

# RECONFIGURING THE EDUCATIONAL PROCESS THROUGH THE USE OF DIGITAL TECHNOLOGIES AND THEIR IMPACT

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## Abstract

*In this paper I aim to highlight the profound changes brought to the educational process through the use of digital technologies and the impact they have had during the pandemic and post pandemic period, as the method of computer-assisted instruction and online course delivery is still used today in combination with the traditional method, especially in university settings.*

*In the paper I will analyse the following aspects:*

- (a) European Union policy in the field of digital education;*
- b) The emergence of socio-educational phenomena that have an impact on development such as: the digital divide (digital segregation), digital literacy and computer literacy;*
- c) Changing learning behaviour;*
- d) The effects of using social networks on learners and teachers.*

**Keywords:** *education system, ICT, digital divide, digital literacy, information literacy, e-learning platforms.*

## Introduction

Effective use of ICT requires a change in teachers' knowledge, practices and conceptions. Teachers need to be open to innovative methods and understand the advantages of ICT technology in their work and undertake appropriate training to be able to

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include technology in the teaching-learning system. ICT contributes to a rethinking of the teacher-learner interaction process.

The adoption and effective incorporation of information and communication technology (ICT) into teaching and learning in schools/universities is unevenly achieved, although the value and importance of its use is recognized by teachers.

The inertia of education systems and resistance to change on the part of teachers, the high costs of purchasing the necessary equipment, the discrepancies between the education system in urban and rural areas, and the lack of teacher training are factors that lead to low implementation of information technology.

Investment in hardware and software equipment is therefore needed, as well as training for teachers so that they can be used to their full capacity. The more intensively, fully and comprehensively ICT equipment is used, the more justified the economic investment. The mere physical presence of such equipment in classrooms does not mean that the technology contributes to an interactive and developed educational process.

#### European Union Policy in the field of digital education

The European Commission has developed an action plan which includes measures on how education and training systems can make better use of innovation and digital technologies and support the development of relevant digital skills needed in life, work and the profession in an era of change. The plan has three priorities: better use of digital technologies in teaching and learning, developing digital competences and skills, improving education through better data analysis and forward thinking.

Digital competence is one of the eight key competences for lifelong learning, as set out by the European Commission in a framework set of recommendations for all EU Member States.

Digital competence is defined as the confident, critical and responsible use of digital technologies for learning, working life and participation in society.<sup>46</sup>

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<sup>46</sup> Council Recommendation of May 22<sup>nd</sup> 2018 on key competences for lifelong learning, OJ C 189, 4.6.2018, pp. 1-13.

The Digital Education Action Plan (European Commission, 2018) focuses on the need to encourage, support and increase the conscious use of digital and innovative educational practices through better use of digital technology for teaching and learning as well as through the development of digital competences and skills. We are looking at digital skills training for learners and teachers on the one hand and the use of technology for pedagogical purposes to support, enhance and transform learning and teaching on the other.

The European Digital Competence Framework, also known as DigComp, describes digital competence in detail and divides the knowledge, skills and attitudes needed by all citizens in a rapidly evolving digital society into five areas:

1. Information and data competences (evaluation of data, information and digital content, management of data, information and digital content),
2. Communication and collaboration (interacting using digital technologies, civic engagement using digital technologies, collaborating using digital technologies),
3. Creating digital content (developing digital content, embedding and detailing digital content, copyright and licensing, programming),
4. Security (protecting devices, protecting personal data and privacy, protecting the environment),
5. Problem solving (solving technical problems, identifying technology needs and responses, creative use of digital technologies, identifying digital skills gaps).

Teachers' digital competences and associated teaching and learning practices are also addressed in the European Framework for Digitally Competent Educational Organisations (DigCompOrg). SELFIE (Self-Reflection on Effective Learning by Stimulating the Use of Innovative Educational Technologies) is a free online self-reflection tool for schools, based on DigCompOrg, which helps schools to identify their strengths and weaknesses in using digital technologies for teaching and learning.

The emergence of socio-educational phenomena that have an impact on development

As digital technology has advanced, the possibilities for its use in education have increased, and the effects on learners depend largely on how these technologies are used in the teaching-learning process. Digital teacher training is essential in facilitating learning through digital technology.

We note that the increasing involvement of this technology in our lives has led to the emergence of a number of socio-educational phenomena: the digital divide, digital literacy and information literacy.

The digital divide refers to inequalities in terms of access to or use of resources depending on a number of factors, namely: income levels, the urban-rural divide, the lack of digital skills among both teachers and learners, and the lack of financial resources to purchase equipment.

Digital literacy is the ability to retrieve information from multiple sources, assessing their credibility and usefulness, skills related to creating and publishing digital content in the virtual environment, information management.

The main skills related to digital literacy are: use of hardware and software, use of applications, innovation and creativity, information processing (searching, analysing and evaluating data), data and information management, communication, internet security, openness and willingness to learn, adaptability.

Computer literacy encompasses functional skills and competences related to the use of computers and applications (use of ICT-based devices, applications, software and services, ability to design and implement ICT solutions, ability to work with a range of tools, platforms to accomplish complex tasks). Another aspect concerns digital communication, digital creation, digital learning and teaching.<sup>47</sup>

Digital learning is the ability to participate in and benefit from learning opportunities, identify and use resources, digital platforms, use digital tools, ability to manage one's own time and tasks.

Digital teaching is the ability to teach and support learners in the context of digital learning (different educational approaches), to design learning opportunities, to support and facilitate learning by effectively using available digital tools and resources<sup>48</sup>.

Artificial intelligence helps the learner to assimilate knowledge and new skills through experiential learning, knowledge of phenomena beyond human perception, facilitating understanding of complex concepts through processing of spatial representations.

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<sup>47</sup> A. Băban, *Educational Counselling*, Psinet Publishing House, Cluj-Napoca, 2003.

<sup>48</sup> I. Albulescu, H. Catalano, *E-didactics. The process of instruction in the online environment*, Didactica Publishing House, Bucharest, 2021.

### Changing learning behavior

The digitization of education brings with it new ways of looking at the learning environment, of understanding the place and role of teachers and learners in this process. Digital learning is not about technology but about pedagogy and the teacher has to be the magician of building a quality course, to bring passion to the field they teach. The educational environment must be open to new technological solutions, as ICT leads to new horizons of knowledge and learning.

Technology can offer the teacher the possibility to make teaching more individualised, more flexible in terms of course content in relation to individual needs and circumstances. It should be noted that the use of technological solutions, educational platforms, various digitised materials does not replace the teacher's work in the classroom. Courses should be blended, not just e-learning. The material and teaching methods should always be adapted to the target group, taking into account the objectives, age, educational level, motivation and the final aim of the course, what are the benefits for the learner.

Learners want to be respected, to be trusted, to matter, to follow their passions and interests, to work in groups and projects, to make decisions, to compete with each other, they want an education that really trains them for professional life.

ICT fosters active learning, provides technical support for mentoring programmes, educational resources, virtual learning communities.

Learning performance is greatly influenced by the ability to use electronic resources, to process and understand digital sources of information. Information is easily accessible, and many young people find the Internet sufficient for learning without having to go to libraries. The downside of online information resources is that they encourage copy-paste behavior without further analysis of the subject. This leads to superficial learning.

The ICT-based learning approach leads to self-management of the learning process.

The learning profile of those using the digital sphere consists of increased speed of task completion, non-linear processing, simultaneous engagement in multiple tasks, preference for images, active learning in unconventional environments, desire for immediate rewards.

They can multitask by processing information simultaneously, but there is also the disadvantage that they have the ability to retain fewer items in a given time and keep them

in memory for a shorter time, as well as the longer time needed to complete a task. Preference for pictures over text because they have the ability to visually process different material, but there is the disadvantage that they do not have the patience to read books, texts needed to create a rich, appropriate vocabulary, literature. Random access to information leads to a partial, incomplete understanding of a subject. Immediate reward for effort can have detrimental consequences for learning in terms of difficulty in persevering through obstacles and creates dissatisfaction when reward is not received immediately. Strategies to capture and maintain attention include the use of interactive materials, multimedia, images and graphics<sup>49</sup>.

#### The effects of using social networks on learners and teachers

The Covid-19 pandemic has profoundly affected the education system and accentuated existing social inequalities.

In September 2020, the Government together with the European Commission decided to upgrade the approaches to the training and digital education plan with the aim of advancing the vocational training of young people in a new digital era. Digitalization has proved to be the lifeline of the education system. Thus, the most effective method of continuing courses in education systems and adapting to the given situation and conditions imposed by the pandemic is the hybrid scenario. This involves a number of learners taking turns in the classroom while the others take classes online, the process being on a rotational basis<sup>50</sup>

Communication is an important way to re-establish relationships with others, so learning platforms within the online environment are the central points through which learning and communication activities can be carried out in ensuring quality education for all.

They play a fundamental role in times of crisis to guarantee efforts and enable access to effective communication and documentation. There must be a starting point through

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<sup>49</sup> V. Frunzaru, O. Ștefăniță, *Social dialogue, problems and solutions in education. Online education in pandemic*, Tritonic Publishing House, Bucharest, 2021.

<sup>50</sup> European Commission. Coronavirus: online learning resources. Available at: [https://ec.europa.eu/education/resources-and-tools/coronavirus-online-learning-resources\\_ro](https://ec.europa.eu/education/resources-and-tools/coronavirus-online-learning-resources_ro).

which learners and others can trust. Digital technologies, social networks and connections are needed more than ever<sup>51</sup>.

Digital technologies are vital in the procurement of equipment and platforms and are becoming indispensable to the whole population. In line with the isolation of the pandemic period, they represent and guarantee a life-saving method for a proper social life.

Because of the new activities taking place in our lives online, ensuring security is more advanced than ever. We have to rely on digital technologies to be safe from any dangers of offences, attacks and security in terms of connections. It is necessary for everyone to be able to have advanced security, both while working online and offline, but also compliance to support digital needs.<sup>52</sup>

Within the online environment, learners have the opportunity to belong to an open environment that facilitates the skills, analysis, beliefs and feedback needed to enhance their needs and develop their capabilities in the learning process. Moreover, changes are made in the role of the teacher as well as in the relationships they undertake with their learners, so that the teacher has the duty to be like a guide, while learners can carry out their activities in the classroom becoming much more active than in the face-to-face learning style.<sup>53</sup>

The most common obstacles in teaching a lesson in the classroom were the difficulties of using technology, namely e-learning platforms, to create sections through which learners could perform their online presence or sections through which, they could add their completed assignments.

Other problems most often encountered were fixing a stable connection, and difficulties in turning on the camera and microphone. These lead to instability of learners' attention.

Teachers organise their courses according to the conditions, on various platforms, but do not provide the guidance needed for learners to accurately acquire the concepts taught by the teacher in the courses. Due to the absence of guidance from teachers, learners have to seek help from other colleagues with wider expertise in a particular field or to find

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<sup>51</sup> T. Ivan Cretu, *Identifying the psycho-pedagogical problems of learners during the Covid-19 pandemic*.

<sup>52</sup> I. Nicola, *School Pedagogy Treatise*, Aramis Publishing House, Bucharest, 2000.

<sup>53</sup> I. Albulescu, H. Catalano, *E-didactics. The process of instruction in the online environment*, Didactica Publishing House, Bucharest, 2021.

information on various online sources to better understand the information taught in class and to carry out their homework easily. Thus, looking at this perspective, it can be seen that teachers and learners alike are no longer showing the same interest in teaching activities, with the online environment being a hindrance to learning as before.

Teachers feel that by doing homework, learners acquire the information they are taught and practise their knowledge in a particular area, and they feel that there is no need for counselling, as all the work takes place online. If the learner has learning difficulties, teachers upload help materials and tutorials to e-learning platforms.

The use of new digital methods in learning processes has put teachers in a position where they have to focus on devising a different plan for the learning process, which is in line with expectations in terms of communication using digital technologies.

The move to the online environment has also caused difficulties for learners in the distance learning process: an unstable connection, the absence of the new learning style and use of platforms. Another barrier to the learning process among learners was the lack of an appropriate environment, as some live modestly and do not have the necessary environment to be able to attend classes, and the absence of tools according to the process underlying online learning. This learning system seems difficult to access in Romania, and for some it is considered to be a lie, as there are learners who do not have access to the Internet and especially to the tools that make communication between teacher and learner possible. For some children, lack of access to the Internet can lead to dropping out of school. This is a very common situation among young people in Romania who, moreover, end up dropping out of school for various reasons: either they are part of an austere environment, or they come from families with various problems, both personal and financial, and their parents are unable to provide them with the opportunity to continue studying due to living conditions.

Moreover, the pandemic also has a major influence on dropout among learners because of the obstacles they face in learning new skills. Because of this, illiteracy and dropping out of school have become widespread among young people because they cannot get used to the conditions in terms of the education system and leads to irrevocable dropping out of the educational process.



## Conclusions

Digitization is a way of integrating the whole community and is a factor in the success of future generations.

Thus, integrating the changes brought by the pandemic has created opportunities for the expansion of digital competence in the education system, but also many disadvantages for education at school level, major learning gaps among young people, social and educational differences between people from different backgrounds, those with fewer opportunities to continue their education, to attend an institution, ethnic and linguistic minorities (UNICEF - Building resilient education systems in the context of the Covid- 19 pandemic: Considerations for policy makers at national, local and school unit level,2020).

Lack of computers, specific equipment for quality learning, and lack of access to the Internet have been major shortcomings in the learning process of learners and the possibility of falling behind in the subject matter, which can also lead to dropout. Other countries more advanced in digitisation such as the Nordic countries, Denmark, Sweden, Norway have been caught off guard by the pandemic, but digitally prepared.

Although young people have the opportunity to access a wide range of information, they are not familiar with it. They have access to information, but they do not know how to select it, they do not know what to do with that information, how to integrate it, they use digital technologies for other, not so useful purposes.

Teachers see the use of various digital means used to create an online connection by learners as the way some of them use technologies, not as a necessary learning device.

New circumstances, unused and unadapt, have quickly molded themselves into technical educational process, through synchronous learning, which was initially initiated with uncertainty by most of the teachers, and for the learners was curiosity and pathos.

The learners also encountered difficulties related to e-learning, including the change in the teaching environment, the lack of methodologies to be applied in emergency situations, the adaptation to digital pedagogy and last but not least the lack of required technologies. However, the major challenge faced by teachers was the absence of digital skills.

Due to these circumstances, teachers have been forced to incorporate ICT-based learning programmes to adapt to new technological methods.

The delivery of training through online means, constitutes certain knowledge, skills, not only in terms of integration and management of content, ensuring essential tools for the training process, adaptability of information methodology, but rather in terms of teacher-student preparation for a teaching activity.

Clearly, the new situation will have consequences for the educational process based on learning outcomes and the minimum knowledge of learners.

The interruption of school courses has had a negative impact on the education system. Teachers are offering a long time in learning the new methodology, in addition to the traditional one, but also the fact that it is a much more difficult method to capture children's attention and motivation in the learning process.

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