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PRIMARY AND SECONDARY EDUCATION WHILE SOCIAL DISTANCING THROUGHOUT THE COVID-19 PANDEMIC: IMPLICATIONS FOR THE RIGHT TO EDUCATION

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Abstract: *OBJECTIVE: To characterize the effect of social distancing measures taken by the government to face the COVID-19 pandemic, in terms of the fulfillment of the right to education in primary and secondary formal education in Colombia and Bogota.*
METHODS AND MATERIALS: A narrative review of the literature was conducted on fifteen studies that examined different aspects of the right to education during the COVID-19 pandemic in 2020 and 2021, as well as a descriptive analysis of secondary sources' data on aspects concerning the right to education in the Pulso Social or Social Pulse Survey by DANE, the Colombian National Administrative Department of Statistics, (including several capital cities of Colombian departments) and in the study "Education in Bogota and Covid-19" by PROBOGOTA, the Foundation for the Progress of the Capital Region and the School of Government of Universidad de Los Andes.
RESULTS AND DISCUSSION: In vulnerable households, interrupted continuity of education due to lack of access to technological resources was common. Sometimes there were discrepancies of expectations between actors in schools and parents, who demand greater support from the educational authorities. Formal education was maintained but greater technological, pedagogical and emotional support training for teachers is required, as well as a new role and responsibility in supporting children and teenagers in their studies at home.
CONCLUSIONS: The greater impact of the lack of technological resources and adequate family support on students from vulnerable or low-income contexts, and the effort of their teachers to maintain educational activity, show that some improvements are necessary in educational authorities to support teachers' work and training for activities related to distance education and for future alternation scenarios. These should be offered by educators' institutions and interdisciplinary research teams on home, childhood, and adolescence topics.
Keywords: Right to education, primary education, secondary education, disease control.

INTRODUCTION

This text delves into the degree of impact to the fulfillment of the right to education caused by the social distancing measures enforced in Colombia and Bogota D.C., to face the COVID-19 pandemic in 2020 and 2021, contrasting research background findings that are emerging on the topics

of education and COVID-19. The specific focus is the sphere of formal education in its primary and secondary levels .

This inquiry uses criteria of an approach based on human rights. According to this approach, fulfillment of a right such as education is analyzed considering the relationship between individual and collective well-being, the likely conditions of inequity in the environment related with the right, and the actions to guarantee it taken by parties who are accountable and liable for its fulfillment (Vargas & Gambarra, 2012). The specific analysis of the right to education required the use of the framework proposed by Katarina Tomaševski (2001; 2004a; 2004b) which suggests four conditions for the right to be fulfilled, namely:

- # Availability: Education must have an institutional foundation and agents to enforce it.
  # Accessibility: People may access it without explicit or implicit restrictions or barriers.
  # Acceptability: It leads people to learn what is expected.
  # Adaptability: It adjusts to include people with different characteristics, conditions and origins.

Thus, this research examines the degree of impact of the fulfillment of the right to education caused by the social distancing measures enforced in Colombia and Bogota D.C. by the national and district governments, to face the COVID-19 pandemic in 2020 and 2021, in terms of availability, accessibility, acceptability and adaptability in primary education in Bogota and other Colombian cities, contrasting research background findings that are emerging on the topics of education and COVID-19. This introduction will present the initial warnings made by experts at the beginning of the pandemic or when restrictions to mobility to deal with COVID-19 were enforced; as well as the types of measures enforced by educational authorities throughout this situation. Afterwards, this study's methodological strategy and results are introduced, the section presents the inquiry and the data obtained from both organisms in terms of surveys in households including students in primary education, and a narrative literature review about aspects concerning education and COVID-19. The last section presents discussions and conclusions of the right to education in the levels of elementary, primary and secondary education on Bogota and Colombia.

Initial Warnings and Support for Educational Plans in the Pandemic

Experts in different areas proposed ideas on the matter before or while restrictions to mobility where implemented, with the consequential closing of face-to-face classes in schools. In the Colombian context, researchers of the Department of education at Universidad de Los Andes warned:

1. Availability of information communications technology within reach may not be equally distributed among the population (Cifuentes, 2020).

Due to having less material, social and symbolic resources, the vulnerable population may be largely affected by restrictive measures, and gaps between people with more or less resources could likely broaden (Escallon, 2020; Palacios, 2020)

Socio-emotional support and socialization possibilities for children and teens could be seriously affected (Velasquez, 2020).

Likelihood of impact on different populations, given disparities among regions and departments and cities in the same region (Montoya, 2020).

Need for more direct and efficient support to the educational task coming from traditional media such as the radio or educational television, since these are more likely to reach the entire country's population (Baxter & Parrado, 2020).

Possible support in terms of health governance among people with greater scientific literacy (Navas, 2020).

Need to maintain the school nutritional assistance for the vulnerable population, now at home (Kairuz, 2020).

Significant challenge for educators in terms of providing comprehensive companionship to students (Garcia, 2020).

Similarly and in the context of the United States, DeMatthews, Knight, Benedict and Callahan (2020), propose that educational researchers could help deal with the crisis, supporting health programs' strategies and servicing the impact caused by measures during the pandemic, in vulnerable or traditionally marginalized populations. Other references showed that:

1. In Colombia, prior to the pandemic, only 11% of continuous training programs for teachers focused on the productive use of information communication technologies in education (Arias-Velandia & Cruz, in the press).

In Spain and in some countries in Latin America, prior to 2020, teachers and students who participated in mobile learning research (which had been suggested by some experts as a good technological alternative for educational support), showed scant knowledge in terms of strategies and educational learning software management, although they were skilled in the social usage of technology and screen management (Castellano & Pantoja, 2017; Sandoval, Garcia, & Ramirez, 2012; Vargas, Gomez, & Gomez, 2013). Likewise, teachers acknowledged the advantage of using these tools but were also aware of being underprepared to use them productively in classrooms (Castellano & Pantoja, 2017; Sandoval, Garcia, & Ramirez, 2012; Vargas, Gomez, & Gomez, 2013).

Evidence existed pertaining to the need and development of students' self-regulation capacities in distance education centers or remote educational centers (Lopez-Vargas,

Hederich-Martinez, & Camargo-Uribe, 2012; Rincon-Baez & Arias-Velandia, 2018).

Children's education supported by people or significant adults at home is a strategy that could strengthen students' resilience (Ruiz & Orcasita, 2018), and could become an opportunity to uplift children's education with cultural practices in their households (Puche-Navarro et al., 2009).

In agreement with these proposals, in June 2020, the Ministry of National Education of Colombia (2020) introduced the *Guidelines for at-Home and Alternation Education*, prioritizing protocols to protect the health of students, teachers and other actors in schools and educational centers. The guidelines were divided in two: sanitary measures and pedagogical management while in isolation as a result of the pandemic.

As part of the sanitary measures, the Ministry of National Education established biosecurity and work protocols for schools, populations, territorial management, work with the health sector and follow-up to those measures. In terms of pedagogical management, it defined strategies, followed-up on students' accomplishments, adapted the study plans, and suggested complementary activities at home, it also enriched the teaching practice, strengthened support to students with difficulties and defined evaluation and attendance guidelines. Although these measures were part of the actions and activity promotion of the government and the educational administration, the question was if they managed to guarantee the right to education of Colombian children and teenagers enrolled in basic education.

In terms of the analysis of what might be happening with these measures, Kuhfeld, Soland, Tarasawa, Johnson, Ruzek and Liu (2020) explain that although education in the restrictions resulting from COVID-19 was a unique measure, it was possible to make some projections in terms of its impact using models of previously studied situations conducive to students' "loss in learning". Therefore, they used two models that could resemble this phenomenon to make projections: the northern hemisphere's summer vacation and events of natural disaster.

The authors introduce that they based their study on these two models and warn that they have chosen to do it since situations of isolation could potentially detach or deprive some children and teenagers enrolled in formal education in educational centers. They also suggest that, in the American context, differences arise in terms of continuity of access to means by many students due to lack of availability of devices, networks, connectivity and adequate spaces to further education. In their projection, they observe differences in gains or losses of expected learning, with greater losses in children and teenagers in low socioeconomic levels, which are also associated with low-quality teaching; the measures could drive that trend (existing before the pandemic) upwards.

Khufeld *et al.* (2020) also believe that these projections show that desertion may increase in all of the groups, and that, in general, the quality of teaching does not differ among them, but that learning for groups

with traits of vulnerability in low income households are usually affected to a greater extent throughout the pandemic. This concurs with other findings about possible losses in learning of children whose education is interrupted due to civil unrest that compromises safety and public policy doctrine (Ang, 2021; Gershenson & Hayes, 2018).

METHOD

This research has two sections: a descriptive data analysis of secondary sources and a narrative literature review. The first one was conducted using two secondary sources: 1) the Social Pulse Survey of December 2020 by DANE, the Colombian National Administrative Department of Statistics (DANE, 2020), on the overall impact of COVID-19 in the Colombian context (DANE, 2021), and 2) the results of the survey "Education in Bogota and Covid-19", developed by PROBOGOTA, Fundacion para el progreso de la Region Capital along with the School of Government of Universidad de los Andes (Garcia, Maldonado, & Palacio, 2021).

In December 2020, DANE's Social Pulse Survey inquired into the well-being of childhood, teenagers and families, seeking to present information about the impact of COVID-19 in 23 of Colombia's main cities and metropolitan areas. This survey inquired about trust, subjective well-being, homes' support networks, well-being of households with children and teenagers and their relationship to education throughout COVID-19. A total of 12 million households were surveyed and asked questions with the intention of knowing if the households' children continued with the educational activities from the moment in which schools were closed, which activities they had undertaken and the means to do so.

PROBOGOTA and Universidad de Los Andes' survey on "Education in Bogota and Covid-19" looked into the impact of restrictions related to COVID-19 on learning, risks of dropping out, physical and mental health and family dynamics, in a sample that included 753 households surveyed in November and December 2020.

In the literature review section, a background check took place for research published in 2020 and 2021 on the impact or effect of the COVID-19 pandemic and its mitigation measures in primary and secondary education in different contexts and countries. The review was done in Elsevier's Scopus database, from which the retrieved research reports were located. The text of the reports was reviewed in its entirety, and they were retrieved from Elsevier's Science Direct. The review included scientific publications on the topic included in the index of the Scopus reference system. In order to locate the reference data and abstracts in said system, the following search equation was used on February 11th, 2021:

(TITLE-ABS-KEY (COVID-19) AND TITLE-ABS-KEY ("K-12 education"))

Once the information was retrieved, it was exported to a format in Microsoft Excel template and in plain text. This step resulted in fifteen research articles and reports, which were used entirely for the analysis. The articles were located in the Science Direct data base and its content information was categorized collecting notes on the topics of the articles in emerging categories that grouped said notes (whose analysis is presented in the results of the study herein), as well as its grouping per type of study developed and its scope. Classifications of the research reports groups in their categories per research developed and scope are included in Table 1.

Categories of Studies per Scope	Number of Research Reports
Large-scale empirical inquiries with statistical analysis	2
Small-scale empirical studies	5
Systematic review analyses or analyses of preexisting data in official sources (evidence-based analyses)	4
Academic essays	4

Table 1
Types of research reports and frequency
Source: compiled by the authors from a search in Elsevier's Scopus, February 11th, 2021.

The discussion section introduces a balance of the meaning of these analyses, according to the criteria of fulfillment of the right to education of Katarina Tomaševski (2001; 2004a; 2004b).

RESULTS
What Happened with Children's Education in Colombia in 2020
DANE's Social Pulse Survey (DANE, 2020) found that almost 53% of the households' composition includes children or teenagers in school age. Out of those, an average of 86.2% continued with their educational or learning activities when schools were closed due to the pandemic, 4.25% interrupted their educational activities and 9.5% did not attend or undertake educational activities throughout that time. Children in households in the cities of Tunja and Manizales had the greatest continuity rate in activities, both cases over 90% (Figure 1), while cities with the lowest continuity rate in activities by children where Popayan, Riohacha and Medellin and its metropolitan area.
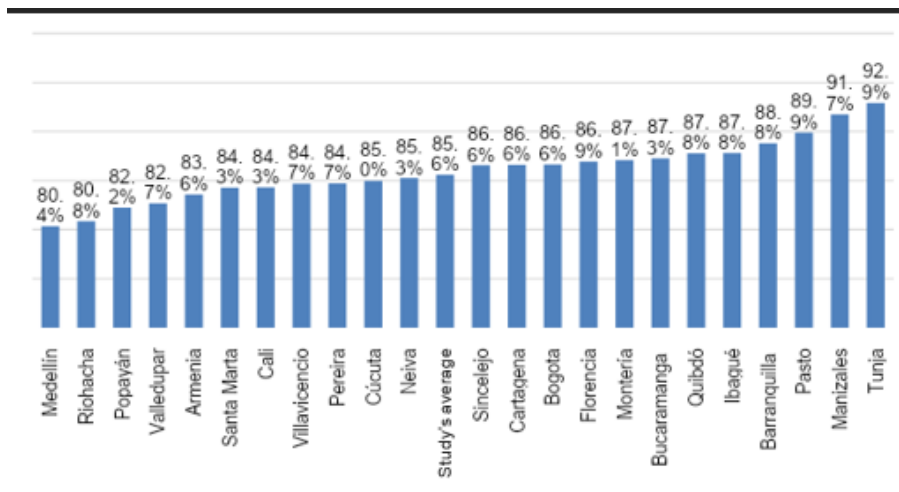
Figure 1
Percentage of households per departments of Colombia whose children
continued with their educational activities during the COVID-19 pandemic
Source: compiled by the authors based on the Social Pulse Survey (DANE, 2020).

Likewise, households with families of four or more people had the highest percentage of children and teenagers who continued their education, with 89%; while in households with three people 79% of the children continued their education; in households with two people the figure was of 84%. 32% of the total households with children are considered poor in terms of monetary poverty, in this case, 88% of them carried on with their academic activities. In those that are not considered poor, the percentage was of 85% (Figure 1).
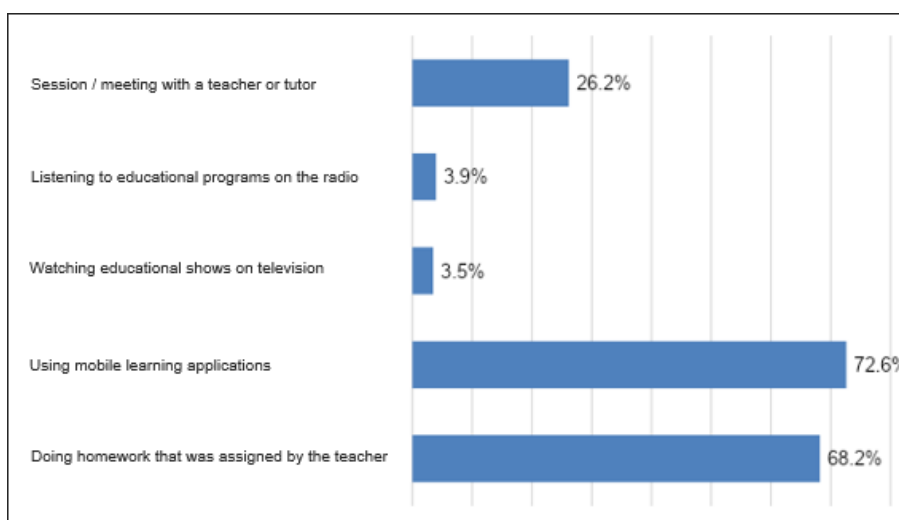

Figure 2
Percentage of means of continuity of educational
activities in households during the COVID-19 pandemic
Source: Social Pulse Survey (DANE, 2020).

Households used mobile apps for educational or learning activities more frequently, with 73%. The second place was for doing homework that had been assigned by the teacher, with 68% (Figure 2). 26% of

households with children have had sessions or meetings with a teacher since the pandemic began. The use of the radio, even more than television, as means to listen to educational programs is noteworthy, the figures are 3.9% for radio and 3.5% for television
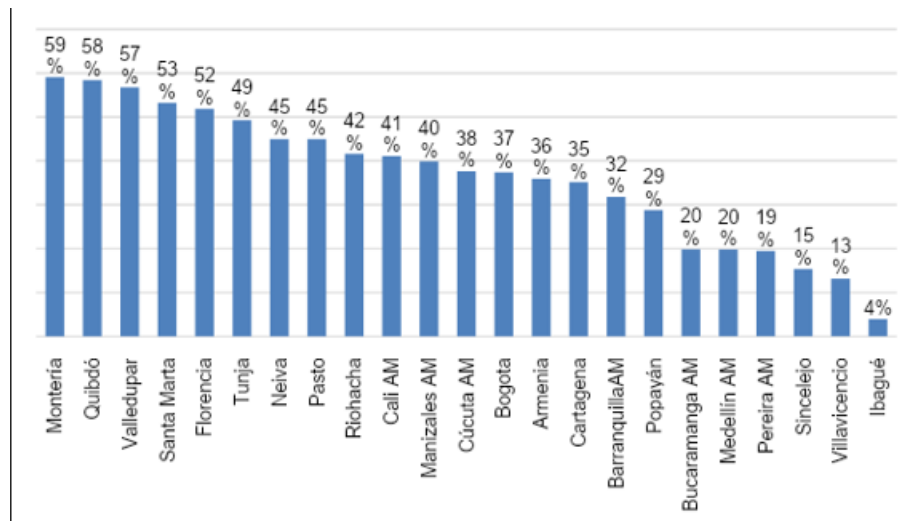

Figure 3

Percentage of households per departments of Colombia which report having had activities assigned by the teacher during the COVID-19 pandemic

Source: compiled by the authors based on the Social Pulse Survey (DANE, 2020).

In terms of the main aspects of educational or learning activities, specially *doing homework that was assigned by the teacher,* cities with the highest percentage are Florencia (52%), Santa Marta (53%), Valledupar (57%), Quibdo (58%) and Monteria (59%). And cities with the lowest percentage include Pereira (19%), Sincelejo (15%), Villavicencio (13%) and Ibague with just 4% (Figure 3).
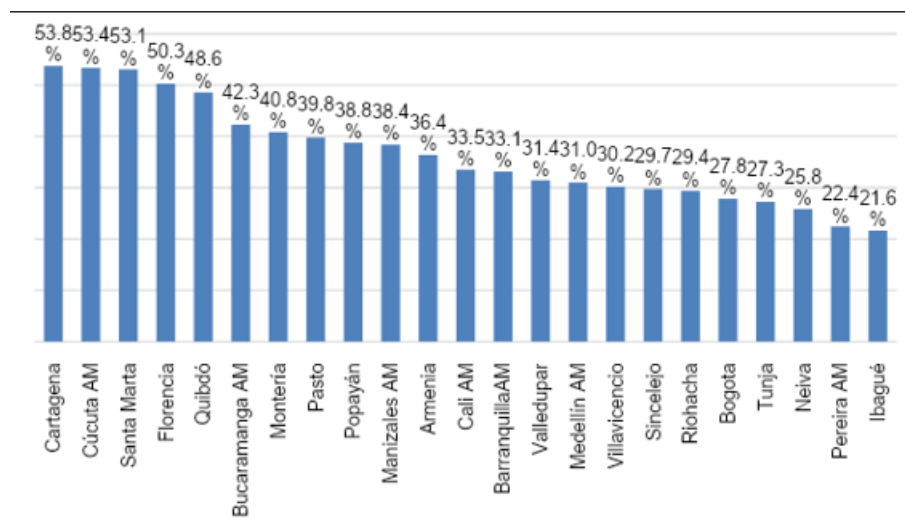

Figure 4

Percentage of households per departments of Colombia which report having used mobile learning applications for activities during the COVID-19 pandemic

Source: compiled by the authors based on the Social Pulse Survey (DANE, 2020).

As for *activities conducted with mobile learning applications* (Figure 4), cities with the highest percentage of use are Florencia (50%), Santa Marta (53%), Cucuta (53%) and Cartagena (54%). Cities with the lowest percentage are Bogotá (27), Tunja (26%), Neiva (26%), Pereira (22%) and Ibague (21%).
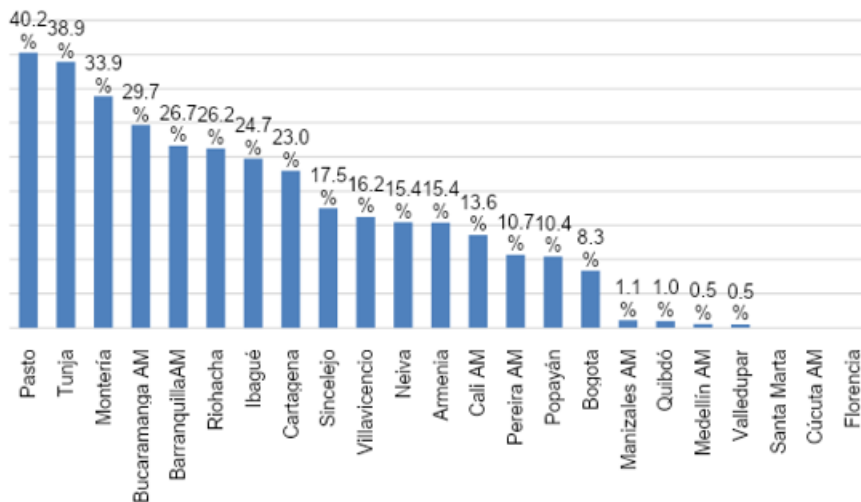

Figure 5

Percentage of households per departments of Colombia which report having had sessions or meetings with the teacher or tutor during the COVID-19 pandemic

Source: compiled by the authors based on the Social Pulse Survey (DANE, 2020).

Regarding *the occurrence of sessions with the teacher or tutor* (Figure 5), cities with the highest percentage are Bucaramanga (30%), Monteria (34%), Tunja (39%) and Pasto (40%). Those with lowest percentage include Medellin and Valledupar, with a mere 0.5% and Santa Marta, Cucuta and Florencia with 10%.
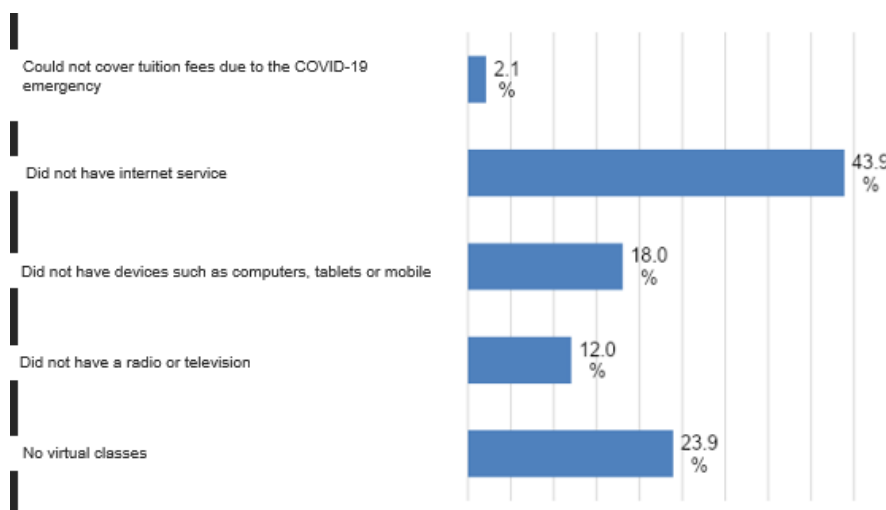

Figure 6

Percentage of reasons to interrupt the continuity of children or teenager's studies in households during the COVID-19 pandemic

Source: compiled by the authors based on the Social Pulse Survey (DANE, 2020).

Children did not participate in academic activities in only 155,023 of the 6,404,381 households of the study, i.e., 2.4%. Of those households, most failed to participate because, although the educational institution did offer virtual classes, the family did not have access to the internet (Figure 6), followed by the fact that the educational institution was closed and did not offer virtual classes, families also lacked devices such as computers, tablets or cell phones. Only 2.1% of the households could not cover tuition fees.
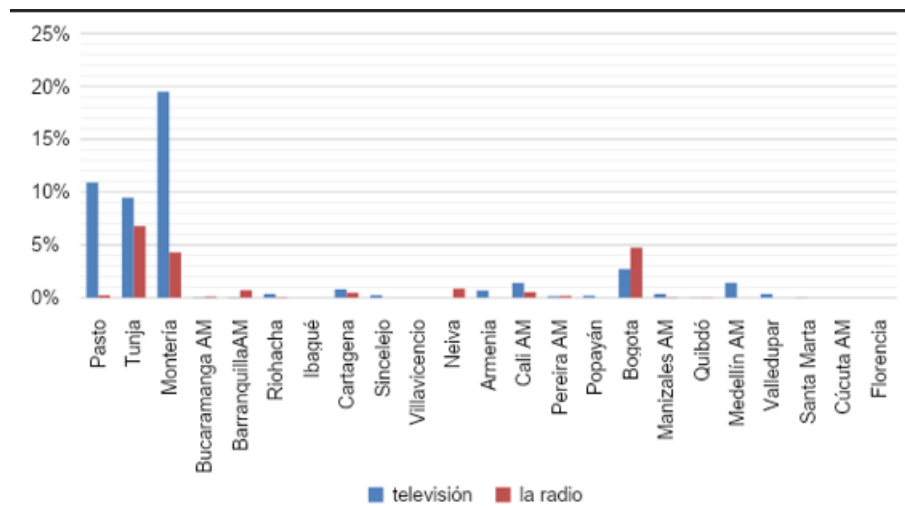
Figure 7

Percentage of use of radio and television in households as continuity strategy for children and teenager's educations in departments of Colombia during the COVID-19 pandemic

Source: compiled by the authors based on the Social Pulse Survey (DANE, 2020).

Overall, it is evinced that only cities such as Tunja, Bogota and Monteria used the radio and television in training processes to a greater extent. Radio reached a penetration share of almost 7% in Tunja and television of almost 20% in Monteria (Figure 7). Popayan, Santa Marta, Cucuta, Florencia, Villavicencio and Ibague did not report the use of these means of mass communication as strategies to continue education.

Figure 8

Percentage of households per departments of Colombia with closed institutions
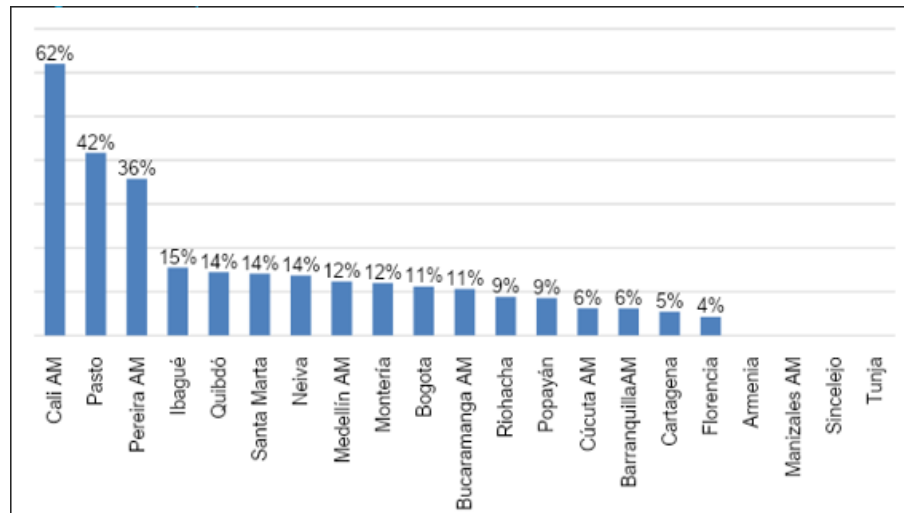which left children without educational activities during the COVID-19 pandemic

Source: compiled by the authors based on the Social Pulse Survey (DANE, 2020).

Cities where institutions were closed and classes were interrupted, thus preventing children to participate in educational activities, namely Pereira, Pasto and Cali, had the highest percentages in this aspect (Figure 8).
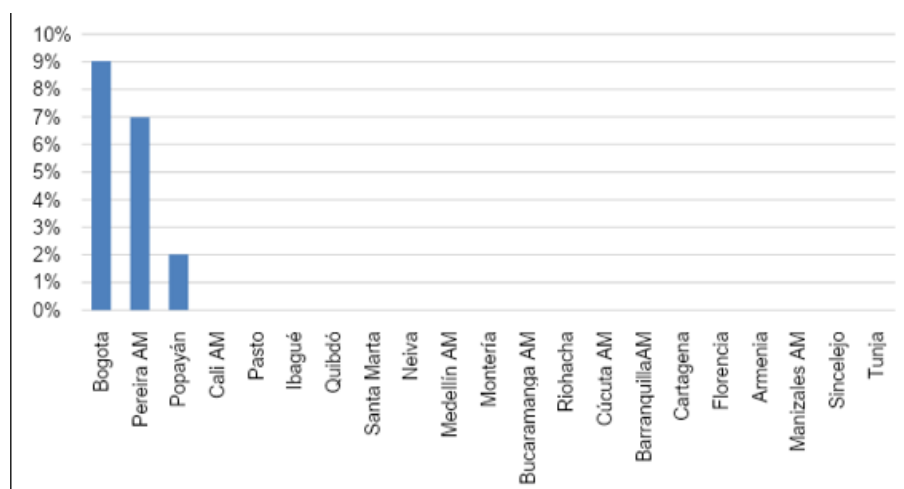
Figure 9

Percentage of households per departments of Colombia with children attending
remote classes but without a radio or television during the COVID-19 pandemic

Source: compiled by the authors based on the Social Pulse Survey (DANE, 2020).

Among children who did not participate in educational activities, only a percentage of the families in Popayan, the metropolitan areas of Pereira and Bogota reported not having a radio or television set to conduct their educational activities (Figure 9).

On the other hand, the report by PROBOGOTA, in Alliance with researchers from Universidad de Los Andes and Centro Nacional de Consultoria (Garcia, Maldonado, & Palacio, 2021) highlights the continuity achieved in primary and secondary education both in official

and private institutions. A positive valuation was granted to focusing on students' learning achievement and on socio-emotional situations that could occur. Likewise, low socioeconomic levels value the activity of the educational institution and teachers less; while mid and high levels socioeconomic levels perceived situations of pressure, stress or anxiety more often between children and teenagers throughout the study, although mid socioeconomic levels state that this situation began with the restrictions associated with the pandemic, high socioeconomic levels claim that it began prior to the pandemic.

Moreover, the possibility of returning to schools face-to-face in mixed modality is perceived positively in mid and high socioeconomic levels. In official institutions and low socioeconomic levels, it is believed that institutions are not adequately fit with measures to face the situation, or that students will fail to follow the protocols.

The basic situation of access to technological resources that act as means of communication during isolation depicts differences between high and low socioeconomic levels. Use of printed worksheets takes place mostly in low socioeconomic levels due to the scarcity of resources; while 70% of the private educational centers has seamless access to the internet, only 52% of public institutions has it. This is one of the perceived problems, which points to a possible bias for face-to-face or virtual activities as the only alternative to school training according to children and teenager's parents and caregivers.

Likewise, the following data on access to technological devices is revealing in that aspect:

1. Access to computers: 66% in public educational centers and 97% in private educational centers.
   Access to tablets or mobile devices: 17% in public educational centers and 43% in private educational centers.
   Access to high-speed internet: 50% in public educational centers and 80% in private educational centers.
   Seamless access to the internet: 51% in public educational centers and 81% in private educational centers.
   Availability of electronic devices for students' school learning purposes increases from low to high socioeconomic levels.
   Having a device of exclusive use for the child or teenager's study also increases from low to high socioeconomic levels. It is considerably low in low socioeconomic levels compared with mid and high socioeconomic levels.

In aspects of handling training and interaction between teachers and students:

1. Almost all parents and caregivers believe that activities that contributed to students' learning took place, this perception is slightly higher in high socioeconomic levels an in private educational centers.

A similar appreciation is made in terms of activities that were clear and appropriate in terms of time.

It is considered that students were encouraged by school activities, the highest index takes place in high socioeconomic levels whose children attend private education centers.

Despite mostly positive considerations, adult caregivers in low socioeconomic levels report less success in maintaining the school's daily activity routine. Although all socioeconomic levels and private and official schools have school days of four hours or more, schools in low socioeconomic levels often reported school days of three hours or less , and some did not even offer a virtual school day at home. They also believe that said activity at home got worse, although the perception reached almost 31% in all levels and educational centers.

Between 28% and 35% of the students felt more anxious or overloaded with activities than before the isolation period, this is noticeable in mid socioeconomic levels; this perception is also elevated in high socioeconomic levels, but it does not differ from parents' perception before the isolation period. Greater participation of parents was reported in high socioeconomic levels and lower in parents of low socioeconomic levels.

Communication of parents with educational centers increased during the first month of isolation, then it dropped again. The perception of enhanced communication with institutions and trust in them is higher in high socioeconomic levels, resulting in greater willingness to return to classes in mixed modality in 2021.

Additionally, between 67% and 72% of parents and caregivers perceive that their income went down during the pandemic. Likewise, less than 4% manifest having received financial aid to attain devices to study in low socioeconomic levels; by 2021 a school desertion rate of 7.6% is expected, this figure would triple the one of 2020, at least in the projections done at the beginning of 2021.

Overall, groups greatly value the actions implemented by educational institutions. High socioeconomic levels value equipment, connectivity and prepared teachers. Others show a similar trend and they also value motivating activities with students, providing feedback and having time to do activities with children's classmates.

The return to face-to-face classes is positively perceived in every socioeconomic level and educational centers. High socioeconomic levels have more trust in it, while others don't, and it is valued that this return means higher quality educational practices and socialization among peers for children and teenagers. This possibility is more feasible in high and low socioeconomic levels, despite some difficulties; while mid socioeconomic levels believe this possibility is less feasible, reporting cases in their own household of people with higher risk of getting the coronavirus. In any case, and as a general assessment, this is perceived more positively depending on the fulfillment of biosafety guidelines and with making progress in vaccination processes.

Generally speaking, data in this study lead to conclude that:

1. There is considerable effort being done to give continuity to educational tasks and to engage parents in children and teenagers' educational activities.

   Students' socio-emotional well-being and accomplishments seem to have been maintained.

   There is an overall desire to return to face-to-face classes, although with reservations in low and mid socioeconomic levels regarding adherence to biosafety conditions.

   There is more adversity in accessing technological devices and internet connections in low socioeconomic levels and in official educational centers, in addition to greater complications to allocate enough time to study.

   So far, tuition fees remain the same, but it could go down in 2021 as a consequence of the development of measures taken in 2020 pertaining to the pandemic. Consequently, access and enrollment gaps may affect the educational achievement of students in vulnerable populations.

What International Research has Found in Different Contexts

Research about the effect of social distancing measures and quarantine on education concurs in identifying the sudden change in conditions pertaining to studies, teaching and learning as a result from the shift to the online modality. As reported by an initial set of fifteen studies on the topic, published in journals in countries such as United States, Brazil Canada, Turkey and Bosnia and Herzegovina (Bansak & Starr, 2021; Beerwinkle, 2020; Biag, Gomez, Imig, & Vasudeva, 2021; Costin, 2020; Fiş, 2021; Greenhow & Chapman, 2020; Howard, Tondeur, Siddiq, & Scherer, 2020; Kaden, 2020; Lambert, Trott, & Baugh, 2020; MacDonald & Hill, 2021; Mesihovic, Ljubovic, & Muharemovic, 2020; Robertson & Muirhead, 2020; Sherwin & Winter, 2021; Trinidad, 2021; Townsley, 2020).

Two of the aforementioned are large-scale empirical studies with statistical analysis (Bansak & Starr, 2021; Howard, Tondeur, Siddiq, & Scherer, 2020), five are small-scale empirical studies (Fiş, 2021; Kaden, 2020; MacDonald & Hill, 2021; Mesihovic, Ljubovic, & Muharemovic, 2020), four are systematic review analyses or preexisting data analyses of official sources (evidence-based analyses) (Biag, Gomez, Imig, & Vasudeva, 2021; Lambert, Trott, & Baugh, 2020; Townsley, 2020) and four are academic essays (Beerwinkle, 2020; Costin, 2020; Robertson & Muirhead, 2020; Sherwin & Winter, 2021).

The large-scale empirical studies are as follows: the Pulse Survey by the United States Census Bureau, applied to 200,000 US citizens that are heads of households (Bansak & Starr, 2021); and the international study on TPACK Profiles on self-efficiency, online presence and educational institution support belief, applied to 222 high school teachers in twenty countries (Howard, Tondeur, Siddiq, & Scherer, 2020).

In the Pulse Survey, Bansak and Starr (2021) observed that parents and caregivers (from all conditions) supported children and teenagers with their schoolwork, reporting greater levels of learning on live interaction or

synchronic activities with the teacher. They also reported more problems in terms of devices and internet connections (needed for the activities) among parents with a lower educational level.

On the other hand, the study on TPACK profiles (teachers' capacity to develop knowledge with pedagogical and technological content in device-oriented teaching) looks into teachers' pedagogical competences as they interact with technological competences and their institutions' support to teaching while following measures of quarantine and social distancing in the COVID-19 pandemic. The study is based on the finding that the implementation of online learning is related to teachers' online competences, although this finding has been identified more in studies on higher education (Howard, Tondeur, Siddiq, & Scherer, 2020).

Consequently, this study is based on an online questionnaire disseminated in social media, including questions inquiring into beliefs of self-efficiency, online presence and institutional support to teachers' online activities, as well as data of their demographic characterization variables: age, gender (male or female), years of experience in teaching, having online teaching experience prior to COVID-19, days of preparation for online teaching before the COVID-related isolation measures, type of online teaching (total, partial or none), and degree of decision of the higher education institution towards online teaching (deemed mandatory, voluntary or needs-based, even if the institution did not implement it.)

Howard *et al.* (2020) found four teachers' profiles: with perception of being greatly prepared for online teaching, with average preparation for online teaching, with low preparation for online teaching, and with mixed perceptions for online teaching. Most report little or scant time of prior experience of online teaching. Those that are greatly prepared are profiled as excellent peers for workmates with the largest difficulties. Those with average preparation mention the need to get support from workmates and administrative staff in terms of how to facilitate learning, how to give clear instructions, how to give feedback, how to engage students; in spite of the difficulties and of the poor technological and pedagogical support provided by the institution (both in isolation as in the return to face-to-face learning,) they benefit largely from their positivity.

It is worth mentioning that teachers with high and average perceptions are capable to detect support needs pertaining to their work easier, both in terms of pedagogy and technology. On the other hand, groups with low and mixed perceptions felt they had little time to prepare for online teaching, attributing it to the initial emergency situation; those with mixed perceptions felt their task received adequate support from the institution while quarantining, whereas those with low perception did not. Authors of the study believe this to be the result of a chaotic transition, which could affect teachers' self-perception of their own capacities.

The five low-scale empirical studies include: impact of the quick response from the Canadian province of British Columbia to the pandemic, which delves into said response's perceptions by citizens

in the continental area of that province (MacDonald & Hill, 2021); primary, secondary and high school students' perceptions regarding online teaching in Turkey during quarantines and social distancing applying semi-structured interviews (Fiş, 2021); platform development for C++ programming courses from home while social distancing in Bosnia and Herzegovina (Mesihovic, Ljubovic, & Muharemovic, 2020), which utilized questionnaires, work samples and a WebIDE platform; a case study including interviews, observations and analysis of artifacts by a school teacher in a rural area in Alaska, USA (Kaden, 2020); and a probe of the organizational priorities for educational leaders and teachers in different areas in the United States (Trinidad, 2021).

Overall, these studies evince:

1. Impact of the shift to online teaching on students among vulnerable populations (Fiş, 2021; Kaden, 2020; MacDonald & Hill, 2021; Trinidad, 2021.)

   Higher access to content on media such as educational television (Fiş, 2021.)

   Enhanced effect of student exam results in synchronic meetings with their teachers, seemingly due to the fact that they were allowed to ask questions and get live feedback (Fiş, 2021; Mesihovic, Ljubovic, & Muharemovic, 2020.)

   Development of software that is appropriate for teaching and that replaces more specialized software, these can be useful in face-to-face teaching as in distance learning (Mesihovic, Ljubovic, & Muharemovic, 2020.)

   Face-to-face accompaniment may be necessary, especially in the initial stages of certain learning (Mesihovic, Ljubovic, & Muharemovic, 2020.)

   Work aimed at equitable teaching for online students seems to drastically increase the teacher's workload (Kaden, 2020.)

   Emerging designs and new resources created by new developments or by teachers act as catalyzers of new designs, artifacts or strategies aimed at hybrid or blended learning (Kaden, 2020; Mesihovic, Ljubovic, & Muharemovic, 2020.)

   Online learning designs do not adapt to a single model because they may be used to approach a student's particular needs, which is why they do not save money when their development is being funded (Kaden, 2020.)

There are four systematic review analyses or preexisting data analyses of official sources (evidence-based analyses). Biag et al. (2021) analyzed work documents of alliances between higher education institutions and agencies or local educational authorities in the United States; Greenwood and Chapman (2020) summarize the results of systematic reviews about research on use of media and social networks in education to suggest online teaching alternatives; Lambert et al. (2020) explore open data of public health planning in the United States in terms of the potential contagion of teachers in alternation situations, following social isolation

measures; and Townsley (2020) formulates recommendations to assess students during social isolation based on a background review.

These studies reveal:

1. In the pandemic, the pre-existing relationship between higher education institutions and local education authorities is altered. Alliances between higher education institutions and local education authorities with well-articulated work throughout the pandemic of COVID-19 are those that had the best strategies to deal with uncertainty (Biag, Gomez, Imig, & Vasudeva, 2021.)

   Media and social networks, along with conventional educational media, strengthened active learning, community construction and civic participation (Greenhow & Chapman, 2020.)

   Traditional planning practices of public health tend to affect teachers who work in districts where minorities or people with less income live, which exposes them to the possibility of getting COVID-19 in situations of alternation (Lambert, Trott, & Baugh, 2020.)

   It is recommended to change assessment practices for others that consider the student in terms of performance with the expected standard, differencing "cognitive" aspects from "socio-emotional" or "attitudinal" aspects, applying dialogue and wide consensus of its use with parents (Townsley, 2020.)

Finally, the four academic essays include: a defense of the possibility to integrate spatial thinking exercises into online content representation (Sherwin & Winter, 2020); the relationship between the crisis caused by COVID-19, sustainability, the Sustainable Development Goal on quality education, revolution 4.0 and the quick disappearance of former working positions (Costin, 2020); a discussion of the technological possibilities in post-pandemic education (Robertson & Muirhead, 2020); and a discussion of the likely ethical risks deriving from the use of learning analytics and its profusion due to online learning during the COVID-19 pandemic (Beerwinkle, 2020.)

The main conclusions of these essays are:

1. Greater learning opportunities may be found in STEM areas and in spatial thinking in primary education's online learning, given the visualization tools and the manipulative work they enable (Sherwin & Winter, 2021.)

   New skills and challenges arise in the current situation: skills for working positions in contexts with greater inequity, global citizenship and a healthier situation with the planet (Costin, 2020.)

   Little has been explored in terms of the impact of situations driven by COVID-19 on students' learning, and there have been plenty of improvements on adaptation to online learning

spaces in universities and higher education institutions, in comparison to primary, secondary and high school educations (Robertson & Muirhead, 2020.)

During social isolation due to COVID-19, schools had irregular development of hybrid or blended learning resources. This Probably has to do with a better approach to challenges regarding work, study and social lives of people who had a greater degree of technological appropriation (Robertson & Muirhead, 2020.)

Schools closing and shifting to online modality resulted in inequalities, but reopening implies new tasks for institutions regarding health care and prevention for students, teachers and staff in general (Robertson & Muirhead, 2020.)

Computing, electronic and digital technology continues to modify how we relate socially, schools need to address this in their operation after the pandemic (Beerwinkle, 2020; Robertson & Muirhead, 2020.)

It is necessary to analyse the risks and possible implementation of these technologies in schools, in order to build up their capacity to face situations such as the COVID-19 pandemic in the future (Beerwinkle, 2020; Robertson & Muirhead, 2020.) Protocols of ethical management of learning analytics need to be adjusted to findings during the pandemic. Increased online activity throughout the pandemic generated more and very detailed analytics on learning activities, which demands more precise ethical protocols to protect children, teenagers or minors (Beerwinkle, 2020.)

Findings in Additional Sources

Aside from the studies and evidence introduced before, the following are some additional findings from three sources that were found and supplied while this research was being produced and reviewed.

These sources, as well as the previously cited ones, also reveal that, at least for certain amount of students, the physical closure of schools prevented them from attaining opportunities to advance in their learning and from a healthier diet, driving them towards school desertion and lack of motivation for studying due to socio-emotional difficulties arising from their situation or their lives at home. Also, some findings show that the teacher felt alone or unprepared to deal with education using remote or technology-based means, and that the impact deriving from school closures could be greater in poorer or more vulnerable students (Education International & OECD Education and Skills, 2021; Gajardo & Diez-Gutierrez, 2021; Navarrete, Manzanilla, & Ocaña, 2020).

In their research Gajardo and Diez-Gutierrez (2021), as in this study, propose that there is still a small number of publications on the topic which should increase because, although medical research pertaining to the pandemic is a priority, research on education must move forward at a quicker pace due to the evidence in households and on individual and social capacities to face situations associated with the pandemic. Gajardo

and Diez-Gutierrez (2021) also conducted a scientific literature review on topics of COVID-19 and education, and even though there is no analysis of regulations or specific application of strategies, they concluded that there is a need to delve into the educational situation of students amidst difficulties and complications, in order to explore them an develop specific and efficient ways to support their learning.

On the other hand, the analysis by Navarrete et al. (2020) illustrates some of the situations that have been described before, with an analysis of measures developed to deal with the COVID-19 crisis by educational policies in Mexico. This study evinced the country's wide experience with technology-based education and with distance education, with an exemplary experience in the use of state, university or international organizations' educational radio and television. Yet other findings concur with some that were presented before: 1) Scant teachers' experience and learning of emerging technology and digital solutions, 2) Slow reaction by the educational authorities to provide support to teachers and students, 3) Not enough development of students' planning and self-regulation capacities to perform in distance education (skills for which formal education had not trained them), and 4) Insufficient support by parents and caregivers, based on their educational level, lives or survival systems, which have been found to be very distant from the activities needed to study.

Finally, the alliance between Education International and OECD Education and Skills (2021) gathers some initial findings or lessons learned in the COVID-19 crisis with the aim of making recommendations to recover the primary education sector worldwide. Those address keeping schools open, providing administrative support and having constant online work involving schools, students, parents and teachers, offering support to students with potential disadvantages in learning, making decisions based on evidence at school level and government level, strengthening collaborative innovation and uplifting teachers' careers, work and well-being.

DISCUSSION AND CONCLUSION

First of all, it is clear that this analysis is an initial approach to the topic. It is based on a limited amount of sources and evidence, with few conceptual input from educational specialists and with an even smaller amount of studies to support its conclusions, since the topic derives from a recent situation with limited known background (Kuhfeld et al., 2020) (Gajardo & Diez-Gutierrez, 2021).

This section integrates the findings by linking them with the four criteria of fulfillment of the right to education suggested by Tomaševski (2001; 2004a; 2004b): availability of education, accessibility to education, acceptability of education and adaptability of education (Tomaševski, 2001; 2004a; 2004b). In principle, it is noticed that in Colombia, children and teenager's education continued throughout the

school year, even for those in conditions of poverty (DANE, 2020; García, Maldonado, & Palacio, 2021).

One of the aspects mentioned by this analysis refers to the conditions of the internet connection and online studying activities at home. For studies in Colombia and other countries, it was seen that many people do not have computing devices, or are not good enough, or lack a good internet connection, especially at home (Bansak & Starr, 2021; Baxter & Parrado, 2020; Cifuentes, 2020; DANE, 2020). Thus, there are reports of alternative printed guides produced by teachers, sent via e-mail or social networks such as Facebook or WhatsApp, or media such as educational radio or television in places with infrastructure issues to access the internet (Baxter & Parrado, 2020; Cifuentes, 2020; DANE, 2020). In Colombia, availability of mobile devices differs depending on the regions: it is greater in cities such as Florencia, Santa Marta, Cucuta or Cartagena (DANE, 2020).

This fact demands more capacities from educational systems to have resources and means for students' online attendance (Biag, Gomez, Imig, & Vasudeva, 2021; Cifuentes, 2020; Costin, 2020; Escallon, 2020; Garcia, 2020; Townsley, 2020). It is important to make progress in this aspect, since it has been identified as the weak point by several specialists, even before the COVID-19 pandemic, with the goal of closing students' gaps per household income levels or occasional vulnerability characteristics in their contexts (Kuhfeld et al., 2020) (Education International & OECD Education and Skills, 2021; Gajardo & Diez-Gutierrez, 2021; Navarrete, Manzanilla, & Ocaña, 2020), especially in terms of availability of computers, mobile devices, internet connections and productive school work hours (Garcia, Maldonado, & Palacio, 2021), and driving positive impact in *accessibility to education* (Tomaševski, 2001; 2004a; 2004b).

Specialists in different areas warned that the COVID-19 pandemic could have a greater effect on students from special or vulnerable populations (Escallon, 2020; Garcia, 2020; Kuhfeld et al., 2020; MacDonald & Hill, 2021; Palacios, 2020). Sadly, this warning became real in different countries and in different contexts in Colombia. The evidence shows problems for these students in aspects such as home accompaniment, frequent failures in communication and in imbalanced expectations between parents and schools or teachers (Bansak & Starr, 2021; Biag, Gomez, Imig, & Vasudeva, 2021; DANE, 2020; Garcia, Maldonado, & Palacio, 2021; MacDonald & Hill, 2021; Trinidad, 2021). It is possible, that some of these conditions hide underlying vulnerabilities for these students, such as parents who lack a social support network, single mothers who take care of children and teenagers in studying stages, of families of refugees or immigrants (Bansak & Starr, 2021; Biag, Gomez, Imig, & Vasudeva, 2021; DANE, 2020; Garcia, Maldonado, & Palacio, 2021; MacDonald & Hill, 2021; Trinidad, 2021).

The aforementioned demands proper identification of the barriers that keep these students away from their teachers, from educational institutions, and even their families and social support networks (Biag,

Gomez, Imig, & Vasudeva, 2021);,to have the support of educational authorities and even specialists in different disciplines in higher education institutions (Biag, Gomez, Imig, & Vasudeva, 2021), in order to drive actions that improve communication channels between actors and thus help redefine their roles and expectations (Gajardo & Diez-Gutierrez, 2021). This impacts the *adaptability of education* in circumstances rising from the situation of COVID-19, as a trait of the educational system as a whole (Tomaševski, 2001; 2004a; 2004b).

A third significant conclusion is teachers' remote contact or online activities. This was something for which elementary, primary and secondary education teachers were not prepared, per evidence and background cited in this work (Arias-Velandia, & Cruz, En prensa; Howard, Tondeur, Siddiq, & Scherer, 2020). Nevertheless, in Colombia and in other places in the world, teachers' work in this aspect managed to have continuity in activities aimed at students' learning, fulfillment or accomplishment (Bansak & Starr, 2021; DANE, 2020; Garcia, Maldonado, & Palacio, 2021; MacDonald & Hill, 2021) (Navarrete et al., 2020), which resulted in a positive impact for primary and secondary's *availability of education* (Tomaševski, 2001; 2004a; 2004b).

It is interesting to confirm that a significant set of teachers generated resources and dynamics on-the-go to achieve continuity in activities and students' progress (Garcia, Maldonado, & Palacio, 2021; Howard, Tondeur, Siddiq, & Scherer, 2020; Kaden, 2020). However, this calls for a robustness of their professional career, for all of the teachers to have greater capacities to face education under difficult situations and have all types of resources to offer a seamless education to their students amidst complicated events such as the COVID-19 pandemic (Biag, Gomez, Imig, & Vasudeva, 2021; Robertson & Muirhead, 2020) (Education International & OECD Education and Skills, 2021; Navarrete et al., 2020), and to further education of students who are in communities that are victims of natural disasters, economic crises and civilian conflicts (Ang, 2021; Gershenson & Hayes, 2018; Kuhfeld et al., 2020). With these measures, actions would also have a positive impact on *acceptability of education* (Tomaševski, 2001; 2004a; 2004b).

These likely actions and developments that may be implemented based on what was created in the COVID-19 pandemic, imply an added challenge for teachers: supporting students with varied origins (Bansak & Starr, 2021; DANE, 2020; Garcia, Maldonado, & Palacio, 2021; MacDonald & Hill, 2021). This support also needs sustained backing from the general education authority or the administration, and of each region or location (Bansak & Starr, 2021; Robertson & Muirhead, 2020). Servicing diverse students entails an additional load to the teachers work, as well as a challenge to higher education institutions and teachers' training centers that support teachers' work with diverse students (Biag, Gomez, Imig, & Vasudeva, 2021; Robertson & Muirhead, 2020).

Finally, another aspect of importance in this work is the activity of at-home accompaniment of students in elementary, primary and secondary education. It appears that it implies a reformulation of parents

or caregivers' roles in students' training, strengthening it specially in the homes of low socioeconomic level students (Biag, Gómez, Imig, & Vasudeva, 2021), to strengthen support offered to students dealing with more pressure or load in their studies, especially in primary education, whose students are frequently children or teenagers (Garcia, Maldonado, & Palacio, 2021; Velasquez, 2020). In that regard, it may be important to develop strategies to support students with an inferior educational level, particularly with students who get to secondary education and whose parents did not, based on the fact that parents' heritage may be limited to support their kids' training (Biag, Gomez, Imig, & Vasudeva, 2021; Kuhfeld, and others, 2020; Trinidad, 2021) (Navarrete et al., 2020).

This cooperative work should allow students to further their learning. That type of work calls for the willingness of the implicated actors to facilitate activities, conditions and resources needed to deliver it (Biag, Gomez, Imig, & Vasudeva, 2021). This will make more progress than during the COVID-19 pandemic in everyone's learning and in adjusting learning for students and their particular conditions (Tomaševski, 2001; 2004a; 2004b).

Moreover, it is important to highlight that some circumstances arise in that may be related with the fulfillment of children and teenagers' right to education, although very indirectly: more communication with the educational institution at the start of the pandemic, admitting to receiving less income in the households and a desertion percentage estimated in 7.6%, which triples the average of this rate in years prior to the pandemic (DANE, 2020; Garcia, Maldonado, & Palacio, 2021).

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