020.

Priority 3: Improving Education Through better Data Analysis and Foresight (ACTION 9 TO 11)

Digital Education Action Plan - Action 9 Studies on ICT in education -Monitoring progress and informing policy:

- The ESSIE2 study will measure progress in the use of digital technologies in school education
- The questionnaire on ICT use, which accompanies the PISA survey will be updated in cooperation with the OECD.

The Commission is also analysing the relevance and feasibility of **new benchmarks for digital and entrepreneurship competences**, as a follow-up to the **2017 Communication on Strengthening European Identity through Education and Culture**.

The goals of the **ESSIE2** study are:

- to assess progress made in mainstreaming ICT use in education and compare results with the previous edition of the **study carried out in the 2011-2012 school year**;
- to provide estimates on how much it would cost to equip and connect all EU primary and secondary classrooms and give guidance on features of a 'connected classroom'.

The PISA questionnaire on the use of ICT will be revised and updated.

A framework for the pedagogical use of ICT for learning will be developed, linking ICT usage to measureable cognitive outcomes.

- Data collection on digitisation in education and training institutions and digital technologies in learning are crucial to inform policymaking.
- Comparable and comprehensive data on the use of technology in educational systems and on monitoring progress in technology use is often scarce, partial or outdated.
- More efficient, effective and coordinated data collection at EU level is needed.

The **ESSIE2** study will be carried out by Ipsos MORI and Deloitte, on behalf of the European Commission. The survey results will allow European and national policy-makers to share practices and data on mainstreaming ICT in schools. It will provide data on new online phenomena that affect students such as fake news and other online risks. Primary, lower secondary, upper secondary and upper secondary vocational schools in 31 countries (EU28, Iceland, Norway and Turkey) will be surveyed. Interviews will be carried out with school leaders, class teachers, students and parents.

In 2000 the OECD included for the first time, a **questionnaire with the PISA survey** on students' use of ICT. Since then the ICT questionnaire has been offered to countries as an optional component of the PISA assessment. The main goal of the action, which will be carried out by the OECD, is to update the ICT questionnaire with the support of international experts in the field.

- For the ESSIE 2 study, a conference will take place in October 2018 where the results will be presented. The final report will be published by the end of 2018.
- The updated PISA ICT questionnaire will be included in the PISA 2021 survey.

Digital Education Action Plan - Action 10 Artificial intelligence and analytics - Predicting future skills with data.

What skills will be needed on the labour market in the coming years? How can we make the best use of the data available online to capture insights and improve decision-making in education?

Under this action, artificial intelligence and analytics pilot projects will be launched to predict future skills and skills shortages.
Various data sources will be combined, compared and analysed with artificial intelligence techniques to build predictive models for future skills.
The action will also provide insights on what educational policies are required to address gender balance and inclusion within certain sectors.
Information available online, such as vacancy notices and employment statistics, could provide valuable insights for education policy but data are rarely used in a comparative way.
As skills gaps emerge, better data analysis, using machine learning, artificial intelligence and learning analytics, could allow Member States to adapt and respond to skills needs and trends.
Pilot projects in these fields could help identify a model to **predict skills shortages for the future** and support education systems to develop targeted educational offers.
The Commission will pilot data analytics projects to predict the learning journeys and training requirements for future competence profiles.
The commission has taken action to make optimal use of artificial intelligence through investments in research and innovation under the Horizon 2020 Framework Programme and the creation of a Digital Single Market. Measures include a comprehensive framework for the free flow of personal and non-personal data, first-class connectivity across Europe and stronger cybersecurity rules. The Commission will build further on this progress with an integrated approach to strengthen Europe's competitiveness in artificial intelligence as well as to provide a stable regulatory framework to address citizens' concerns about the legal, ethical and socio-economic implications of artificial intelligence use.

- 2018: identify digital tools and experts
- 2019: build a common data repository which centralises different data sets and develop and test a set of algorithms that match future competency levels to learning activities.
- 2020: build a repository of learning activities and learning elements for the skill profiles that were used in the pilot projects.

Digital Education Action Plan - Action 11 Strategic foresight - Key trends arising from digital transformation

- A series of **policy, research and guidance papers** will be published on the impact and potential of digital technologies in primary, secondary, and higher education.
- An **EU-wide education hackathon** will be organised to identify innovative solutions to the challenges facing educational institutions today.

In today's fast-paced, changing world, the ability of people to adapt, learn and re-skill matters more than ever. Education and training institutions must respond to these changes and adapt how they are organised and what, how and where they teach.
Strategic foresight for education and training can help educational stakeholders to proactively **plan for and lead the change**. Strategic foresight provides a forum to explore the dynamics of technological change and, most importantly, to think about what action is needed and how this should be implemented. Strategic foresight and prospective analysis provide **insights** on topics that will affect education and training systems. This can help in designing policies and strategies to address upcoming trends and needs.
The initiative will help:

- gain a better understanding of key digital trends that are affecting and transforming education and training systems;
- stimulate a debate at European level on the future of education;
- engage Member States in sharing forward-looking ideas for future policy development.

The research and policy papers will set the scene and allow a non-expert audience to understand key trends in education and training.
The education hackathon will actively engage stakeholders from different education and training institutions in an annual contest, taking place simultaneously over 48 hours in Europe, to identify key challenges for education in the digital age and co-create solutions across disciplines and organizations.
This initiative supports the Commission's commitment to facilitate cross-border cooperation on education and will contribute to the creation of the European Education Area.
EU education policy is designed to support national action and help address common challenges, such as ageing societies, skills deficits in the workforce and technological developments. Cooperation takes place under the Education and Training 2020 framework, a forum for exchange of best practices and mutual learning, gathering and dissemination of information and evidence of what works, as well as advice and support for policy reforms. Projects supporting strategic, evidence-based analysis and forward-looking policy advice are funded through Erasmus+ and other Euprogrammes.

- 2018-2019: a series of policy, research and guidance papers will be published.
- 2019: EU-wide education hackathon will be organised with participation from EU Member States and partner countries.

5. Encouragements for educational policy maker bodies in collaboration with media, to create new instruments and evaluation tools for measurement of media literacy skills of the students.

If teachers are to provide their students with effective media education, they should:

a) be sufficiently media literate and
b) have the necessary competencies to promote media literacy among students.

In order to measure such competences, a questionnaire needs to be developed to determine the extent to which teachers understand these competencies from both perspectives, ie their personal competences in media literacy and their pedagogical and didactic competencies.
The questionnaire should be developed in several stages. Literature related to media literacy is required in the first stages in order to develop a relevant and exhaustive questionnaire. In the next phase, this questionnaire needs to be evaluated and reviewed by a pre-established pilot group. In the final phase, the questionnaire was completed by a representative sample of teachers and teachers. Expectations on the results of the questionnaire are to be relevant, internally consistent and reliable. Despite the expected positive results, possible limitations can be mentioned. The questionnaire is a self-reported instrument. These instruments pose the risk of misrepresentation by the respondents, the possible inconsistency between measuring self-assessment and performance measurement. Indeed, the actual behavior (ie the actions that a teacher performs in reality) should be in time after assessing their own competencies or self-efficacy.

However, the actual behavior once again affects the future assessment that the teacher will make for his competences. In fact, behavior is one of the basic dimensions in the trending model of the reciprocal causation of Bandura (1986), next to the personal factor and the social, contextual environment. In order to prevent these risks, we recommend using the questionnaire in both presented dimensions: as an assessment of personal competencies in media literacy, self-efficacy of teachers in the field of media literacy ("I can" - statements); and as an evaluation of their pedagogical-didactic competences, giving an indication of the possible realization of their literacy competences in class practice ("students can" - statements). In this way, the questionnaire would show how teachers can assess their own competencies and the degree to which they feel they are capable of performing certain activities in an educational context.
Another difficulty of instruments with self-evidence is the risk of misinterpretation of the conditions in the measuring instruments for media literacy. Digital concepts are developing rapidly. In questionnaire, this issue should be neutralized by including older and newer concepts in the examples it has and added to the competencies (for example, the computer versus the interactive whiteboard).
Only those competencies that teachers need to develop between themstudents and who need to master them, should be included in the questionnaire. Pedagogical-didactic competences should only be asked from students' point of view, while from a methodological angle, for example, competencies related to the use of the media in the preparation, execution and evaluation of the lesson; the use of media in the professionalization of the teacher and the use of media for the performance of tasks within the educational community.
Media education does not only concern teachers and their students. In the educational process it is necessary to involve educators of teachers from the competent authorities. They play an important role in preparing teachers for students as adequate media educators. The same questionnaire can also be used in educators supplemented with specific methodic competences (use of media in teacher education, in their professionalization and in their contacts with the education and training community).

RECOMMENDATIONS

1. Defining media literacy as a crucial competence and adequately integrating it in the strategic documents in the field of education
2. Encouraging debates between the representatives of the competent state institutions and the educational sector, on the topic of the importance and the state of media literacy in the Republic of North Macedonia.
3. development of media literacy in mandatory educational
4. New curricula and programs in secondary education to include topics that aim to foster the critical perception and analysis of media content
5. Additional training for the teaching staff about media education and about the new information and communication technologies.
6. Organizing pieces of training, and distributing information packages for raising awareness, especially of young people, parents, and teachers about the risks related to processing personal data through communication networks.

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Table: Media Literacy Comparative Matrix

	NORTH MACEDONIA	LITHUANIA	BULGARIA
Media Literacy index 2018	Ranking (1-35): **35** **Cluster 5 country** (where 1 is best 5 worst) Score (100-0): **10** Change in score vs 2017: **(-1)** Change in ranking vs 2017: **(0)**	Ranking (1-35): **20** **Cluster 2 country** (where 1 is best 5 worst) Score (100-0): **55** Change in score vs 2017: **(0)** Change in ranking vs 2017: **(0)**	Ranking (1-35): **30** **Cluster 4 country** (where 1 is best 5 worst) Score (100-0): **30** Change in score vs 2017: **(0)** Change in ranking vs 2017: **(0)**
National strategy	Republic of North Macedonia has no Strategy for Media literacy and safe use of new media currently. The Agency for Audio and Audiovisual Media Services is responsible for development and promotion of media literacy and safe use of new media. In that direction in 2015, the Agency developed a document – Program for Promoting Media Literacy in the Republic of North Macedonia. The document aims to provide directions for the development and promotion of media literacy in the Republic of Macedonia. Media literacy entered media policy during the process of harmonization of media-related laws with the Audiovisual Media Services Directive. The Law on Audio and Audiovisual Media Services, which entered into force in early 2014, vested the Agency with a direct obligation to promote media literacy, cooperating with all the relevant stakeholders, and to report on its activities in the annual work reports it	The national strategy on media and information literacy (MIL) does not exist; however, the concept of MIL is included into education policy documents: The Information Literacy Framework Programme for Primary Education, and Information Technology Framework Programme for Basic Education (these are national guidelines prepared by the Ministry of Education and Science on skills and competences for secondary schools) have media literacy integrated. The concept and content of MIL are planned to be fully included in the curricula regulating documents (primary, basic and secondary education standards, educational plans and common programmes) by 2020.	Until now Republic of Bulgaria has not adopted a National Strategy for Media Literacy for Children and Youth. These relations are partially settled in the National Youth Strategy 2010-2020 adopted by the Council of Ministers. http://mpes.government.bg/Default.aspx On 10 January 2019, a draft of the "National Strategy for the Child 2019-2030", where the term "media literacy" is mentioned as a whole, was submitted for public discussion. The strategy was developed on the basis of Art. 1, para. 3 of The Child Protection Act by working group with a mandate from the National Council for Child Protection, involving representatives of state bodies, non-governmental organizations, and academic community. While developing the document, There were held many consultations and discussions with different target groups - cross-tables, thematic groups and user groups with participation of parent organizations, professional assistants and

	submits to the Parliament of the Republic of North Macedonia(Article 26). The Agency for Audio and Audiovisual Media Services first tackled the issue of media literacy while working on the previous Strategy for the Development of Broadcasting Activity, 2013-2017. The Strategy contains a short assessment of scarce evidence of the characteristics of the context for media literacy development in the Republic of Macedonia. Namely, until that moment, the most active factor was civil society as most of the projects were conducted by citizen organizations and referred to the fields of education and safe usage of the Internet and the social networks. The Agency for Audio and Audiovisual Media Services in 2017 started with preparation of new Strategy for the Development of Broadcasting Activity 2018-2022. The Agency considers that the Strategy for the Development of Audio and Audiovisual Activity 2018-2022 should focus on six areas, including the development of media literacy by encouraging the critical reception and understanding of media content among citizens and increasing the role of the media in the development of media literacy. In the Working Programme 2018 of the Agency it is stated that the Agency's priority activity in 2018 will be the development of the		specialists involved in working with children and parents , statesmen, legislators, judicial and local authorities, academic communities, children and youth formers, students and parliamentarians, civil and international organizations and other organizations working with children. The mission of the Strategy is to mobilize, collateralize, integrate and direct state authorities and community citizens to carry out their activities.

	Development Strategy for the Development of Audio and Audiovisual Activity. The work plan foresees the activities for the preparation of the Strategy to be completed in the first half of 2018, but it has not yet been adopted.[1] The agency is still working on the Strategy and it is expected that the draft version will be put on public debate in December. The Report for the work of the Agency for Audio and Audiovisual Media Services for 2017 stipulates that the Agency, in order to encourage media literacy in the country, realized a number of activities such as: initiating the establishment of a Media Literacy Network of the Republic of Macedonia, which has 35 founding members ministries, state institutions, higher education institutions, civic associations and organizations); together with some of the members of the Network, prepared educational material on media literacy for primary schools in the country; finalized the development of a separate web page dedicated solely to media literacy; print a leaflet which explicitly explains the basic principles of media literacy; adapted and promoted a video clip from EAVI for raising awareness about media literacy, and more.[2] The Media Literacy Network of the Republic of North Macedoniawas established on the initiative of the Agency launched in early 2017 and was launched on		

	April 27, 2017. The goal of establishing the Network was to facilitate the communication and consultation between the various subjects in the country working on raising the level of media literacy in both children and adults. It has 35 founding members, including two ministries: education, labor and social policy; and from the state institutions, besides the Agency for Audio and Audiovisual Media Services, founders are also the Directorate for Personal Data Protection and the Agency for Film. There are also two private higher education institutions - the School of Journalism and Public Relations and the Institute of Communication Studies. The most numerous are the civil associations and organizations - there are 18, and nine media are also founders of the Network. The network remains open for new members, and everyone can access it by accepting the Act on Establishment and completing the Registration Form, which is available on the website of the Agency. In December 2017, within the activities of the Media Literacy Program, the Agency finalized the development of a special web site dedicated exclusively for media literacy www.mediumskapismenost.mk where research, analyzes, information on conferences, projects, videos and other materials are published . The creation,		

	maintenance and administration of the website is financed by the Agency, and it is common to the regulator and members of the Media Literacy Network. The website operates in Macedonian, Albanian and English and is available for people with daltonism and weakness. It is a great opportunity for the concept of "media literacy" to reach all parts of the Macedonian society, but also to introduce the world to the Macedonian activities in the field of media literacy		
Media literacy and online safety through formal education	In the sphere of education, there is no single document law, strategy, program for development of education, in which media literacy is incorporated, in spite of the numerous reforms in the curricula and subjects and in their content, both in primary and secondary education. Even in the new Education Strategy 2018-2025, media literacy as a term has not been mentioned at all. There is no separate study program for media literacy that is taught in schools, but certain segments of the media (their characteristics, differences between false and real news, as well as education for recognizing information sources and assessing their quality) are present in the curriculum on the subject Civic Education in Primary and Secondary Education.[1] But the total fund of classes where these topics are discussed is almost negligible, which makes it difficult to talk	The Information Literacy Framework Programme for Primary Education, and Information Technology Framework Programme for Basic Education are supplemented by methodological help (books, guidelines, lesson plans) for teaching media literacy at secondary schools (all grades) and in non-formal or informal education. This methodological help was the result of the project of Critical Thinking and Media Literacy implemented nationally by Education Development Centre together with Nordic Council of Ministers Office in Lithuania and Ministry of Education and Science and project partners: Nordic information Centre for Media and Communication Research NORDICOM, Swedish Media Council, universities and other national actors in the field of media literacy education. This project aimed	For the first time in 2018/2019 in the curriculum plans are included media literacy classes in which students should develop five key competencies (1. information literacy, 2. communications and management, 3. digital content creation, 4. security and 5. problem solving)., through which the relevant cross-curricular links can be constructed and different aspects can be seen. These key competences are embedded in the individual curricula of the subjects "Computer Modeling" in the 3rd and 4th grade and "Information Technologies" in 5th and 10th grade. This is established by an amendment made by the Ministry of Education and Science to Ordinance No.13 on Civil, Health, Ecological and Intercultural Education. At the same time, the topic should be integrated into every subject when the task is related to the use of information resources.

	about the acquisition of comprehensive knowledge in this field.	to create a platform for a dialogue and cooperation among Lithuanian stakeholders and their Nordic counterparts and to create systemic preconditions for development of media and information literacy education based on the best Nordic experiences in integrating MIL into general and non-formal education. All in all 15 MIL workshops organized for about 600 teachers. MIL was included into agenda of other events, organized by Education Development Centre, attended by 150 teachers; MIL tools were presented to the public during the biggest annual event for schools – Exhibition/Fair" School". Recommendations for the Ministry of Education and Science on MIL education in schools and school cooperation with the social partners (NGOs, libraries etc.) have been prepared. The Information Literacy Framework Programme for Primary Education, Information Technology Framework Programme for Basic Education has been supplemented with MIL competencies and in cooperation with participating schools, description of pupils' achievements have been prepared and tested in schools. Special methodological material, based on the identified needs within MIL education, organizing innovative forms of competence building, using the best examples of the Nordic countries is available.	E-government and media literacy are topics that will be taught in class. This provides for the amendment of the same Ordinance No. 13. According to the current class requirements, about 10 topics are studied in class - patriotic education, tolerance, financial literacy, military training, road safety, prevention of violence and anger, career guidance, etc. Following the amendment, a new one is added - "e-government and media literacy". Students are encouraged to discuss these issues one hour a year between grades 4 and 7, one hour in grades 9 and 10 and four hours a year in grade 11. The process is facilitated by providing teacher training and methodological support, creating positive online content, active parenting, popularizing innovative practices, preparing curricula, etc. University programs: Bachelor program at NBU - Media literacy course for journalism students https://ecatalog.nbu.bg/default.asp?V_Year=2019&YSem=1&Spec_ID=&Mod_ID=&PageShow=coursepresent&P_Menu=courses_part1&Fac_ID=3&M_PHD=0&P_ID=2212&TabIndex=1&K_ID=45863&K_TypeID=10&l=0 Doctoral program at Sofia University "St. Kliment Ohridski "- "Media Pedagogy" https://www.uni-sofia.bg/index.php/bul/universitet_t/fakulteti/fakultet_po_nauki_za_obrazovanieto_i_izkustvata/specialnosti/doktora

			nti/kandidatstvane Bachelor program at Sofia University "St. Kliment Ohridski "- "Media Pedagogy and Artistic Communication" http://fnpp.uni-sofia.bg/?page_id=1122
Promoting media literacy and online safety through non-formal and informal learning	The CSO sector in Macedonia is much more active in the area of media literacy. Several researches have been conducted by citizen's organizations concerning media literacy. The civic organizations have the largest role in promoting media literacy in Macedonia through non-formal education. There are many trainings and seminars where young people through different non-formal educational methods (scenarios, role playing games, workshops) can learn and become aware for the wide sea of false information present around us. In December 2017, National Youth Council of Macedonia in cooperation with Radio MOF, organized a series of free trainings with young people between the ages of 15 and 25 (from Skopje, Veles and Tetovo) in order to learn how to recognize the false news, the manipulative content in the media, and the propaganda techniques through theoretical and practical work. The project was implemented with the help of a grant awarded through the project "Media Literacy in an Information Dive: Media Literacy Coalition" conducted by the School of	The Information Literacy Framework Programme for Primary Education, and Information Technology Framework Programme for Basic Education are supplemented by methodological help (books, guidelines, lesson plans) for teaching media literacy at secondary schools (all grades) and in non-formal or informal education. This methodological help was the result of the project of Critical Thinking and Media Literacy implemented nationally by Education Development Centre together with Nordic Council of Ministers Office in Lithuania and Ministry of Education and Science and project partners: Nordic information Centre for Media and Communication Research NORDICOM, Swedish Media Council, universities and other national actors in the field of media literacy education (see section above: Media literacy and online safety through formal education).	**The Coalition for Development of Media Literacy** of Bulgarian children brings together organizations working in the field of education, media and civil society. The Coalition has been working to develop digital literacy in Bulgarian schools even for children in 1st do 4th grade. The aim is to ensure the safety of children as well as the development of their critical thinking and creative talents in the digital media world. **The Bulgarian Safer Internet Centre** works for the protection and empowerment of children and young people in Internet by awareness raising, training, consultations and acting on reports from the public about online sexual abuse and exploitation of minors. According to the Safer Internet Center's **National Representative Survey "Bulgarian Children Online, 2016"**, 80% of the 9-17 year olds are confident in their ability to search for information, but only 50% can appreciate their veracity; about 38% of child abuse is online; about 20% of Bulgarian children met face to face with a stranger after online communication; ½ cannot judge whether what they read online is true or not. At

	Journalism and Public Relations, in collaboration with the Institute for Media Diversity in London and the newspaper "Nova Makedonija" with financial support from the European Union. In October 2018, the Association Ganimed Bitola started to implement the project "Subject for Dilemma" within the CRITINK project - "With critical thinking to citizens with media skills", which is financially supported by the European Union and in the next three years will are implemented by the Foundation for Internet and Society "Metamorphosis" and the Center for European Strategies - Eurothink. The project is scheduled to last 6 months from 01 October 2018 to 31 March 2019, and the media partner in this project is TV 21. The goal of the project is to promote media literacy by stimulating critical thinking, pluralism of opinions and democratic values. The target groups of the project are students from 7 high schools from Bitola.		the same time, there are no adequate curricula to develop key survival skills in the information ocean, such as critical thinking, false information recognition, personal data protection; harassment response, etc. **Teacher Education - Media literacy in the field of education, 2017** - The Media literacy curriculum in the field of education provides teachers with guidance through which they can create lessons and develop students' media literacy using the curriculum content. The program has been developed by acting teachers, journalists and educational experts, and includes: finding, handling and analyzing information (mainly from Internet-based sources), media and technology; Identifying fake news; researching a specific topic / problem and forming an opinion; forming a civic position; debating and teamwork. The training program includes modules that also cover topics such as personal data sharing, security, internet harassment, digital citizenship, and digital skills needed.
Raising awareness about the risks posed by new media	As above mentioned, in the recent years CSO's and Agency for Audio and Audiovisual Media Services through Media Literacy Network, are trying to improve the situation and contribute to medially-conscious youth who will critically evaluate the information. Occasionally there are trainings and conferences aiming to raise	As the result of the project of Critical Thinking and Media Literacy implemented nationally public awareness was raised by promoting the concept of MIL among teachers, students and other stakeholders in the field of education as the concept of MIL in Lithuania is still not so widespread. The methodological help (books, guidelines,	**"Don't fake with me"** is a contest for teenage videos and texts, which aims to raise awareness of the consequences of fake news. **Media Literacy Days** is a campaign that promotes the need to introduce media literacy into education. Media Literacy Days are organized by The Media Literacy Coalition, started for the first time in 2018. In

	awareness about the risk posed by new media, targeting mostly youth, but also educational workers, journalists and general public. But still, media literacy is not a common topic in public discourse in Macedonia, and young generations do not know how to check and verify information that is shared daily by mass media. That this is so, is confirmed by the media literacy index published in March 2018, where Macedonia is at the last, 35th place.[1]	lesson plans) for teaching media literacy at secondary schools (all grades) and in non-formal or informal education are available.	2019, the main focus of The Days is the ability to recognize fake news. **Scoolmedia.com** is a national internet platform for student journalism. Editorial instructions and mentoring of young future journalists are available. Scoolmedia.com is a national online platform showcasing students' work. **The national information and education campaign under the slogan: "I won't be hacked"** The campaign was held during the first Bulgarian Presidency of the Council of the EU, under the patronage of the European Commissioner for Digital Economy and Digital Society, Maria Gabriel. The campaign was held during the first Bulgarian Presidency of the Council of the EU, under the patronage of the European Commissioner for Digital Economy and Digital Society, Maria Gabriel.