RESILIENCE AND CRITICAL EDUCATIONAL VALENCES DURING THE PANDEMIC

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Abstract: *One year after the COVID-19 pandemic has become a public health emergency the health crisis is ongoing, as evidenced by the number of cases and deaths reported by countries worldwide. During this time, the educational process underwent a series of transformations, and all educational institutions aimed to maintain the educational process during the SARS-CoV-2 pandemic, using various means and tools. Thus, the existence of digital technologies and access to the Internet have significantly contributed to the continuation of teaching and research in a practical online learning environment. For this reason, online education together with teleworking, telemedicine, delivery services or internet banking are essential services to a society dependent on digital technology during the pandemic. Avoiding a major crisis in education was possible only through a sustained effort both organizationally, coming from states, authorities and educational institutions, and individually coming from teachers, support staff, students and parents. This article analyses the main critical valences of education from a social, economic and military perspective, as well as the resilience of education during the pandemic. Therefore, the educational process worldwide has managed to overcome the initial shock, and a year after the onset of the pandemic is still in the response stage specific to resilience.*

Keywords: educational institutions, SARS-CoV-2 pandemic, e-learning, resilience of education, critical valences

1. Introduction

The onset of the pandemic surprised the entire educational process, affecting the education of children, youth and adults. The impact of the transition to the online education system has been quite substantial for the educational institutions that carried out face-to-face educational activities, without using virtual learning environments. Instead, a lower impact was to those educational institutions that already used educational platforms and video chat apps and video calling software for online meetings or distance learning. Deficiencies have emerged consisting in the sudden increase in the number of users and the

information managed, which required both a sustained effort from technical and management personnel, as well as the optimization of the IT systems and networks to meet the new requirements.

It is interesting how a pandemic was seen by people, institutions and authorities before the COVID-19 pandemic. If we look at the history of events, a pandemic occurs at long intervals, which indicates a lower probability of occurrence, but with particularly high effects, with great challenges exceeding natural human limits and overloading health care systems. Thus, before the COVID-19 pandemic, the question was if the states and specialized

health and medical care facilities were prepared to face pandemic threats. In the same context, there were epidemiological safety measures based on a number of variables, such as microbiological research, state-of-the-art technologies, specialists and experts in the field, pharmaceutical companies, efficient biobanks and developed vaccines, medical equipment and much more. All these cumulative variables have failed to stop the rapid spread of COVID-19 virus worldwide.

Among the fields of activity seriously affected by the pandemic is education, regardless of its types: formal, informal or non-formal. Thus, the SARS-CoV-2 pandemic affected the entire educational system in the world, and countless nurseries, kindergartens, schools, high schools and universities were temporarily closed creating a number of problems for students, teachers and parents. The solution to safeguard education in the pandemic was distance learning, which created a broad range of challenges, efforts and achievements. Moreover, UNESCO [1] considers the recovery process should be based on inclusion and equity. Equity involves maintaining a balance for vulnerable and disadvantaged students, for whom the educational infrastructure also provides social services, such as health or nutrition. According to some authors [2], any pandemic will be branded in the collective memory of a country, with a significant impact on a country's culture. Therefore, the study of epidemics and pandemics is an indispensable part of the study of human history, and the lessons learned can be extremely valuable in the future.

This article analyses the main critical educational valences during the pandemic. In support of this analysis, the main resilient elements that contributed to development of the educational process in the pandemic should be highlighted, regardless of the types of educational institutions.

2. Resilience of education in the COVID-19 pandemic

On March 11, 2020, the World Health Organization - WHO assessed COVID-19

as a pandemic. At that time, more than 118,000 cases were reported in 114 countries around the world, and 4,291 people had lost their lives in the fight against the virus [3]. The epidemiological situation did not stagnate or diminish, on the contrary, it worsened. According to data presented by the WHO, at the end of 2020 79 million cases and over 1.7 million deaths had been reported globally since the start of the pandemic [4]. One year after the onset of the pandemic, 219 states and territories were affected [5], and according to data presented by the WHO, 118,949,943 cases were confirmed, resulting in 2,637,144 deaths [6].

The sudden spread of COVID-19 virus around the world, coupled with the rapid increase in the number of cases and deaths, has affected the economic, social and political life of countries and communities of people. The education system has been going through a multitude of challenges due to the restrictions imposed by the authorities fighting the virus. Educational institutions have been temporarily closed to limit the spread of the virus. According to the technical report of the Joint Research Center of the European Commission [7], most educational institutions around the world cancelled in-person instruction and moved to remote learning and teaching in March 2020. Although young people and children are prone to mild symptoms, with a very low rates of hospitalization [8], the risk of continuing learning and teaching in traditional settings with physical interactions was not taken by the authorities due to the uncertain rate of community transmissions. Thus, one year after the COVID-19 pandemic has become a public health emergency, the resilience of education is confirmed by the continuity of the educational process in the online environment, the gradual return to face-to-face educational activities, respecting the rules and safety measures specific to the pandemic, and initiating the recovery process. Also, the resilience of education must be developed in stages over a long

period of time and correlated with the resilience of the health system and implicitly with national resilience, starting from the onset of the pandemic and absorbing the initial shock, continuing with the response stage from all social entities and individuals and continuing with the recovery process until the normal state is restored. The main resilient elements from the perspective of education one year after the Covid-19 pandemic has become a public health emergency are analysed below.

In an attempt to limit the spread of the COVID-19 virus, educational institutions cancelled in-person instruction and moved to remote learning and teaching. Given the scale of events in the first weeks after the pandemic, the social context created was characterized by a series of restrictive measures taken by the authorities, such as restricting travel, interrupting social, cultural, scientific, sports and religious activities, reducing the working hours of public and private institutions and many more. There was a state of uncertainty among the population, in which the fear of the unforeseen was growing. In-person activities have been moved to online activities, significantly contributing to the mitigation of these conditions. Thus, online education can be considered as a crisis solution for society, along with telework, telemedicine, delivery services or internet banking.

The rapid transition to online education involved both the human factor and the technical factor. The virtual classroom maintained its traditional class format, the participants became users of online technologies, and renounced to participate in face-to-face classrooms. Comparative studies between physical class and virtual class have a number of advantages and disadvantages. Online teaching can be interactive, can create an attractive learning atmosphere, especially for the today's students who are generically called the Internet generation. The efficient and appropriate use of digital resources can

improve the teaching process, but it cannot replace traditional classrooms [9]. The limits of online learning may vary depending on the technological skills of teachers and students. Early childhood learners may have some limitations of using technology, requiring the availability and involvement of adults [10].

Building virtual connections depends, to a large extent, on the human factor. From the perspective of the educational institution that uses an e-learning platform, the installation, configuration, operation and maintenance of computer systems and applications is performed by specialized personnel. On the other hand, users, in addition to having a compatible computer device and an Internet connection, must follow several steps in order to be connected. Thus, during the pandemic, educational institutions that did not have e-learning systems, especially those in non-university education, were forced to activate licenses dedicated to digital education. Students have been confronted with many problems in this new learning environment due to the lack of devices, limited or non-existent access to the Internet, a larger number of users in the family for the same device, etc. Thus, the lack of Internet access was covered by other means of communication. According to a World Bank study [11], in several countries educational programs were being broadcast on the national television.

Returning to the face-to-face educational activities in the midst of the pandemic was a challenge for both teachers, and educational institutions. The rules of hygiene and social distancing are indispensable and mandatory, and communication between teachers and students or between teachers and parents, in case of younger students, is essential. The role and responsibilities of teachers are different in the new situation created by the pandemic, because in addition to basic tasks they must identify, through assessment activities, learning losses and intervene to recover them. The problem of learning loss

recovery must be solved immediately in the post-pandemic period. All educational institutions must self-assess and take viable measures to cover as many deficiencies as possible.

Countries have treated differently the beginning of the academic year 2020-2021. For example, more than three-quarters of US schools offered all their courses entirely online, while several European countries have opted for traditional face-to-face learning, depending on the epidemiological situation at the time [12]. During the pandemic, along with online and in-person education, the mixed version was implemented, combining both of them. Therefore, hybrid education can be a teaching and learning model in order to improve the student experience and ensure continuity of learning, with particular relevance during the partial reopening of schools [13]. One year after the COVID-19 pandemic has become a public health emergency, the vaccination of teachers may lead to the development of a normal educational process. According to UNICEF [14] the vaccination of teachers represents a priority, after the vaccination of healthcare personnel and people at high risk and is leading to the reopening of educational institutions. There are three provisional vaccination variants, recommended by The Strategic Advisory Group of Experts on Immunization-SAGE [15], namely: the Pfizer- BioNTech BNT162b2 vaccine, the Moderna mRNA-1273 vaccine and the AstraZeneca - Oxford University AZD1222 vaccine.

In the fight against the COVID-19 virus, medical students from different countries participated as volunteers in supporting the health system. According to a study conducted in Poland [16], the volunteer activities of medical students included triage activities, call-center service for patients, working in hospitals and clinical laboratories. The volunteer students received positive feedback from patients, families, friends, as well as from healthcare personnel. The most common benefits

mentioned in the study were gaining professional experience and the feeling of helping people in need, thus demonstrating that volunteers can provide important support for the health system in major crisis. In some countries, such as Italy, medical students were enrolled immediately after graduation in the medical system, without completing internships, and in the UK, students were hired from the last year of college [17]. In different parts of the world, in addition to the mission of higher education, volunteering is a form of community engagement, transposed through curricular activities representing an important stage of experiential learning. Compared to the internships, in which the student is the beneficiary and the emphasis is on learning, in volunteering the beneficiary is the one who benefits from the services of the volunteer student [18]. Therefore, in the case of a pandemic, the beneficiary is the patient, and the medical student learns via experimental learning. Volunteering is considered an important contribution to reduce the effects of a major crisis, even if volunteers do not face critical situations as healthcare personnel do.

3. Education - a vital service in the pandemic

Education worldwide has suffered during the SARS-CoV-2 pandemic. Like any threat scenario specific to an important critical infrastructure, the effects of the pandemic on education must be analysed from the perspective of the identified risks. Therefore, all measures taken by the authorities involve reducing these risks. Thus, the measures were gradual and distinct, for people within various geographic areas, depending on the level of disease occurrence. The closure of educational institutions was a measure taken by states to stop the spread of coronavirus. Why is education essential in the pandemic? The answer to this question can come from several directions. Therefore, in this article there are analysed the answers from a social, economic and

military perspective.

First of all, from a social perspective, whether it is about face-to-face learning or online learning, the educational process ensures the continuity of human behaviour and development in the social environment. Under the conditions of the pandemic, characterized by a long period of time, the primary, secondary, high school and university study programs are affected. Along with the teaching activities, the research activities are also affected. Therefore, the development of research programs and projects was considerably restricted, the approach of doctoral studies encountered serious limitations on the application experiment, the development of scientific events was possible only online, some of which being cancelled. An element of criticality in the pandemic was students' impossibility to undergo the final evaluations. Where this was not possible, the educational system, inevitably, headed towards a major crisis, which generated negative effects in all fields of activity. Another problem resulting from the temporary closure of educational institutions is the future consequences of the pandemic on children and young people. Once social interaction has been limited, while creating a different work environment, some authors [19] have stated that the effects on the psychosocial and physical health of children and young people cannot be evaluated yet, as they require long-term monitoring.

From an economic perspective, the critical valences of education during the pandemic consist in short-term effects, during the pandemic, in medium-term effects, in the post-pandemic period and long-term effects, after the state of normality will be restored. First, the labor force as a product of the educational process during the pandemic is less qualified and contributes to low economic growth which leads to reduced social welfare. In the current, knowledge-based economy, people's cognitive abilities developed through the education system contribute significantly to

labor productivity, the development of technological progress, and economic growth. Moreover, cessation of face-to-face activities of all educational institutions generates long-term economic losses [20]. During the pandemic, the frequent transition to online learning brought economic benefits to manufacturers and suppliers of information and communication technology systems, applications and equipment, but the increase in both the number of devices connected to the Internet and the number of users leads to cybersecurity issues, online fraud, violation of ethical and deontological norms within the virtual classroom, etc. In the short term, the critical valences of education have been best observed in the process of training and continuous development for the qualification of people in various fields of activity, especially in critical infrastructure sectors. Recruiting or supplementing key staff members has become a priority for several critical infrastructures and public authorities. Along with key staff in the health system, the key role of employees in other critical infrastructure sectors, such as dispatchers in the energy, transport or drinking water sector, postal and courier staff, the personnel specialized in microbiological research, etc. should also be highlighted.

From a military perspective, the pandemic produced a series of effects, some of them were expected to occur only in a situation of war. The negative effects produced by this pandemic were seen in many fields of activity, affecting a large number of people, including military people, and overloading the medical system in the fight against the virus. Basically, this fight against the enemy, in the COVID-19 virus, involved structures, resources, strategies, inter-institutional dialogue and cooperation and, last but not least, the population. In general, military education aims throughout the curriculum to develop a range of military capabilities to act in different environments, including in crisis or conflict situations. The fight against COVID-19 has highlighted the

importance of military medical education. Some military doctors, throughout their careers, have gained experience in crisis situations as a result of intervening in conflict-affected areas, peacekeeping missions in post-conflict areas and areas where military assets have participated in natural disaster response. Such experiences, during the pandemic, contributed significantly both in the practice of medicine and in the exercise of right to making decisions. Collective training during the SARS-CoV-2 pandemic is a critical value of military education. Given the restrictive measures implemented to limit the spread of the virus, the collective military training has suffered. However, a collective training in the virtual environment does not cover all military performance standards. Also, the transition of training courses to an online training environment may have dire consequences in the future on the military career. Therefore, after the pandemic period, the assessment process on covering the deficiencies identified during the pandemic period should be implemented.

4. Conclusions

The pandemic has shown that education is a vital social service, with lasting effects for the younger generations. For today's children and adolescents who are tomorrow's future, the pandemic experiences will mark them for life. The pandemic has accelerated the transition to the digitalization of education and highlighted both the benefits of digital technology connected to the Internet and the benefits of traditional education, based on human interaction. The pandemic was a rigorous test for the traditional education system, which confirmed its importance,

usefulness and timeliness. Therefore, after the pandemic, the education system will return to normal, but the lessons learned must be implemented in the post-pandemic period. Depending on the epidemiological situation in a community, the educational process was conducted throughout in-person or online, or hybrid learning. Along with the technical solutions safeguarding and well-being education in remote learning environments, it should be noted the considerable effort made by teachers to manage the virtual classroom in good conditions. Moreover, the fight against COVID-19 virus has been carried out in kindergartens, schools, high schools and universities, based on the rules and epidemiological measures imposed by the authorities. In the same vein, the problems faced by students and how they were supported by families and state institutions should be taken into account. One year after the onset of the pandemic, educational institutions have been intensely involved in the resilience of education during the pandemic. Their efforts have succeeded in not turning the educational process into a major crisis. Education is a particularly important variable in crisis management. Educational institutions are meant to train specialists who, during a crisis situation, are able to respond professionally to the occurrence of unwanted events. Therefore, during the SARS-CoV-2 pandemic, the knowledge and training of the personnel involved have been outlined through the educational process. Thus, key personnel in various fields of activity played a critical role in the fight against the virus. The experience they gained during this period should be exploited to facilitate the prevention and response to future epidemics and pandemics.

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