

REPORT ON REGULATIONS AND GUIDELINES CONCERNING THE COMBINATION OF DIGITIZATION AND SKILLS

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Introduction

The last quarter of a century was a time of unprecedented development of digital and information and communication technologies. Under their influence, the world, social relations, ways of communication and technologies used in all branches of the economy are changing before our eyes. Digitalisation is entering all areas of life, not allowing us to stay with existing solutions. The dynamic development of modern technologies, which have unlimited potential for change, forces their users, children, young people and adults, to constantly learn and develop, acquire new competences. Under the influence of technological changes, the conditions on the labour market change. And not only in the scope of competences and qualifications required from employees (e.g. in terms of operating machinery, equipment, processes, media, etc.), but also in the area of professions themselves. At a very fast pace, some professions are disappearing, and in their place new ones are being created. This forces employees to be able to adapt quickly to change and reinvent themselves, which requires constant learning of new things. Such rapid dynamics is also problematic in terms of the professional preparation of children and young people, who will soon work in professions that are not currently in existence. Therefore, they need to be prepared to face the “unknown”, not just to learn specific competences and qualifications.

Advanced digitalisation and technology forces changes in the approach to education of children, young people and adults, in terms of professional preparation and social functioning. Changes cannot be stopped – they are an integral part of the process of socio-economic development. It is therefore necessary to adapt to the changing world by taking digital progress into account in the education process at every stage and for all groups of learners.

Legislative solutions at European Union level in the area of digital technologies

Digital development is an integral part of the modern world. And like any field, it requires some regulation. At the European level, attempts have been made to identify the directions of digital development and ways of exploiting the opportunities associated with it. The first document at the European level on digital reality was the "Digital Agenda for Europe: 2010-2020". The document focuses on increasing access to, and disseminating the use of, digital solutions to develop digital potential. The development of the postulates of the agenda was the Digital Single Market Strategy, developed in 2015. It sets out detailed rules based on three pillars to ensure a fair, open and secure digital environment. The pillars described¹ are:

- 1) providing consumers and businesses with easier access to digital goods and services across Europe through lower prices for electronic communications (Ordinance (EU) No 531/2012) and ultimately the abolition of roaming charges as of 14 June 2017 (RLAH regulations, "Roam like at Home");
- 2) creating the right conditions for the development of digital networks and services through better Internet access for all, together with comprehensive basic broadband services, mainly through the development of mobile and satellite broadband communications to make Gigabit Internet available to all major actors contributing to socio-economic development;

¹ <https://www.europarl.europa.eu/factsheets/pl/sheet/64/digital-agenda-for-europe> (accessed: 03.2023)

- 3) maximising the growth potential of the digital economy through better consumer protection in the field of telecommunications through privacy rules (Directive 2009/136/EC) and data protection rules (Directive 95/46/EC), an improved new regulatory framework for data protection (Ordinance (EU) 2016/679 and Directive (EU) 2016/680).

Five years later, in 2020, the second five-year digital strategy, entitled "Shaping the digital future of Europe" was created, which focuses on three key objectives in the field of digitalisation,² including:

- a) technology that benefits people,
- b) a fair and competitive economy,
- c) an open, democratic and sustainable society.

In 2021, this strategy was supplemented by a 10-year digital compass: European Path to the Digital Decade, which sets out ambitious EU targets for a digital transition by 2030.

The next step on the path following the spirit of digital solutions is the next ten-year agenda – "Digital Agenda for Europe: 2020-2030". It focuses on the challenges of new ways of communicating, shopping and accessing information. To this end, it addresses the issues of creating secure digital spaces and services, ensuring a level playing field in digital markets where large platforms lead, and strengthening Europe's digital sovereignty, while contributing to the European objective of *climate neutrality by 2050*³.

The implementation of these postulates is based on two strategic communications: "Shaping the digital future of Europe" and "Digital decade of Europe". The European Commission has put forward concrete actions, which it will take to support the creation of safe and secure digital services and markets⁴. Priorities for the current decade have also been set, including⁵:

- a) development of quantum computing technologies,
- b) a strategy for blockchain technology and a commercial policy based on blockchain,
- c) human-oriented and trustworthy artificial intelligence (AI),
- d) semiconductors (European microchip act),
- e) digital sovereignty, cybersecurity,
- f) gigabit connectivity, 5G and 6G,
- g) European data spaces and infrastructures,
- h) establishing global technological standards.

In addition, the so-called *digital compass* was published on 9 March 2021, (COM (2021)0118) with four digital objectives to be achieved by 2030 in the areas of⁶:

- 1) skills: at least 80% of all adults should have basic digital skills and 20 million ICT professionals should be employed in the EU, with more women taking up this work;
- 2) businesses: 75% of businesses should use cloud services, large data sets and artificial intelligence; more than 90% of small and medium-sized businesses in the EU should reach at least the basic level of digital technology usage rate and the number of unicorns (i.e. Innovative start-ups, valued at \$1 billion) in the EU, should double;
- 3) infrastructure: all households in the EU should have gigabit connectivity and all populated areas should be covered by 5G networks; the production of state-of-the-art and

² Ibid.

³ Ibid.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid.

sustainable semiconductors in Europe should account for 20% of world production; 10 000 climate-neutral edge network nodes offering a high level of security should be operational in the EU; Europe should have its first quantum computer;

4) public services: all key public services should be available online; all citizens will have access to their electronic medical records and 80% of citizens should be using electronic identity solutions.

The “Digital Europe” Program is a tool to achieve these objectives. This is an EU digital funding program with a planned total budget of EUR 7.5 billion for the period 2021-2027. The program is intended to provide strategic funding to support projects in five areas: supercomputing, artificial intelligence, cybersecurity, advanced digital skills and ensuring a broad use of digital technologies across the economy and society, including through digital innovation centres. This fund will be supplemented by other EU programs such as “Horizon Europe”, the “Connecting Europe” facility for digital infrastructure, the “Recovery and Resilience Facility” and the structural funds facility. In view of the need for economic recovery after the COVID-19 pandemic, Member States must allocate at least 20 % of funds for reconstruction to projects aimed at digitising their economies and societies (Ordinance (EU) 2021/694)⁷.

Subsequent regulations developed by the EU cover the next emerging solutions of digital technology that affect socio-economic reality. The latest documents currently regulate one of the most dynamically developing areas of digitalisation, i.e. artificial intelligence (AI). In February 2020, the so-called *white paper on artificial intelligence* was published. It states that artificial intelligence will play a key role and that it is expected to bring numerous social and economic benefits in many sectors. In October 2020 the European Parliament adopted three resolutions on artificial intelligence, covering issues of: ethics, civil liability and intellectual property. At the same time, the EP asked the Commission to establish a comprehensive and time-tested European legal framework on ethical principles in the areas of: development, implementation and use of artificial intelligence, robotics and related technologies. On 21 April 2021 the European Commission published a proposal for a new act on artificial intelligence (COM(2021)0206) that introduces a technology-neutral definition of artificial intelligence systems in EU law, which adopts a different set of rules adapted to the risk-based approach⁸.

The presented short analysis of the solutions developed in the EU aimed at regulating the area of digital technologies shows how important, and at the same time how dynamically developing, this area is. The so-called *technological leaps* mean that legislation often does not keep up with changes. At the same time, the unpredictability of the directions of development, dependent on creativity and skilful combination of unlimited resources, makes pre-emptive actions practically impossible. The digital expansion directs regulatory and legislative action. And above all, it is a challenge for education at all levels, because it gives a new shape to all processes occurring both in the economy and in social relations. The dynamic digitalisation and development of information and communication technologies make it necessary to have digital competences. This is currently the biggest educational challenge, especially for adults.

The Polish legislative perspective on the area of modern technologies and digital competences

⁷ Ibid.

⁸ Ibid.

Although Poland has been present in the European Union for almost 20 years (i.e. since 2004), and its economy is developing rapidly, taking advantage of the opportunities available within the EU, the area of digital technologies, and in particular the competences of digital society, leaves much to be desired. According to European Commission data presented in the *report on digital performance* (EU DESI 2021), in terms of digital society human capital, Poland ranks 24th of 27 EU countries⁹. The data collected for this report shows that in 2019 only 44% of citizens in Poland had basic digital skills, while the EU average was 56%. At the same time, the percentage of people with basic or above-basic digital skills in Poland in Polish government programs at the end of 2022 is estimated to be the EU average¹⁰. This result shows that there is still much to be done in Poland in the field of digital education. Paradoxically, the COVID-19 pandemic has contributed to the development of digital competences in the last 3 years. Limiting the possibility of direct interaction and transferring activities in many fields to the network, from shopping, to studying and remote work, forced many people to acquire (at least at a basic level) or develop digital competences. However, this forced, bottom-up change is not the right solution to the problem of insufficient level of digital competences in Polish society. A coordinated system approach is needed both in terms of regulation and implementation of comprehensive educational solutions. And this is what is missing in Poland at the moment.

In March 2022 the Supreme Audit Office (in the Polish system this is the main and independent state audit authority guarding public finances), published "Information on the results of the audit of public administration bodies' activities to improve the digital competence of the society". The document clearly states that "the efforts of ministers and other actors to improve digital competences have proved insufficient". There was a lack of a strategic document to comprehensively define the main assumptions and directions of action in this area. There is also no single entity to coordinate all activities related to the development of digital skills¹¹.

The lack of coordination was repeatedly indicated by the SAO as the main weakness of Polish solutions for improving digital competences. All the more so because, as the SAO emphasised, actions aimed at improving the digital competences of society were undertaken by, among others: the Office of the Prime Minister (OPM), the Ministry of Education and Science (ME&S), the Digital Poland Project Center (DPPC), the Ministry of Development, Labour and Technology (MDL&T), as well as municipal governments. This means that expenditure in this area is financed from many sources. This is one of the main reasons why, according to the SAO, it is necessary to appoint one entity to coordinate the activities of all institutions involved in this process, responsible for coordinating, monitoring and supporting other entities in the field of improving the digital competences of the society¹².

In particular, the SAO report highlights 3 levels of implementation of actions for the development of digital competences¹³:

- 1) The Minister of Digital Affairs - has developed three programs to support the development of digital competences in society: "Integrated State Information Technology Program 2019-2022", "IT Talent Development Program 2019-2029" and "Digital Competence Development Program 2030" (DCDP). The DCDP project, which is a new strategic state document in the

⁹ <https://www.nik.gov.pl/aktualnosci/kompetencje-cyfrowe.html>

¹⁰ Ibid.

¹¹ Ibid.

¹² Ibid.

¹³ Ibid.

field of improving the digital competences of society, was developed within the set deadline, i.e. before the end of 2019. However, in 2020 it was subject to further opinion. This program has set 3 goals to be achieved, which are¹⁴:

- a) improving the quality and scope of communication between citizens and other stakeholders and the state;
- b) strengthening the organisational maturity of public administration units and improving back office facilities;
- c) raising the level of digital competences of citizens, ICT professionals and public administration employees.

Regarding the period of work on the program, the SAO pointed out that the prolonged period of work on the program delayed the prospect of implementing solutions for the development of digital competences among citizens. It was stressed that this is to the detriment of many groups of citizens - according to age or profession: from children and young people to seniors, but also for entrepreneurs, officials or digitally-capable people who could become ICT specialists in the future¹⁵.

In addition, the SAO pointed out to the Minister of Digitalisation the lack of a report on the implementation of the program for the period from July 2020 to June 2021, which was inconsistent with the developed assumptions, and sluggishness in implementing the provisions of the Act on the Integrated Qualifications System. Despite the passage of five years from the date of its entry into force, it did not complete - by the required date, i.e. by January 15, 2021 - the review of the qualifications referred to in Art. 104 sec. 1 of the Act on the IQS, in order to identify the qualifications to be included in the IQS.¹⁶

The development of the aforementioned program was preceded by a detailed analysis of the situation in the area of digital competences, which revealed, among others: that despite a significant decrease in the number of digitally excluded people in 2019-2020, approx. 13% of all Polish residents are beyond the reach of the digital economy, i.e. they do not make electronic transactions or purchases via the Internet. The analysis also showed that Poland is one of the EU countries with the lowest level of employment of women in the ICT sector¹⁷. These results show that Poland faces very large challenges in the field of developing digital competences, but also infrastructure. The recommendation of the SAO is all the more justified because comprehensive, coordinated actions are needed, for which a specialised institution should be responsible.

- 2) The minister responsible for education - each year took into account the development of digital competences in the educational policy of the state, as well as in the plans of the Ministry of Education. The Human Capital Development Strategy (HCDS) for 2017-2024 assumes that 30% of teachers employed in the education system will participate in activities to improve their competence in the implementation of the base curriculum using modern teaching aids and teaching methods. The activities of the Minister of Education and Science resulted in over 580,000 teachers participating in training to improve digital competences

¹⁴ <https://www.gov.pl/web/ia/program-zintegrowanej-cyfryzacji-panstwa>

¹⁵ <https://www.nik.gov.pl/aktualnosci/kompetencje-cyfrowe.html>

¹⁶ Informacja o wynikach kontroli działań organów administracji publicznej na rzecz podnoszenie kompetencji cyfrowych społeczeństwa” [Information on the results of the audit of public administration bodies’ activities for the improvement of the digital competences of society] Departament Administracji Publicznej [Department of Public Administration], Warsaw 2022. p. 11.

¹⁷ <https://www.nik.gov.pl/aktualnosci/kompetencje-cyfrowe.html>

and other forms of professional development in the years 2018-2021. As part of the actions undertaken during this period, **62 e-textbooks and about 30 thousand other electronic educational materials for general and vocational education** in primary and secondary schools were published on the Integrated Education Platform. However, no result indicators have been developed for the evaluation of e-materials targeted at schools, which means that no assessment of the effectiveness of the activities in this area is possible. In addition, the Ministry introduced changes in digital education for primary school students¹⁸.

In the context of the actions taken, the picture at universities is very negative. The Minister of Education and Science did not analyse the needs of academic staff in the field of raising the level of digital competences. A report prepared by the National Centre for Research and Development (NCR&D) in 2020 showed, among others, that universities lack information technology equipment, software and tools for online work. It would therefore be necessary to develop the IT infrastructure of universities, as well as teachers' ability to master the operation of equipment and programs for remote work. Despite the conclusions of the NCR&D report, the Minister did not develop a concept for preparing and using digital educational materials at universities and improving the digital competences of academic staff, not wanting to interfere in the so-called "autonomy of universities"¹⁹. It is worth noting, however, that the study was based on pre-pandemic data, i.e. before the period in which universities also introduced remote learning, which forced the implementation of digital solutions enabling classes to be conducted remotely. However, as shown in practice, these were not solutions at a high level of exploitation of the potential of information and communication technologies. This was demonstrated by the results of an ad hoc study conducted in 2020, in connection with the announcement of the state of epidemic, for the needs of the then Ministry of Science and Higher Education. Information Processing Centre – the National Research Institute conducted a survey among universities on distance education during the suspension of in-person classes, which showed, among others, that the vast majority of remote classes (88%) used e-mail contact with students, and only 15% of remote classes were conducted using external materials and courses. In addition, 72% of universities participating in the study did not have open educational resources (e-textbook type) and entire courses that could be made available to other entities²⁰.

- 3) Municipalities - the SAO audited 24 municipal governments, most of which included the improvement of digital competences in their strategies and tried to determine the needs of residents in this area, e.g. by means of surveys or consultations during village meetings. All municipalities had undertaken informational and promotional activities, including highlighting the benefits of dealing with official matters via the Internet. The municipalities implemented grants for the development of digital competences within the framework of projects of the Operational Program Digital Poland for the years 2014-2020, co-financed by EU funds, achieving the expected results. The audited municipal governments carried out activities to improve the digital competence of the inhabitants, although the municipal governments' own tasks did not explicitly define an obligation in this respect. In all studied municipalities, their inhabitants of different ages were able to take advantage of workshops, courses and training in the field of computer operation. A relatively large number of training

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ "Information...", op. cit. p. 14.

courses were addressed to seniors. Educational activities were undertaken not only by educational institutions, but also by libraries, cultural centres and social welfare centres. That is, institutions that are most often used by residents.

The analysis carried out by the SAO from the audit was the basis for publishing recommendations for the main state institutions responsible for conducting policy on digitalisation and developing digital competences, i.e. for:

- 1) the President of the Council of Ministers and Minister of Digital Affairs:
 - a) an indication of the body responsible for coordinating the activities of the institutions involved in improving the public's digital competence;
 - b) completion of the Digital Competence Development Program and implementation of the Program.
- 2) Minister of Education and Science:
 - a) consideration of the need to develop a concept (strategy) for the preparation and use of digital educational materials at universities.

According to the presented data, Poland still has a lot to do in the field of digitalisation and development of information and communication technologies, as well as raising and developing digital competences. The main problem of the Polish reality is the lack of coordinated, comprehensive actions to improve the situation in this area. And this despite the existence of development programs. This includes a document that was created in 2015: the "Framework catalogue of digital competences", which the authors themselves stated, sought to link digital competences with the specific benefits that users can enjoy in their respective areas of life²¹. This catalogue sets out 3 levels of competence, enabling the achievement of concrete actions and benefits through the use of digital technologies²²:

- a) digital competences – includes information competences consisting of the ability to search for information, understand it, as well as the assessment of its reliability and usefulness and IT competences, which consist of the ability to use computers and other electronic devices, use the Internet and use various types of applications and software, and also create digital content,
- b) information competence – understood as a set of skills allowing the user to determine when information is needed and to search for, evaluate and use information from various sources,
- c) functional competences – based on IT and information competences, combining them in order to implement actions aimed at achieving benefits in key areas, such as: work and professional development, relationships with relatives, realisation of interests, health, finance, religion and spiritual needs, everyday affairs, civic engagement.

What is more worrying is the fact that Poland is situated in the "tail" of EU countries in terms of its citizens' digital competences. This situation is particularly unfavourable in terms of economic development and the competitiveness of Polish social capital. In the available analyses, their authors point to a close correlation between technological development and the demand for employee competences and qualifications: "modern, but above all, future work is and will increasingly be dependent on the achievements of technology and technological solutions derived from it. The pace

²¹ „Framework catalogue of digital competences", collective work, https://depot.ceon.pl/bitstream/handle/123456789/9068/Ramowy_katalog_kompetencji_cyfrowych_Fra.pdf?sequence=1&isAllowed=y, accessed 03.2023, p. 2.

²² Ibid., p. 5-9.

of change in this area creates the need for constant learning. The competences acquired at school, at university (formal education) are no longer sufficient, they should be skilfully supplemented and improved in various types of postgraduate studies, specialist courses, practical training and workshops on a non-formal basis"²³ and "the latest technologies have an impact on rapid changes in the labour market. New functions and tasks of computers and telecommunications technologies affect changes in the structure of the market and social relations (...) new professions that were not known a few years ago are arising. In every field of the economy and in almost the majority of professions, digital competences are of key importance. Many professional tasks force employees to be able to search for, select and process information. The level of these competences depends on the innovation of companies, their competitiveness, as well as their efficiency. That is why many employers are looking for employees who fully understand the need for functioning in the technical world and efficiently use the tools of new technologies. Thanks to the Internet, barriers to the creation of new companies are overcome, and many professions that can be performed remotely are created. Many industries are evolving, including marketing and medical services. In the face of the above considerations, digital competences are of key importance. The development of digital competences is important not only in the perspective of the continuous development of new technologies, but also in the possibility of using them in various areas of life, in order to cope more effectively with various types of challenges. Digital technologies permeate - or rather it should be said: they can permeate - every aspect of our lives, often allowing for faster, more convenient and cheaper handling of everyday tasks: from shopping, through arranging a social meeting, professional work, to studying and paying bills. Technology literacy is also becoming increasingly important as this factor is now becoming a new dimension of digital exclusion"²⁴.

This extensive quotation shows how important it is to adapt the competence of society to the conditions of the changing economy and the digital leap that is happening before our eyes. In this context, it is crucial to enable children, young people and adults to be equipped with digital competences that will prepare them for effective functioning in a changing world.

Summary

Today, we are witnessing dynamic changes. Digital reality has entered all areas of social and professional life. It is therefore necessary to acquire and develop digital competences. At the EU level, strategic documents are being developed which set the direction for social development, related to digitalisation and computerisation, and form a legislative framework.

In Poland, this process is taking place in an uncoordinated way. Unfortunately, Poland is in the bottom four EU Member States in terms of digital society human capital. The audits of state institutions carried out in the implementation of strategies and policies in the area of digitalisation and ICT indicate the lack of a dedicated institution that would conduct activities at a central level in a coherent and coordinated manner. Poland faces a number of challenges in the field of adaptation and adjustment of society to the digital transformation, including in the field of education, from children and young people, through adults, to seniors.

²³ Andrzejewska A., „Wyzwania i zagrożenia przestrzeni cyfrowej dla edukacji i aktywności zawodowej” [Challenges and threats of the digital space for education and professional activity] in „Kompetencje przyszłości” [Competences of the future] ed. S. Kwiatkowski, Wydawnictwo FRSE, Warsaw 2018, p. 378-379.

²⁴ Ibid., p. 384-385

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