

The 3<sup>rd</sup> International Conference on Economics and Social Sciences  
**Innovative models to revive the global economy**  
October 15-16, 2020  
Bucharest University of Economic Studies, Romania

**Innovative Educational Models  
to Revive the Education System after Pandemic Crises**

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DOI: 10.2478/9788395815072-046

**Abstract**

*After the social transformations imposed by the appearance of the COVID 19 virus and the pandemic that spread in the whole world, at the global level, besides imposing health safety measures, it was necessary to implicitly create innovative educational models which focus on new aspects of distance. social, as well as on the transition of all educational activities in the online environment, using methods and means of education different from those used in the educational act carried out face to face. This new approach to educational activity has led to the emergence of numerous educational models which, however, must be analysed and which must be selected according to the educational level and the educational requirements related to the demands on the labour market. With the help of statistical data presented by Eurostat, as well as through the analysis of the models presented in some webinars, we tried to find variants of innovative educational models which are achieved in the new conditions. The main challenge is to find the ideal educational model, able to restart the educational system according to the measures imposed by the global pandemic.*

**Keywords:** educational models, innovation, education system, pandemic.

**JEL Classification:** A10, A20, D83, I15, I21

**1. Introduction**

At the end of 2019 and especially in the first two months of 2020 in China the SARS-COV-2 virus that radically changed the face of humanity, because it spread at a worrying rate across the planet and completely changed the way of life ordinary people, appeared. The onset of the pandemic has forced authorities around the world to impose health and social measures on the population in order to protect the population from the disease and to slow down the spread of the virus. Against the background of this situation, many of the companies sent their employees to work from home, others closed completely.

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In all countries of the world, the isolation of the population also determined the closure of schools, and the solution to continue education was to move the educational act online.

Education is one of the basic links of society and although it has no tangible results, materialized in finished products, in reality without education society is subject to collapse. The closure of schools has led to a forced decline in economic engines in all countries of the world, because the stay of children at home has also required the stay at home of at least one parent, thus causing disruption in all other areas of the economy.

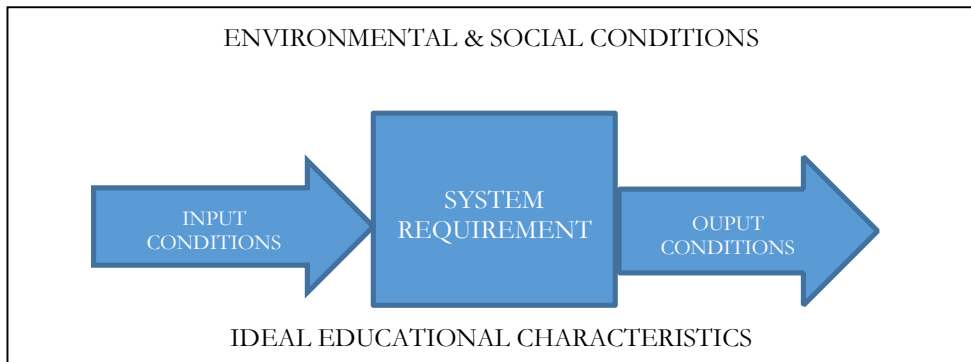
Also, the dimensions of social inequities deepened with the installation of the pandemic, disadvantaged areas, subject to poverty located mainly in rural areas, becoming even poorer and the impact of students' staying home by closing schools caused students in most cases to break complete school. The transition to digital teaching has highlighted problems related to the lack of ICT training among both students and teachers, as well as the lack of internet connection and laptop, desktop, tablet, printer, and their number in families with several children whose parents also worked from home (Dumulescu, Balazsi, & Oprea, 2015).

What will be the next context? Certainly, for the return to school, in the next school year, additional hygiene measures will have to be ensured, social distance, wearing a mask will become a permanence, ensuring a framework with specialized medical training at the level of each school and especially in Romania, the numerical resizing of students in a class by organizing staff with a maximum of 10-15 students, constant groups of same students, thinking about line flows in schools, different breaks for students and rethinking school programs by carrying out educational activities in open spaces.

All these aspects will be easier to accomplish in countries with developed economies, with a modern school infrastructure, well-funded and with a more flexible education system. Less economically developed countries will encounter difficulties, as it happens in Romania where 30% of schools have unsanitary conditions with a toilet in the school yard and without being connected to running water, where the education system is always underfunded, schools curricula are rigid and not adapted to the needs of today's society, relying more on the transmission of information and less on the training of skills and competencies needed in the trades of the future (MEC, 2019).

## **2. Problem Statement**

The biggest challenge for any educator is to build an ideal model of education (Aithal, & Shubhrajyotsna Aithal, 2015) that he/she can put into practice and whose result is beneficial for the long term for the student or teacher but especially for society as a whole. With the advent of the pandemic, education systems have undergone major transformations, as they have had to reinvent themselves and create or implement new models of education, models that can be developed without access to the traditional model of education developed face to face and rely more on technology, digitization and online education.



**Figure 1. Classification of an Ideal Educational System Characteristics**

*Source:* adapted from P. S. Aithal & P. Shubhrajyotsna Aithal (2015), p. 2464

When the transition to digitalized education is sudden, the system may not respond very well, errors may occur, or the desired quality may not be obtained, and from this point of view it is necessary for the development of new models of education to be achieved, to be developed by specialists and put it into practice by teachers after a serious training of their competencies.

Globally, it has been observed that where online education programs already exist, the respective institutions have quickly adapted to the new conditions of distance and isolation at home and have conducted online courses for all students, using online learning platforms. EU countries have taken a number of measures to connect teachers with students, to access platforms and information, to support the continued professional development of teachers, either by providing free online platforms, or by funding projects to support online learning for the next period.

The European Commission also initiates, coordinates and supplements the measures required to manage the coronavirus pandemic, and from this perspective digital technologies play a key role. Thus, the Action Plan for the digital age (European Commission, 2018), which aims to implement measures to help EU member states to meet the challenges of education in the digital age and to increase the opportunities offered by it was developed.

In Romania, as in all European countries, after the imposition of measures specific to the coronavirus pandemic and the transition to online education, steps were taken to carry out educational activities using digital tools and resources, which were familiar to many teachers, especially those from the large urban environment.

In recent decades, all government institutions represented by MEC, ISE have taken several steps in terms of digitizing the education system starting with SEI which represents the Computerized Education System, training programs for teachers on the use of new technologies, eTwinning action, and creating an open educational resource base, RED, or projects such as CRED or ROSE.

Despite all these attempts, the education system, in fully digitized form, as imposed by the pandemic, is far from functional, especially since not all teachers have competences specifically for computer-assisted instruction, the curriculum

requires changes for transposition into distance activities, technical educational solutions are not yet built for the realization of an education system developed entirely online.

Fred D. Davis's (1989) theory of acceptance of technology states that the criterion for choosing a technological solution is its ease of use, as perceived by those who intend to use it, rather than its usefulness. (Davis, 1989).

What is being tried in the field of education at the moment is to find digital models of education, an alternative to traditional education by implementing a technological pedagogy, as well as a smart education that corresponds to the new social dimensions of humanity and that manages to bring young graduates in the position of qualitative human resource, qualified for the new trends and requirements on the labour market. Thus, we will present different models of digitalized education, used by European countries but also by Romania in the context of the coronavirus pandemic.

### **3. Research Questions/Aims of the research**

The main objective of this research is to show that the future of education can no longer be a model in which digitalization and technology are only an educational component but on the contrary, it must be designed so as to achieve a technology both horizontally and vertically and to totally transform the educational system at the level of the two triads of teaching-learning-assessment and students-teachers-parents.

The new era of digitization must be implemented even when teaching is face-to-face. It is also necessary to bring to the fore all the positive aspects or those that raise problems in terms of online education; identification of teachers' competencies regarding the use of computer-assisted technology in the teaching act, as well as the continuous improvement of these competencies; identification of those tools and methods that teachers use in online teaching as well as the efficiency and effectiveness and innovation produced by them; adapting students and teachers to remote education; analysis of classroom management and how students, but also teachers and students and even students and parents and teachers and parents can collaborate and why not highlighting the relevance, usefulness and effectiveness of support measures offered to both teachers and students for remote education.

The set in of the pandemic has made digital technology an essential component of the act of education and not only, along with the media and telecommunications. The European Commission and all political and administrative structures in European countries are making consistent efforts to ensure the necessary infrastructure, connectivity and regulations in order to keep people active and especially safe in the online environment. Digital networks present platforms that have the role of offering not only a multitude of information, but also creative and innovative learning models, skills sharing solutions and online collaboration and creativity (Schleicher, 2020). An important part of doing business online, especially when we talk about education and children, is that of cybersecurity and our trust and safety as individuals when we are online.

In Romania, starting with March 11<sup>th</sup>, when the governmental structures announced the closure of schools, the education system has undergone a radical transformation by moving for the first time, at least within the state pre-university education system, to online remote learning, by adopting platforms and ways of using digital technologies. Unfortunately, there were several problems related to the lack of technology, internet connection, teacher training, issues felt especially in rural areas, so that this pandemic caused for some of the students the total rupture of school and education, and for the area The teachers' dissatisfaction in the urban area was related to the lack of a high-performance technology, in most cases outdated technologies that could not support access to new applications and platforms being used. Another major problem was the communication on streaming platforms through which direct, real-time communication between teachers and students is achieved and which was perceived as an artificial communication, either due to the development in virtual space or due to the lack of authentic feedback in communication, as well as blockages or barriers of nonverbal communication or the use of paralanguage. And last but not least, the interruption or blocking of communication due to the loss of internet connection, limited bandwidth capacity or very high data traffic (Botnariuc, Cucos, Glava, Iancu, Ilie, Istrate, Labăr, Pânișoară, Ștefănescu, Velea, 2020).

Thus, in the conditions in which a continuation of the remote measures and of the pandemic is foreseen, it is necessary to find some innovative models of education, and those that have already been applied and have been successful should be implemented in as many education systems, not only at the level of developed countries in the EU, but also at the level of countries with lower funding, where they should recover from the gaps in the conditions stated above.

#### **4. Research Methods**

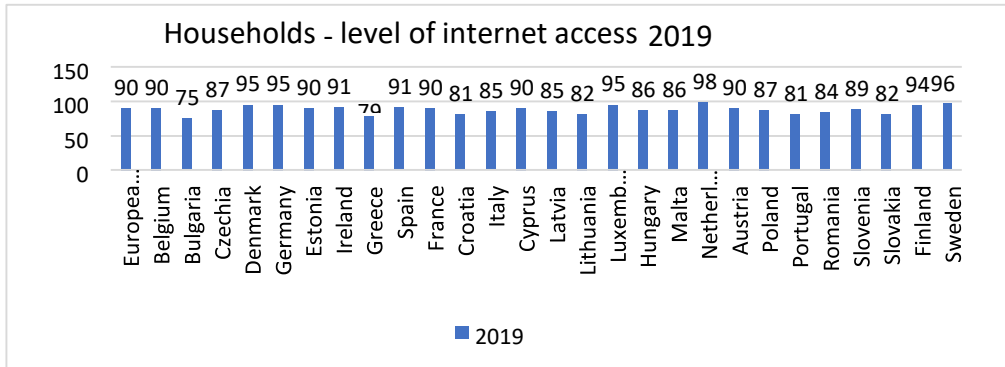
Following the analysis, the reports prepared by the European Commission, UNICEF, OECD, MEC, ISMB, ISE and other databases we were able to get a general opinion on how the educational activities took place both at EU level and in Romania, in the new conditions imposed by the COVID-19 pandemic. Based on the data presented, but also on the basis of written reports or following the sharing of experiences by teachers and students throughout this period, we could see that there is a wide variety of digitized resources; some already existed, others were created right now and that is an important niche in the area of business on edu-techology, a field very little touched by the great giants in the field of technology and artificial intelligence.

Following the analysis of data provided by Eurostat, it was possible to analyse how not only individuals but also households are connected to the virtual environment and technology, as well as the areas of interest they have in terms of interaction in the area education with technology and online education. All the analysed data are only for 2019, and for Romania there are more recent data, collected by a group of researchers in the field of education sciences, based on a questionnaire applied to a sample of 6000 teachers from rural areas, but also from

small and big urban areas covering all levels of education – preschool, primary, secondary, high school and post-high school.

These data are relevant not only to the negative aspects of online education imposed by the pandemic, but also to the aspects that have worked and represent a starting point to truly succeed in an innovation of the education system.

## 5. Findings

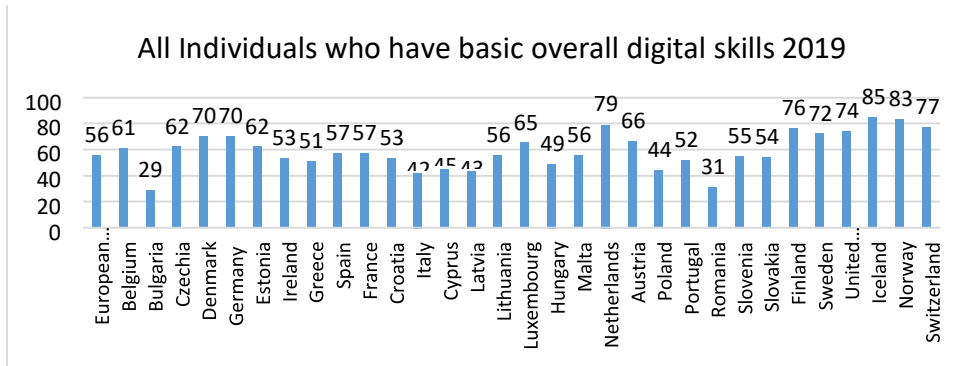


**Figure 2. Households level of internet access**

Source: Eurostat (2020)

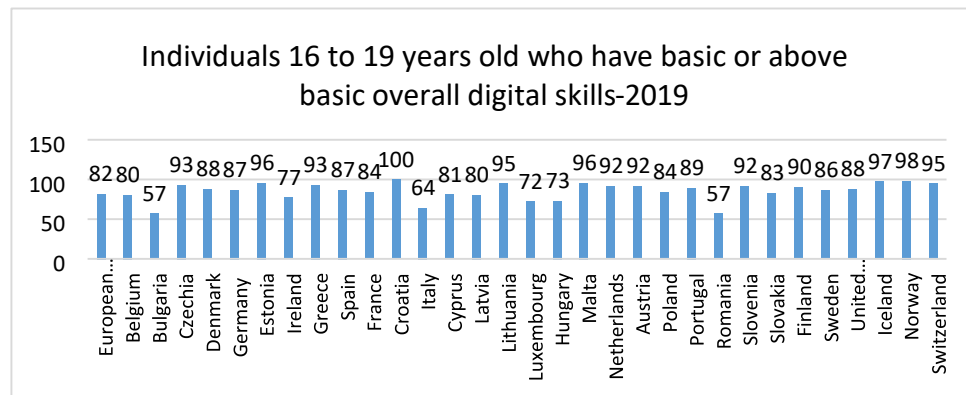
If we take into account the data processed in the graph above regarding the household level of internet access, we find that at EU level there is a coverage of 90%, also the values range from 75%, the minimum value, as recorded in Bulgaria and up to 98%, the maximum value in the Netherlands. For Romania there is a value of 84%, which places us in a middle zone.

Also, if we analyse the percentage of all those who have basic overall digital skills, as well as only those aged 16-19 who have basic overall digital skills, we can see that at EU level young people are in a share of 82%, compared to the calculation made for all individuals where the percentage is only 56%. The skills of young people are much higher and range from 57% in Bulgaria and Romania where they are the lowest values and reach 100% in Croatia and values of over 95% in countries such as Iceland, Norway, Malta or Estonia. Unfortunately, young people in Romania are at the bottom of the rankings for these skills. And if we analyse the graph in which the abilities of all individuals are presented, we notice that the position of states in this graph is the same as that of the 16-19 year old group, with the difference that the percentages are lower, due to older people who have reduced basic overall digital skills.



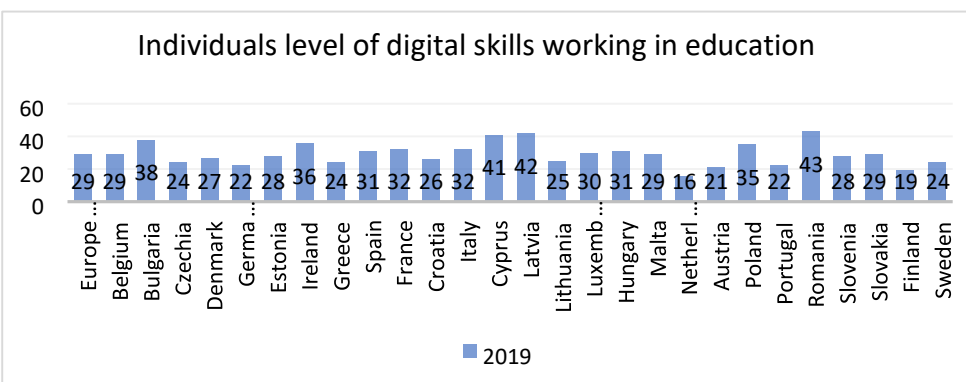
**Figure 3. All individuals who have basic overall digital skills**

Source: Eurostat (2020)



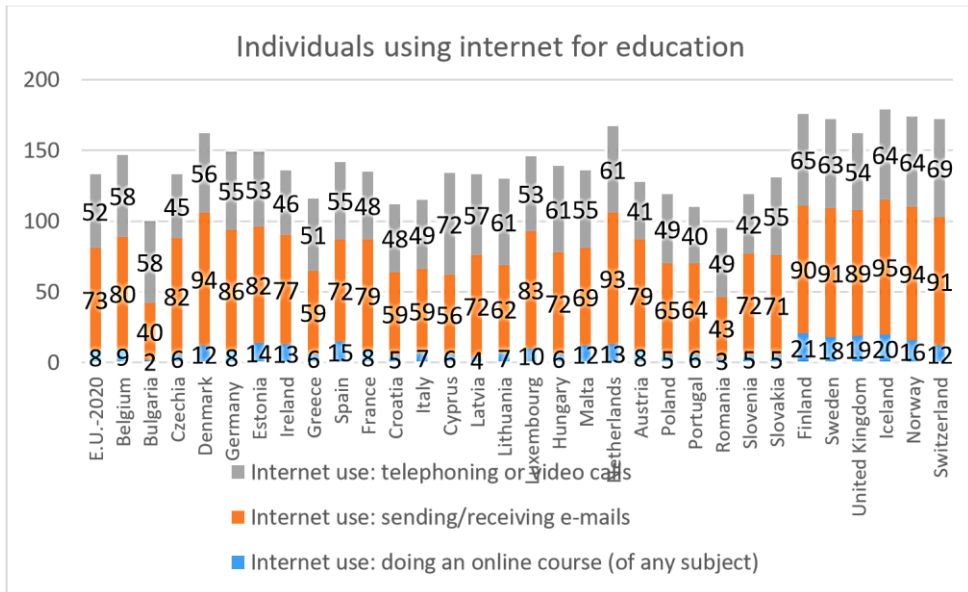
**Figure 4. Individuals 16-19 old who have basic or above basic overall digital skills**

Source: Eurostat (2020)



**Figure 5. Individuals level of digital skills working in education**

Source: Eurostat (2020)



**Figure 6. Individuals using internet for education**

*Source: Eurostat (2020)*

If we analyse how things are related in terms of education, either in terms of human resources and the level of digital competence, we can see that in the EU, the percentage is 29%, with the lowest values recorded in the Netherlands 16% and Finland 19 %, and the highest values in Romania with 43%. Regarding the way the internet is used for education, three aspects were considered: telephone or video call, sending/receiving emails and doing an online course. The graph above shows that the largest share is represented by sending/receiving emails and the lowest share is represented by the online course. In the category of online courses, the best are Finland and Iceland with 21% and 20%, respectively, and the worst are Bulgaria and Romania with 2% and 3%, respectively.

## 6. Conclusions

The pandemic crisis that has set in worldwide has caused the whole society to suddenly change the natural order of things and force people to value one of their greatest abilities, namely the ability to adapt and implicitly the power of innovation, finding new solutions for new situations. The education system was one of those that was reinvented, but the effects will be felt only in the coming years. The transition to remote education forced the imposition of technological pedagogy models as well as the mandatory existence of an internet source and a device, which was not possible in all geographical areas, so there were total disruptions in education in areas with poor populations, for children from disadvantaged backgrounds, often on the verge of poverty and who, in addition to not having access



to education, were also deprived of social programs such as "Milk and Bun" or "School after school", which deepened and more the limits of poverty. On the other hand, the transition to digitalization is a major requirement of today's society that needs young people ready to face the new demands of life and to be prepared for the professions of the future, all of which are very closely related to technology and artificial intelligence. For many of the education systems, especially those in urban areas, the transition to distance learning has been easy, and pedagogical models have been increasingly creative and more applicable to the new demands of the labour market.

Thus, a movement of social imbalances and an attempt to bring technological systems to poor environments, not only for students but also for teachers is required, which must be done as soon as possible given that the pandemic crisis is just beginning, and the online education system will probably be the most affordable solution for the future.

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