

Article

The Right to Education and ICT during COVID-19: An International Perspective

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Abstract: There is a lack of concluding evidence among epidemiologists and public health specialists about how school closures reduce the spread of COVID-19. Herein, we attend to the generalization of this action throughout the world, specifically in its quest to reduce mortality and avoid infections. Considering the impact on the right to education from a global perspective, this article discusses how COVID-19 has exacerbated inequalities and pre-existing problems in education systems around the world. Therefore, the institutional responses to guaranteeing remote continuity of the teaching–learning process during this educational crisis was compared regionally through international databases. Three categories of analysis were established: infrastructure and equipment, both basic and computer-based, as well as internet access of schools; preparation and means of teachers to develop distance learning; and implemented measures and resources to continue educational processes. The results showed an uneven capacity in terms of response and preparation to face the learning losses derived from school closure, both in low-income regions and within middle- and high-income countries. We concluded that it is essential to articulate inclusive educational policies that support strengthening the government response capacity, especially in low-income countries, to address the sustainability of education.

Keywords: COVID-19; right to education; ICTs in education; SDG4; comparative education

1. Introduction

For centuries, the responses of society to pandemics, whatever their origin and nature, regardless of cultural differences and levels of development, have been quite similar. Home confinement, isolation of the infected, travel and mobility restrictions, the closure of work centers, and the imposition of social distancing (i.e., the so-called non-pharmaceutical resources) have been the common denominator in all responses, as is currently the case, in the absence of an effective drug or vaccine for the treatment and control of the pandemic. Since compulsory education became a reality in Europe and the United States in the last quarter of the 19th century—either in cases of cholera epidemics, typhus outbreaks, or pandemics, such as the so-called Spanish flu in 1918 that, in two years, ended the lives of an estimated 40 million people around the world—the closure of educational centers has been a common strategy. In some cases, reactive closures, which are more frequent, have been implemented due to infections originating in school centers, while proactive measures, which are more sporadic in nature, have been implemented in other cases to prevent the spread of infection and transmission due to the forced breaking of social distance in educational centers. Nicholas Christakis, a social scientist and physician at Yale University, has pointed out two reasons behind these proactive closures: firstly, to protect minors while minimizing the risk that they could transmit the virus without closing schools; and, secondly, to avoid parents from mixing with each other when children enter and leave school, where they also remain confined in their homes. The same can be said of teachers [1].

In 1918 and 1919, the closure of educational centers was one of the measures that, for a shorter or longer period of time, was applied in almost all countries affected by the influenza pandemic. Markel and collaborators studied response strategies to the pandemic in detail, including the closure of schools to mitigate infection and reduce the death toll, which in the USA, particularly in 43 North American cities, stood at 500,000 as a result of the flu. The combination of school closures and bans on public gatherings, activated simultaneously, was the most common measure implemented in 34 cities (79%). This response, ranging from 1 to 10 weeks, had a mean duration of four weeks, and a significant association can be observed with reductions in excess mortality rates where it was applied. In the specific case of Saint Louis, schools closed the day before the peak of the epidemic and for the following 143 days. By contrast, Pittsburgh closed schools seven days after the peak of the epidemic and for only 53 days. In Saint Louis, mortality was approximately one-third of that in Pittsburgh [2]. In Spain, there have been no studies of this type conducted on the effectiveness of such a measure; however, it is also true that in October of 1918 all public teaching centers and most private ones were closed [3] (p. 731). There were also partial and localized closures of schools in the other two major flu pandemics in the past century, i.e., in 1957 with the Asian flu and in 1968 with the Hong Kong flu [4].

A review of recent medical literature has tried to determine the relevance, necessity, and goodness of closing educational centers during pandemics, and the results are far from reaching a position unanimously defended by specialists. In the case of flu epidemics, various studies show the beneficial influence of school closures. They contemplate a reduction of cases between 13% and 17%, and between 18% and 23% in children [5]. In particular, school closures are very effective if implemented when there is a peak in infections among schoolchildren, though there is not much evidence in published epidemiological studies regarding what the most appropriate threshold is for closing schools [6]. Other studies indicate that the closure of educational centers, coinciding with the peak of the influenza pandemic, can reduce maximum infection rates by up to 40%, but the impact of such a measure on general infection rates is not very high when compared to measures such as the isolation of sick persons or a domestic quarantine [7].

However, unlike the flu, there is neither consensus nor enough information about nonpharmaceutical interventions that, beyond the usual ones, could be revealed as more effective for diseases such as severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and the coronavirus disease of 2019 (COVID-19). In the specific case of the closure of schools, to reduce the spread of COVID-19 different studies have shown varied conclusions about the effects of reactive school closures on the course of influenza outbreaks. For this reason, more studies are needed to more accurately determine how beneficial school closure may be in practice, suggesting the need for developing epidemiological studies to guide public health policy [8] (p. 2467). “A contact survey developed in Wuhan and Shanghai, China showed that school closure and social distancing significantly reduced the rate of COVID-19 infection among contacts of school-aged children” [9]. A recent report from Shenzhen, China suggested the importance of school closure [10]. In the case of the United States, there are studies that show that school closure is associated with a significant decline in both incidences of COVID-19 and mortality [11].

Other recent analysis of databases for published work on the subject and modeling studies suggests that the influence of school closure on the control of the COVID-19 pandemic may be low, representing only a 2–4% reduction in mortality [12]. School closure seems particularly ineffective when compared with other strategies, such as the use of personal protective measures and social distancing. The same experts emphasize the social costs, e.g., harming the mental health of children, and the economic costs, e.g., family economy. The educational costs that this public health measure can generate should also be noted, which include creating digital divides, different amounts of cultural capital for families, and greater impact on less advantaged social groups. As of today, it is not clear that the advantages of this measure offset the disadvantages in low-resource settings.

Despite this, governmental policies to mitigate the pandemic have been unanimous. All of the states in the US have enacted nonpharmaceutical interventions, including school closure, to reduce the

spread of COVID-19. In fact, 191 countries have closed educational institutions, both public and private, so that, according to the latest data for April of this year provided by the United Nations Educational, Scientific, and Cultural Organization [13], 90.2% of the world's student population is affected by school closures and 1.57 billion children and youths are learning outside of the classroom. At least 63 million primary and secondary teachers are operating outside of their educational centers [14]. Obviously, each country has closed its educational centers in relation to its own peak of the pandemic. Because closure durations are not identical, they are related to other imposed social distancing measures enforced by each government. Hence, although there are similar patterns of educational response to closures, national differences are still visible.

With the arrival of autumn, the ongoing debate has focused on whether or not to reopen schools. As Choe and Choi pointed out, the "opening of schools is also expected to increase contact rates in the community, decreasing the effectiveness of social distancing, which is the mainstay of the current mitigation strategy" [15] (p. 1). In that context, the discussion and exchange of views between education professionals and authorities about the role that new technologies can and should play in the so-called "new normal" has played a central part.

Beyond the medical measures of social distancing and school closures in pandemic situations, we wondered what other measures have been adopted (or could be adopted) to ensure the right to education in the current situation caused by COVID-19, and to what extent the decisions that have been taken are of a more homogeneous or heterogeneous nature across countries, depending on the context and conditions of the different scenarios resulting from the impact of this pandemic. In this regard, it is worth mentioning the strategic role of information and communication technologies (ICTs, in view of what has happened worldwide over the first six months of the pandemic in 2020) in contributing towards the achievement of the 2030 Sustainable Development Goal 4 of the United Nations (UN), which seeks to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" [16] (pp. 19–20).

The current COVID-19 pandemic in 2020 has put the world education systems in check after the almost universal school closure. Aware that "education research in itself can become critical and itself make a change and promote societal change" as another side of the sustainability education quandaries [17] (p. 6), an assessment of the reality of the countries and regions is necessary to give a contextualized counter-measure to the needs and possibilities of each scenario. In this line, the aim of this work was to study the response of the world education systems to the COVID-19 crisis. Therefore, a comparative study has been carried out concerning the infrastructures, resources, and real competences of educational centers and teaching staff to develop distance learning, as well as to the national measures that ensure the right to education. In order to carry out this comparative analysis, we selected and studied information published since the beginning of the COVID-19 pandemic outbreak, as well as databases and inventories that published measures by different institutions, such as UNESCO, OECD, World Bank, European Union, and COTEC Foundation. The results found that a selected group of countries are prepared to offer universal e-learning, while a vast majority countries have significant barriers to making remote education possible or sustainable for all students. Moreover, a third group of countries still relies on other mass media and communication resources. These results allowed us to build a prospective analysis on how previous disparities among worldwide education systems exacerbated the equity right to education, and how this special educational situation affects the most vulnerable groups of the global population.

2. The Impact of the COVID-19 Pandemic on Education

The COVID-19 pandemic presents devastating effects worldwide for health and all spheres of life (i.e., the economy, social security, education, and food production), encompassing profound and negative impacts on the enjoyment of economic, social, and cultural rights [18]. Therefore, the Global Campaign for Education [19] has reaffirmed its position on the need for actions to respond to COVID-19 to protect human rights in the short-, medium-, and long-term. Interventions should be inclusive and

properly contextualized [20]. Moreover, the UNESCO Global Monitoring Education Report for 2020 has stated that the COVID-19 crisis is an opportunity to focus all efforts on developing policies for educational inclusion.

UNESCO, through the Global Coalition for Education, has invited interested organizations to an initiative to ensure and provide continuity of education during the global emergency caused by COVID-19. The central idea is that organizations should commit to providing educational services and materials with open and free access. Participants in this initiative are United Nations agencies, private sector organizations related to ICTs, non-profit organizations, international media, and additional networks and civil associations. The International Commission on the Futures of Education, created by UNESCO in 2019, has also expressed its opinion on desirable guidelines for education policies in response to the pandemic [21].

In addition to UNESCO, other international responses to this global problem for education have been put forward. Thus, the World Bank, by advising, assisting, and strengthening measures in the field of education for both students and teachers in education systems in developing countries, is seeking to turn the crisis into an opportunity for improvement [22]. The Organization for Economic Cooperation and Development (OECD) is taking similar action via the definition of a framework for action to guide them through the educational response to the pandemic [23], under the concern that “every week of school closure will mean a massive loss in human capital development with major long-term economic and social implications” [24] (p. 1).

From a children’s rights perspective, the realization of the right to education recognized in international treaties must be considered under the social, cultural, economic, political, legal, and educational factors that support or impede it. Take for instance the 1948 Declaration of Human Rights, the 1966 International Covenant on Economic, Social, and Cultural Rights, and the 1989 Convention on the Rights of the Child. This is a perspective based on a broad human rights framework, in which, as Robeyns points out, “Every human being, including every child, has the right to a decent education, even when one cannot be sure that this education will bear fruit in terms of human capital” [25] (p. 75). This approach is also based on the principles that inform the criteria established by the United Nations Children’s Fund (UNICEF) and UNESCO [26], finding its full meaning in the orientation of the pronouncement of the abovementioned treaties. There is a need to develop actions in the fight against the current pandemic within the framework of human rights. Otherwise, “there is a clear risk that the measures adopted may violate economic, social, and cultural rights and increase the suffering of the most marginalized groups” [18] (p. 1).

To truly gauge the impact that COVID-19 is having and will have on education in the short-, medium-, and long-term, it is necessary to consider some determining contextual elements. Firstly, the lack of schooling and gender bias. The problem with the current pandemic is that, in 2019, globally, 258 million children were out of school, a figure which has not changed much since 2007 for primary education and since 2012 for secondary education [27] (pp. 44–46). The health crisis has further exacerbated the situation of being forced out of school, especially in conflict zones. It has also done so with regard to the gender gap, where, based on what happened with the Ebola outbreak years ago, the crisis will affect girls more than boys since they will not be able to return to school. Meanwhile, the discrimination and violence suffered by millions of women and girls throughout the world keeps spreading; for example, the foreseeable increase in child marriages in the coming years, the physical and sexual violence of confined children living day by day with their abusers without having access to the food and security provided by schools, and additionally child labor and sexual exploitation. In a nutshell, of all those affected, the youngest children are very likely to be those who will suffer most intensely from the worsening of inequality.

Secondly, this entire crisis falls on top of a previous global learning crisis with 617 million students aged between 12 and 14, who, at the end of their primary education, have serious learning deficiencies in reading and mathematics [28]. Despite the fact that a considerable proportion (almost 20%) of adolescents in schools in developed countries also lack the basic skills to get ahead, this learning

crisis has hit some countries especially hard in Central Asia, South Asia, and sub-Saharan Africa [29]. In addition to the lack of access to school, there is the added problem of a poor quality of education in some schools that fail to retain the children who enroll, leading to high dropout rates and insufficient learning. Children arrive unready to learn and teachers very often lack the skills or motivation to teach effectively [30]. Without a doubt, school closures will only further aggravate this situation, considering that both the provision of educational infrastructure and the adequate training of teachers have fundamental weight when it comes to guaranteeing quality education.

Thirdly, there is weakness built into the “international architecture for education”, as claimed by Burnett, which is the “set of international agencies and institutions, official and unofficial, public and private, that receive international resources to support the educational development of countries” [31] (p. 15) that, together with governments in developing countries and donors, are failing the world with out-of-school figures which have been stagnant for years and with a learning crisis that still needs to be resolved. From his point of view, it is, among other things, a problem of a lack of effective leadership, lack of definition in global educational priorities, and insufficient funding for the development of educational systems in low-income countries, especially in sub-Saharan Africa. Besides this, the pandemic will aggravate its causes and make solutions more difficult.

3. Methods

In the context of the current crisis of inevitable learning loss, education systems need a plan for recovery that involves prior assessment of their capacity to respond and intervene in the context of the risk of the exacerbation of inequality after the closure of schools [22]. Hence, it is imperative to analyze the current situation and forecast how this special situation may affect the most vulnerable groups of the population in order to understand the current state of the right to education, considering the change since the beginning of the COVID-19 pandemic.

From an interpretative approach, seeking to understand in order to facilitate reflection and the study of the data from the point of view of the various measures and actions, an analysis has been carried out according to the information currently available, reviewing the statistics and databases of different institutions, such as the United Nations, UNESCO, UNICEF, World Bank, OECD, European Union, and COTEC Foundation. To this end, the information has been classified and ordered around three categories of analysis:

- (A) Basic and computer infrastructure and equipment, as well as Internet access in educational centers to deal with their total or partial closure;
- (B) the preparation and means of teaching staff to develop teaching-learning models based on distance education;
- (C) the measures and resources implemented by countries to provide continuity for educational processes.

4. Results

This section offers a global analysis on the response capacities of different education systems in the world to guarantee the sustainability of the right to education in the context of the new demands generated by school closure. In the case of the measures and resources mapping, the data on UNESCO’s webpages for different regions of the world, those collected by the same organization for the specific cases of Latin America and the Caribbean, and those published by [32,33] have been collated and elaborated through an analysis of qualitative content. A series of categories have been developed to classify and organize these policies and measures so that they can be presented by regions and graphically represented.

4.1. Infrastructure and Equipment of Schools to Respond to the Pandemic

Based on the information provided by the United Nations Sustainable Development Goals (SDG) [34] database for the SDG4 targets, we analyzed SDG4.a.1 in terms of creating and strengthening

effective and inclusive school environments. This target included indicators on the proportion of schools with basic facilities. Services such as access to electricity, the Internet, or computers for teaching purposes are compiled and compared in Table 1.

Table 1. Proportion of schools, by region and educational level, with access to basic infrastructure and access to new technologies for educational purposes. Latest available data (2015–2018).

Regional Groups	Electricity		Computers		Internet	
	Primary School	Lower Secondary School	Primary School	Lower Secondary School	Primary School	Lower Secondary School
Oceania	89.45%	98.16%	65.81%	84.74%	68.32%	85.38%
Central Asia	99.97%	99.26%	95.71%	95.01%	78.35%	78.76%
East Asia	97.16%	97.92%	91.72%	97.09%	91.30%	94.43%
Southeast Asia	83.82%	93.22%	48.03%	66.51%	(n.d.)	60.06%
South Asia	52.22%	67.60%	15.95%	41.56%	(n.d.)	46.63%
Western Asia	91.10%	94.61%	80.77%	91.79%	79.64%	86.40%
Europe and North America	(n.d.)	99.89%	(n.d.)	98.67%	(n.d.)	96.35%
North Africa	85.70%	79.60%	63.22%	59.86%	66.82%	73.54%
Sub-Saharan Africa	32.47%	47.20%	(n.d.)	(n.d.)	(n.d.)	(n.d.)
Latin America and the Caribbean	87.91%	92.14%	60.63%	73.61%	43.36%	63.49%

Source: Extracted from the United Nations Sustainable Development Goal (SDG) Database (2020).

When we contrasted the available data on basic infrastructure and the need to adapt educational centers to implement measures that allow for remote education (Table 1), an enormous gap was revealed between the most advanced and most vulnerable economies in terms of access to electricity. In sub-Saharan Africa, for example, nearly 70% of primary schools do not have access to electricity, as well as in South Asia, where nearly 50% of primary schools do not have access to electricity, compared to the rest of the world, where this indicator is above 80% in all the cases. In lower secondary schools, for both regions mentioned above, the data are somewhat better, but again differ significantly with the figures for the rest of the world.

All the education systems in the various regions started from different situations regarding the possibility to use computers for teaching purposes at both levels of education (Table 1). In fact, the more developed economies of the world represent the highest values of this indicator. The regions of Central, Eastern, and Western Asia, together with Europe and North America, stand out mainly at the secondary level, as well as for primary education, with the exception of Western Asia (80.77%). Compared to these figures, Oceania has lower levels, with 20 points of difference between the primary schools (65.81%) equipped with computers and the secondary schools (84.74%). The region of Latin America and the Caribbean follows this trend, with 60.63% primary schools possessing such equipment compared to 73.61% of secondary schools. This situation is repeated in North Africa, with values of 60.63% and 73.61%, respectively; however, there are considerable differences according to the stage and country. The reality reflected for this indicator shows even lower rates in Southeast Asia, where 48.03% of primary schools have computers for teaching purposes compared to 66.51% for secondary education. The values are even worse in the case of South Asia, especially at the primary level, with only 15.95%, compared to 41.46% of schools equipped with computers for teaching purposes in secondary education.

There are no global data for sub-Saharan Africa, as the information to measure the use of new information and communication technologies in education is scarce and dispersed [35]. However, with the available information on the indicators of target SDG4.a.1 in the United Nations SDG Database from 2015 to date, referring to the level of primary education in twenty countries of the region, we can outline a scenario characterized by both the precariousness of this type of infrastructure and the enormous disparity of the situation according to the countries there. At the

primary education level, the region has higher coverage rates compared to the low level of secondary education. The percentages of primary education schools with computers for teaching purposes range from 0.31% in Burkina Faso and 1.58% in Madagascar to 75.45% in Rwanda and 85.38% in Zambia. Moreover, if we look at the indicator of primary schools with Internet access for educational purposes, we again find large differences in this region, where 2018 shows the lowest human development index overall of 0.541 [36] (p. 28), with 0.4% in Madagascar and 2.7% in Angola, to 15.85% in Cape Verde and 30.01% in Rwanda. The dissimilar situation of Mauritius and the Seychelles stand out, with 100% coverage for both variables.

In relation to Internet access, again, the global northern regions and East Asia, as well being the areas with the highest concentration of developed economies, both have percentages over 90% for primary and secondary schools that have such facilities. However, in other regions, these figures are slightly lower, such as in Central Asia and Western Asia, with values close to 80% for schools at both levels of education with access to the Internet for teaching purposes (Table 1). In addition, there are far fewer homogeneous data for Latin America and the Caribbean or Southeast Asia, which can be explained by the wide inequalities concentrated in both regions between the countries that make up these regions, but also by the stages there. Thus, in Latin America and the Caribbean, less than half of primary schools have access to the Internet for teaching purposes, while, in secondary education, the figure is 20% higher. There are also notable differences; for example, between Argentina, which in 2017 had 39.98% for primary schools and 53.12% for secondary schools with Internet access, and Cuba, which a year later had only 12.58% and 46.37%, respectively. Similarly, in Southeast Asia, although 60.06% of secondary schools have access to the Internet for teaching purposes, the differences between the two countries are very pronounced, as is the case with Myanmar, where only 0.18% of primary schools and 0.77% of secondary schools had Internet access in 2017, while in countries in the same region, such as Thailand or Malaysia, 100% of schools had access [34].

In regions where more low-income countries are concentrated, such as South Asia or sub-Saharan Africa, the data are again scarce due to their own idiosyncrasies and poor educational infrastructures [37]. In fact, as shown in Table 1, only data for the first region were recorded for secondary education, showing that Internet accessibility was below 50% when the data were recorded. In sub-Saharan Africa, in addition to what has already been stated above regarding the provision of computers and Internet access in schools, in the current context of school closures, it is relevant that 89% of students do not have access to computers at home and 82% do not have access to the Internet [35]. UNESCO estimates that 56 million students in this region live in areas without access to mobile networks, though they do have significant percentages for the access and use of mobile phones [38].

These data can be complemented by the latest data provided by [39], which indicated that of the 1043 million school-age boys and girls who have been affected by school closures, 263 million lack access to digital or remote learning. Next, Table 2 shows the distribution of this global figure by region.

Table 2. Percentage of school-age children, pre-primary to upper secondary, without access to distance education by region.

Region	Minimum Percentage of School-Age Children without Access to Distance Education (%)	Minimum Number of School-Age Children without Access to Distance Education
Eastern and Southern Africa	49%	67 million
West and Central Africa	48%	54 million
East Asia and the Pacific	20%	80 million
Middle East and North Africa	40%	37 million
South Asia	38%	147 million
Eastern Europe and Central Asia	34%	25 million
Latin America and the Caribbean	9%	13 million
World	31%	463 million

Source: UNICEF, 2020.

The latest data provided by UNICEF, published on 29 August 2020, estimated that at least a third of the world's schoolchildren are unable to access remote learning during school closures, mainly due

to a lack of remote learning policies or lack of equipment needed for learning at home. This recent report notes that, globally, “at least 31% of students from pre-primary to upper secondary schools cannot be reached due to either a lack of policies supporting digital and broadcast remote learning or a lack of the household assets needed to receive digital or broadcast instruction” [40] (p. 1).

From the data collected in Table 2, it can be seen that the regions represented are those with the highest concentration of low-income countries, such as those in East Asia and the Pacific, as well as Latin America and the Caribbean, which have clear barriers to developing teaching-learning processes in remote modes. These results present a worrying situation for the sustainability of the right to education in the light of the effects of COVID-19, especially regarding to school-age students. In the region of Latin America and the Caribbean, of the 32 million schoolchildren between the ages of 5 and 12 in the region, only 43% can receive tele-education. [41] (p. 3).

4.2. Skills and Teaching Resources for the Use of Information and Communication Technologies (ICTs) for Educational Purposes

After school closures, the greatest burden of remote education falls on teachers. From one day to the next, in a context of uncertainty, they have been forced to rethink their teaching work but also to develop, in a self-taught way most of the time, technological skills and to integrate digital devices and resources that were new in their teaching practice or an instrumental support in on-site classes.

Although SDG 4 has indicators for measuring digital infrastructures in educational centers, these are not available in relation to the level of digital competence for teachers, nor the use and integration of ICTs in teaching processes, which would allow them to be analyzed globally [42]. In 2012, UNESCO developed a series of indicators for assessing the skills and integration of ICTs in the classroom for teachers, but it contains hardly any data for that year or the following years. However, there is information on this subject, disaggregated by region, which is presented below.

As a benchmark for the more advanced economies, the OECD’s PISA Report (2018) provides indicators of teacher skills and ICT integration, but these data refer to the lower secondary level and do not allow an assessment of the situation for primary education. Zubillaga and Cortázar [43], in a report prepared for the COTEC Foundation, brought together the data from this report, offering the proportion of teachers with the technical and pedagogical skills needed to integrate digital devices into teaching, as well as the effective professional resources available for learning to use digital devices. Globally, for the first indicator, countries with values between 75–95% belonged to Central Asia, East Asia, and Eastern Europe, along with Denmark, Saudi Arabia, and Mexico. A second set of countries, with values between 55–75%, included Australia, most European Union countries (except Spain, Italy, Iceland, Ireland, and The Netherlands), North America (United States and Canada), and three Latin American and Caribbean countries (Panama, Colombia, and Chile). Values between 35–55% were concentrated in Spain, Italy, Iceland, Ireland, and most of the Latin American and Caribbean countries belonging to the OECD.

For the other indicator, the percentage of teachers with effective professional resources available to learn to use digital devices was 75–95% in most Central and East Asian countries, as well as the United States, Canada, Norway, Denmark, Estonia, Lithuania, Austria, Czech Republic, Slovakia, Bulgaria, and the United Arab Emirates. The rest of the European countries, together with Chile, Panama, French Guyana, and the Dominican Republic, reached figures between 55–75%. Countries below this range included Germany, Portugal, Ireland, and the rest of the countries in the Latin American and Caribbean region, presenting values between 35–55% [43].

In relation to more vulnerable economies, sub-Saharan Africa in particular, the data showed that teachers were under-qualified for the job they held and that schools had chronic shortages of teachers, with 70% for primary education and 90% for secondary education [44]. However, Montoya and Barbosa [38] noted that teachers in this region received minimal training in ICT (64% in primary education and 50% in secondary education). The Global Education Monitoring Report [45] showed that there was a huge gap between low- and high-income countries in terms of familiarity with digital

skills and the use of ICTs, such as office automation and e-mail, in the daily lives of adults, which was also related to the socioeconomic levels of families. If we bear in mind that adults (family members and teachers) are the educational agents in a situation of confinement, it is not difficult to get an idea of the enormous difficulties they face in guaranteeing learning and the right to education.

Furthermore, Schleicher [46], based on the data from the 2019 Teaching and Learning International Survey (TALIS) of the OECD, highlighted that teachers reported a high need for training with the use of ICT. Additionally, of teachers who received professional development in ICT, 60% reported a higher need for development in this area, 18% reported a greater need for development in this area, and 36% reported participating in online courses or seminars.

4.3. Measures and Resources Implemented by States in the Various Regions of the World in Response to the Education Crisis after the COVID-19 Outbreak

There are several tools to understand the characteristics of different government responses to the unexpected challenge that the current pandemic has imposed to education systems and confined families. Firstly, we can use the information presented on the UNESCO website [47], which classifies the world's countries into six major regions to observe the monitoring of national government responses to the education crisis arising from COVID-19. Secondly, we can find more specific information regarding national measures implemented in Latin America and the Caribbean at UNESCO website [48]. Thirdly, the mapping of policies implemented to address the non-accessibility of schools for students has been carried out by Dreesen et al. [32] for UNICEF, compiling some initiatives from countries in Africa, Asia, the Pacific, Eastern Europe, Central Asia, Latin America, and the Caribbean. Finally, we also gathered the data provided by the Center for Global Development on the policies being developed in 220 countries and territories, with the data grouped by region. We constructed Figure 1 with all these data.

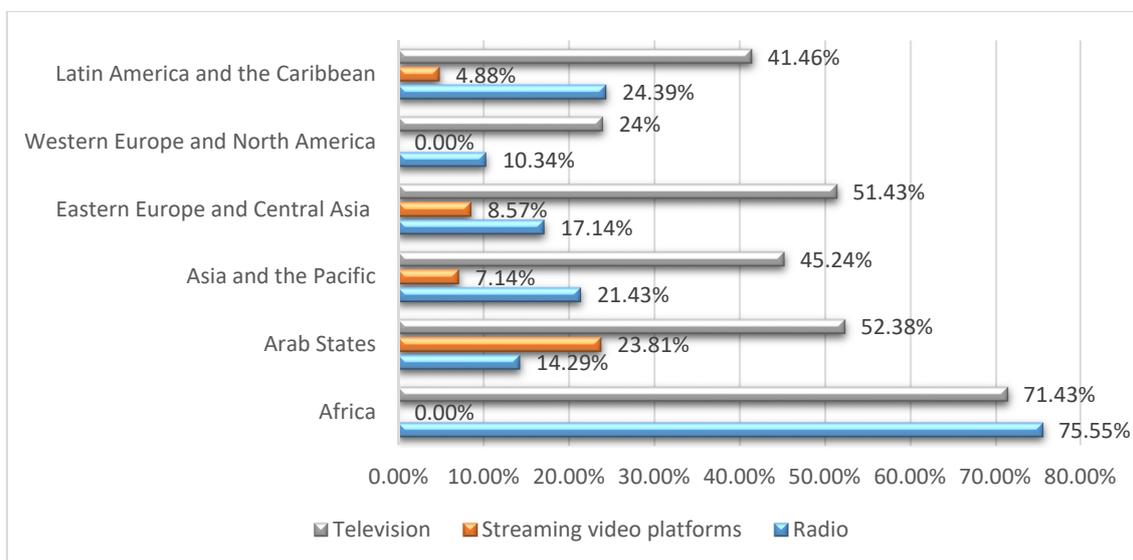


Figure 1. Regional percentages of conventional audiovisual infrastructures and social networks. Sources: United Nations Educational, Scientific and Cultural Organization (UNESCO) [47,48], Dreesen et al. [32], and the Center for Global Development [33].

As can be observed from Figure 1, of the three listed platforms, television is the most widely used, although not in a balanced way among the different regions. The geographical areas with a greater number of low-income countries or economies supported the diffusion of teaching or teaching-learning processes via television (an exciting educational innovation in the classroom in the 1960s, and even useful today outside of the classroom) or radio, which was an exciting innovation for use in schools

in the 1930s. This is clearly reflected in the African region; 41 countries have mostly implemented educational initiatives through television (71.43%) and radio (77.55%).

According to estimations from UNICEF [40] (p. 4), a “country’s choice of distance learning technology seems to be influenced by its income group”; for example, low-income countries (80%) apply radio instruction at much higher rates than lower-middle-income countries (56%) and upper-middle-income countries (46%). By contrast, Internet and television instruction are much less common in low-income countries (47% and 60%, respectively), while these methods are applied much more widely in lower- and middle-income countries (79% and 82%, respectively) and upper- and middle-income countries (95% and 92%, respectively) [40] (p. 4).

Other measures implemented as emergency educational alternatives for students in response to school closures are shown in Figure 2.

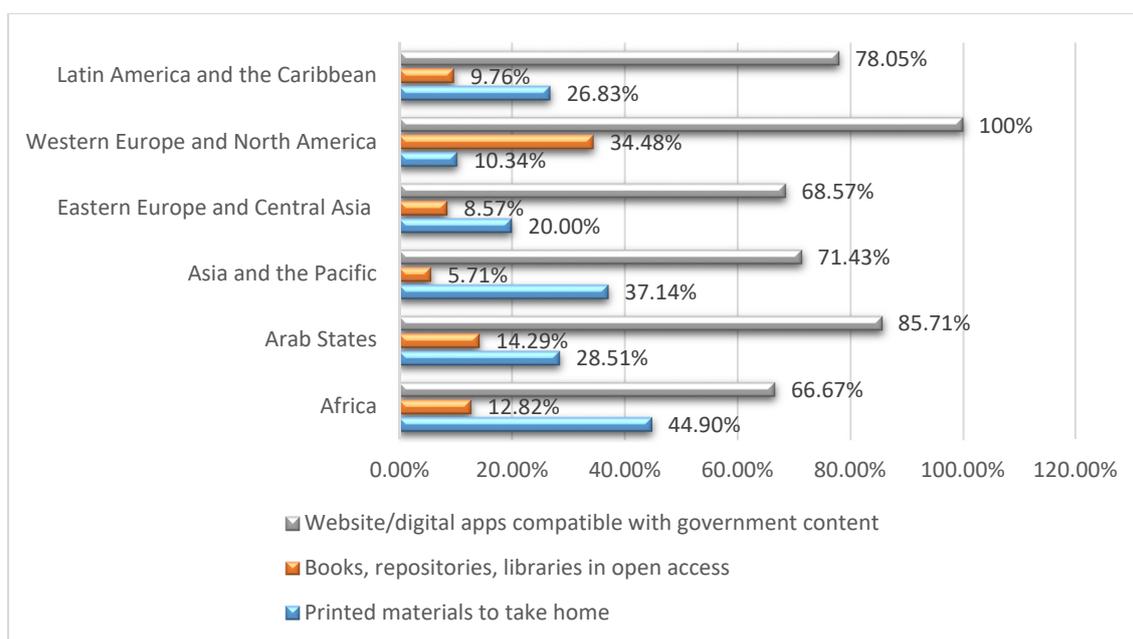


Figure 2. Regional percentages of the use of learning platforms and tools by type. Sources: United Nations Educational, Scientific and Cultural Organization (UNESCO) [47,48], Dreesen et al. [32], and the Center for Global Development [33].

As can be seen in Figure 2, most regions use ministerial web platforms designed for the continuity of remote teaching, generally built in response to the school closure caused by the COVID-19 crisis. Nevertheless, from the mapped data of UNESCO [47], which contains descriptions and links to access the platforms of the various registered countries, we can see that most of the digital platforms in sub-Saharan Africa, as well as some of those in low-income countries in other regions, are informative rather than pedagogical tools, unlike the global northern regions, which have a wide variety of ministerial resources and online repositories. It is also noted that in the African region, due to the barriers and gaps in access to digital content and connectivity, policies are in place to distribute printed materials and activities that are collected in schools, a measure observed in about half of the registered countries.

In the case of the developed measures to provide platforms, resources, or means of communication with students and families, as well as online training courses for teachers, there is a lack of systematized information to be able to offer a representative overview. However, Vegas [49], based on the information from the Center for Global Development [33], has pointed out that guidance or training for teachers to interact with students during the crisis has been provided in 50% of the countries in South Asia, Eastern Europe, and Central Asia, 48% in North Africa and the Middle East, and 40% in Latin America

and the Caribbean, East Asia, and the Pacific. For part of the sub-Saharan Africa region, Vegas [49] reports that around a third of countries require teachers to maintain communication with students, but without guaranteeing specific means or training to do so.

To provide a more complete picture of regional actions on platforms and learning tools for teachers after COVID-19, we compared the available information collected by UNESCO [47] and UNESCO [48], represented here in Figure 3.

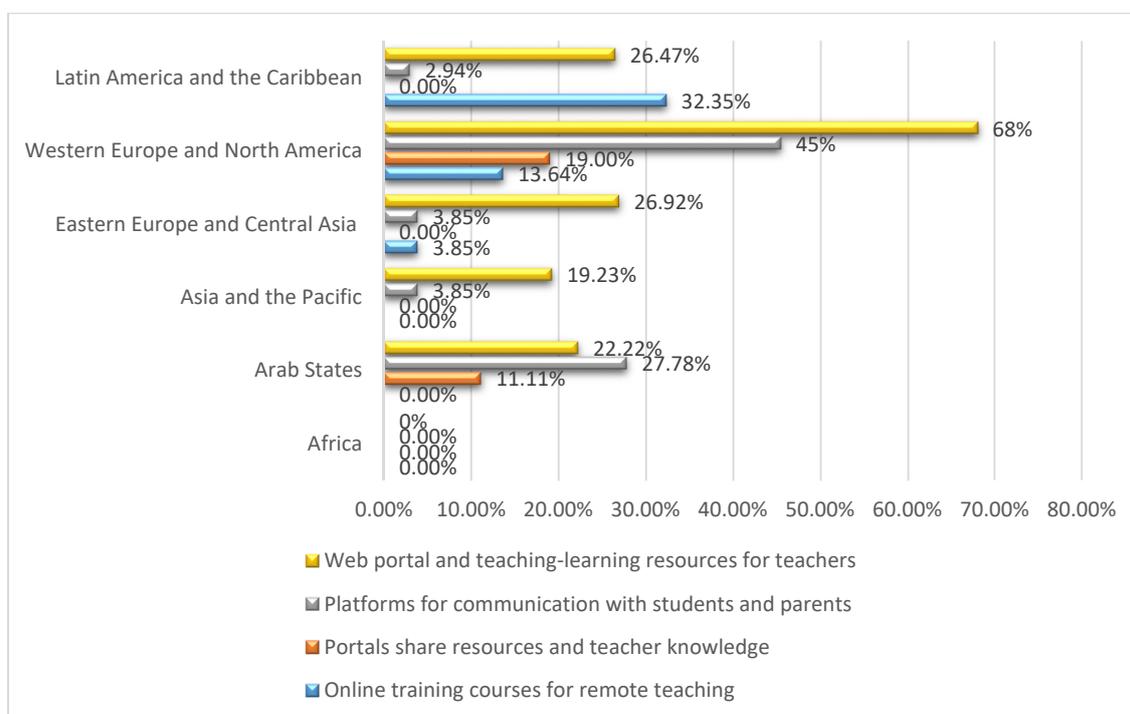


Figure 3. Percentage of countries by region that have developed learning platforms and tools for teachers after COVID-19. Source: United Nations Educational, Scientific and Cultural Organization (UNESCO) [47,48].

Finally, the data in Figure 3, though not covering most of the countries in the mapped regions, allowed us to observe significant differences between them. This was a clear indication of the enormous digital gap of inequality, as well as gap in teacher training and professional development opportunities, separating the regions that represent more low-income countries (i.e., Africa and Asia) and those that host more high-income countries (i.e., Western Europe and North America). The capacity to respond to the crisis by supporting, accompanying, and training teachers to try to ensure continuity in the learning processes of confined schoolchildren and to monitor and maintain communication with students or families (in short, to guarantee the right to education) was found to be very uneven between regions.

5. Discussion and Conclusions

As we pointed out at the beginning of this work, epidemiologists and public health experts are unable to agree on school closure, and solid scientific evidence is yet to be found in terms of supporting or disproving the benefits of mass school closure to contain the spread of COVID-19, or alternatively reopening schools and the role of children in potential transmission [50]. However, in the field of education, there is no doubt about the negative influence of the closure of educational centers for all countries, although with very different intensities and consequences, both among the different countries and within them. The above analysis shows an uneven map in which students in low-income countries or vulnerable groups are suffering the cost of the current learning loss. Witnessing the existing global inequality, which the pandemic has made even more visible, it is impossible to not see

how much there is still to be done to make Condorcet's enlightened project a reality, even after more than two centuries. In 1795, he declared his hope for the future of the human species regarding three important issues: "The destruction of inequality among nations; the progress of equality within the same community; and, finally, the real improvement of man" [51] (p. 263).

The situation described so far shows that the lack of Internet or almost non-existent Internet connectivity in educational centers across the board in the poorest geographical areas of the world remains a challenge. School closures have been widespread in almost all regions of the world, leading to risks in the sustainability of education with negative effects on the teaching-learning process in all. In order to alleviate the negative consequences of this measure, considerable effort has been given to putting in place a set of alternatives to guarantee remote education. However, the technological divide between developed and developing nations exacerbates the enormous inequality in educational opportunities between them. The right to education, also in distance modalities, is once again a threatened and non-realized right for children in the most impoverished societies, and for those belonging to the most disadvantaged and vulnerable groups, ranging from women to students with special educational needs. Furthermore, this inequality is twice as harmful because of the added lack of Internet access and shortages of computers in schools, and there is also a lack of Internet access at home. As can be seen in Table 2, the problem presents important regional differences. Besides, UNICEF has pointed out that "in many situations, despite remote learning policies and the presence of the necessary technology at home, children may be unable to learn due to skills gaps among their teachers or a lack of parental support" [40] (p. 5).

In high-income countries, the closure of educational centers to this unknown level has been alleviated by providing the necessary coverage from homes. Thus, to a large extent, both the support and the necessary connection for the online learning of children and young people in homes, supervised by teachers, accompanied by mothers and fathers, has been ensured. It is totally true that in the developed world, not all schoolchildren have been able to enjoy these facilities for distance learning, nor have they had the same opportunities as those offered by being part of families with a consolidated cultural capital. The first studies in Europe on the impact of the pandemic on learning (studies from the United Kingdom [52], Netherlands [53], Catalonia [54], and Flandes Region (Belgium) [55] clearly show how the different socioeconomic levels of families have accentuated the differences in learning opportunities for schoolchildren during confinement.

In the case of the United States, referring to K-12 students, a recent report from Common Sense Media and the Boston Consulting Group has shown that "prior to the pandemic, between 15 and 16 million U.S. students out of 50 million total lived in a household that lacked either Internet access, a digital device, or both" [56]. Of these, between 55 and 60% lack both an internet connection and a digital device. Besides, "between 300,000 and 400,000 public school teachers, or slightly less than one out of every ten nationwide lack adequate Internet or computing devices at home" [57] (p. 5). The study demonstrates that the digital divide is a major problem across all 50 states, but with a very uneven and skewed impact. The percent of households with at least one K-12 student without a connection or without adequate connectivity varies according to race and location. The results are the following for geography: Urban, 21%; suburban, 25%; rural, 37%. By race/ethnicity, the results are the following: White, 18%; Latin, 26%; Black, 30%; and Native American, 35% [57] (p. 3). Obviously, school closures during the COVID-19 pandemic have put all of these students at risk for significant learning loss.

The digital divide has widened the existing differences between students according to their social origin. However, it is undeniable that it has mainly affected, and to a larger extent, the children of those families in low-income and high-income countries, although there is no doubt that the impact can be felt in developed countries as well. The closure of educational centers, according to estimates by the United Nations Development Program (UNDP), in what is defined as the "effective out-of-schooling rate", which is the percentage of boys and girls of a primary school age, adjusted to reflect those who do not have Internet access, is reaching 60%. The global lack of schooling would thus reach percentages unknown since the eighties of the last century. The UNDP estimates that, with school closures and

deep gaps in access to online learning, 86% of primary school children are currently out of school in countries with low human development, compared to the 20% in countries with very high human development [58].

Regarding teachers, 63 million teachers [14] have been compelled to leave their usual workplace and, with few institutional means, to use their own computers and Internet connections, without the necessary initial or in-service training to use the new technologies with solvency. These teachers feel obliged to cope with these completely new modalities of distance teaching-learning for which they have not had any training. Their response has been remarkable, requiring many volunteers. It must be said that a sustained ethical commitment to students has alleviated some of the most negative effects of closures for schoolchildren. However, one cannot meaningfully speak of homogenous responses without taking into account the specific context of each situation. Besides, when it comes to teachers, fulfilling their obligations in one region or another has meant having more or less access to different opportunities for effective performance of their given tasks, never mind their levels of training as professionals, which may vary greatly from one country to another.

In general, for the most vulnerable regions, based on their financial standings and, by extension, their digital equipment for educational centers, such as in sub-Saharan Africa or Southeast and South Asia, it is considered urgent that the ministries of education guarantee the integration of more indicators for the use of ICTs in primary and secondary education for monitoring and evaluation frameworks, as well as establishing collection mechanisms to produce all the required data and indicators that will ultimately help improve the situation there [35]. Thus, the pandemic, in addition to obvious limitations in predicting events, has very clearly exhibited the enormous differences in the capacities of countries to prepare for and respond to the pandemic. The inevitable growth of poverty and inequality that the pandemic will bring about makes a global response that goes far beyond national borders even more necessary, with a reinforcement of the leadership of international organizations with responsibility in the different areas of action.

The crisis linked to the expansion of COVID-19 has been systemic, and responses must simultaneously consider health, economic, social, and educational factors. The possibility, especially for low-income countries, of a sharp decline in income, life expectancy, education, health, and human development, compared to the situation back in 1990, is a horizon that has not been ruled out by UNDP. This is how things will be unless policies aimed at fighting inequality are implemented. It is estimated, for example, that internationally financing educational systems and countries with more accentuated digital divides could reduce the number of schoolchildren now deprived of education due to the closure of educational centers by more than two thirds [58]. Furthermore, this inequality is distributed in a very uneven manner. Of the school population that does not have access to digital education, according to the latest UNICEF data for the month of August, girls are more affected (52%) than boys (48%), along with boys and girls living in rural areas (76%) versus those living in urban areas (24%), and also poor households (72%) compared to the richest households (28%) [40].

Therefore, we can conclude that policies oriented to equity and inclusive education are now more necessary than ever to guarantee and strengthen the right to education in the context of achieving the UN Sustainable Development Goals. This is precisely what Koumbou Boly Barry, UN Special Rapporteur on the Right to Education, demanded of the United States in 2017: Important positive measures to face discrimination, inequity, and exclusion in education [59].

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