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Teaching and Learning During the COVID-19 Pandemic: Challenges and Opportunities Amidst Educational Inequalities
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Essays

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Editorial Introduction
Teaching and Learning During The COVID-19 Pandemic: Challenges and Opportunities Amidst Educational Inequalities

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On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a pandemic. Different countries adopted measures to stop the virus's spread and support the various sectors impacted by the emergency, including public and private schooling. Whereas the pandemic presented a significant disruption to teaching and learning, the government's strategies directly affected school system structures, highlighting various inequalities in education provision across the globe. The pandemic has also impacted students, teachers, and families differently. From experiencing the virus or the illness of a loved one and feeling anxiety or fear, to abrupt school shutdowns and food insecurity, school communities felt dire consequences in the new context marked by COVID-19. Moreover, the emergency introduced further educational challenges, such as the abrupt movement of school practices to virtual platforms and unequal access to Information and Communications Technologies (ICTs) for learning purposes.

Unexpected times called for creative problem-solving: educators, caregivers, and policymakers started developing solutions to tackle the inequalities faced by students, schools, teachers, and families and alleviate the hurdles associated with the pandemic. Considering a world of disruption and possibilities, *Current Issues in Comparative Education* welcomed submissions on the challenges and opportunities faced by the school community during the COVID-19 and amidst educational inequalities. The 2022 Special Issue assesses how the pandemic has affected schooling and how different individuals, governments, and organizations have responded to the crisis since 2020.

The Special Issue is organized into three major sections. In the first one, authors present articles that discuss various perspectives on how the pandemic has affected learning and working from home, graduate students' mental health, and distance and inclusive learning. The discussions also highlight that the disruption resulting from COVID-19 evinced weaknesses already existing in schooling systems and, at the same time, signified an opportunity to reimagine teaching and learning practices.

Offering an analysis based on quantitative and qualitative approaches, **Frank O. Ely**, **Fallon R. Mitchell**, **Katherine E. Hirsch**, **Michael Diana**, **Krista J. Munroe-Chandler**, **Paula M. van Wyk** and **Cheri L. McGowan** discuss how the COVID-19 pandemic has impacted graduate students' mental health. Their findings suggest that graduate students in Canada have experienced mental health challenges and dissatisfaction with how online learning was conducted. The authors offer some insightful recommendations to inform university administrators on how to deal with the issues faced by graduate students during the pandemic.

Junjian Gao, **Brittany Kenyon**, **Yanghwan Choi**, **Isaely Echavarria**, **Ling Qiu**, and **Hope Jensen Leichter** analyze how the social disruptions resulting from the COVID-19 pandemic have resulted in changes within the family and home, impacting learning and

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working. Through semi-structured interviews with families around the globe, the authors suggest that there were fundamental shifts in the way individuals balance their personal and professional lives. Working and learning in the home during the pandemic has blurred the boundaries that in the past delimited time, space, and human relationships within each family's household.

Sandrine Simon and **Lucimar Santos** highlight the lessons learned at the Interdisciplinary Center for Research on Education and Development (CeiED). The researchers attended the meeting in Lisbon to delve into an emerging area of research called Citizen Science and how it will impact learning on digital platforms. In the article, the authors question how Citizen Science will influence education in a world marked by the challenges presented by the COVID-19 pandemic.

Inspired by their experiences as leaders and educators of a small urban elementary school in Harlem (NYC), **Dawn Brooks DeCosta**, **Danica Goyens Ward**, and **Michael Cornell** describe how the staff, families, and children in the community came together to face the multiple posed by the pandemic. Their account suggests a collective approach to reimagine the learning experience and emphasizes the importance of a united school community to ensure students' education and mental, emotional, and physical well-being.

Man-Ho Adrian Lam writes the last article in this issue. Analyzing the teaching and learning practices adopted by Hong Kong during the COVID-19 pandemic, the author shows how the education system swiftly transitioned to a "new normal." Lam concludes that the crisis was an opportunity to shift education paradigms and transform teaching and learning perspectives.

Three essays compose the Special Issues' second section and present the COVID-19 pandemic as an opportunity to correct the inequities that have long challenged educational institutions. Using her experience teaching throughout the pandemic, **Samantha Harrienger** argues that schools must reform the curriculum, allowing space for culturally relevant pedagogy so that students and teachers can interact with materials connected to their classroom and society. Also considering culturally relevant pedagogy, **Kevin Cataldo** revisits and critically analyzes the three tenets of CRP, suggesting that such an assessment is needed in schools today more than ever before. Lastly, **Jon Nordmeyer** and **Esther Bettney** explain how a global network of schools and scholars created a robust community to learn from and contribute to a dialogue about equity for multilingual learners during the pandemic.

Reports on Latin American education systems' challenges during the COVID-19 pandemic compose the Special Issues' last section. Under the guidance of Romina Quezada Morales as the Principal Investigator and Marcella Winter as Co-Principal Investigator, a group of Teachers College students analyzed how digital education strategies adopted by national and local governments have impacted teaching and learning, the quality of education, and the already existing socioeconomic gaps in the region. The exploratory studies were based on semi-structured interviews with teachers, policymakers, and other actors involved in the digital strategies implemented by Latin American countries in 2020 and 2021. **Marcella Winter** analyzes how the digital strategies adopted by Brazil's three largest schooling districts impacted education and the lives of students, teachers, and families. In three different reports, **Romina Quezada Morales** presents her analyses on Chile, Mexico, and Uruguay. The author looks at how the digital strategies adopted relate to each country's education system's issues and how the policies

impacted private and public school leaderships. Considering the Dominican Republic, **Katia Diaz** argues that although the country's education reforms have underpinned technology and online learning to improve quality education, the COVID-19 pandemic has shown that the strategies achieved little success. **Hannah Stinson** discusses how the pandemic highlighted a significant digital divide in Ecuador, particularly between rural and urban areas and families with high and low incomes. Lastly, **Judith Pineda Munguia** examines accessibility and quality of education for students of various socioeconomic statuses during the pandemic and possible concerns for a society emerging from limited access to quality education in Honduras. All the reports were reviewed by a team of guest editors interested in the topics related to digital divides and education in Latin America. CICE thanks Gabriela Chacon Ugarte, Kevin Henderson, and Romina Quezada Morales for their careful reading and insightful comments.

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This editorial introduction is also an opportunity to celebrate CICE's team's remarkable work for the last two years. When I was appointed as the journal's editor-in-chief for 2020-2021, it was clear that this would be a fantastic experience, given the publication's prestige and standing in the International and Comparative Education academic community. However, I could not imagine that all the work would be done in the middle of a pandemic. Aside from the disruption in the team's personal and professional lives, as it happened with everyone else in the world, we had to create the bonds and the trust necessary to make CICE go forward by distance. It was a daunting task, but we did it. Despite a challenging context, we also dared to make different changes that have made our journal an even better publication.

One of the main inspirations for my term as CICE's editor-in-chief was emphasizing diversity and the "international" in international and comparative education. Therefore, we invited scholars from diverse academic backgrounds, experiences, and geographical locations to compose our International Advisory Board. They helped us foster cutting-edge debates in ICEd, promoted the publication to their networks, and offered different perspectives on the work we have been doing since the journal was established in 1998. CICE also expanded the languages in which it accepts submissions to make the process more inclusive to Portuguese and Spanish speakers around the globe. In the 2021 Special Issue, we had the pleasure of publishing our first article in Portuguese. I hope the journal can receive manuscripts in even more languages in the future and make scholarly work more accessible for those who do not speak English or have it as their first language. Also inspired by diversity, we welcomed more masters and doctoral students at Teachers College to compose CICE's editorial board, expanding the number of editors and adding copy editors to our team. It was a pleasure to see how this remarkable group helped improve the quality of the journal's work, offering thoughtful insights and considering that our job is to present the finest publication, respecting authors' different ways of seeing education and doing research. The 2020-22 cohort left its mark in CICE, and I am grateful for all the lessons we learned together in the last two years. All these transformations would not be possible without the guidance of our faculty advisor, Professor Regina Cortina, to whom we are very grateful.

On the more practical side, we also spearheaded relevant changes. In partnership with Columbia Libraries, we launched CICE's automatic submissions system to make it easier for authors and reviewers to move along the publication process. Our journal's logo and visual communication also changed, preserving its colors and the quality we want to convey to readers, scholars, and practitioners in every published issue. Team

development meetings also became more frequent to encourage collegiality and hear different voices in decision-making. Many of the crucial decisions taken, such as the new logo and the topic for our special issues, were defined collectively by the team. We also had the opportunity to collaborate with our friends at TC who founded "CICE: The podcast" and are doing a great job fostering debates in our field and beyond.

For all the great work in the past two years, I thank the CICE Team, Professor Cortina, the International Advisory Board, the external reviewers, the authors, and everyone who contributed to our journal's growth and expansion. With limited resources and much will to make it work, we could promote significant transformations that, hopefully, will have a long-lasting impact on CICE and the ICEd community.

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Resilience and Despair: Exploring the Educational Experiences of Graduate Students during the COVID-19 Pandemic to Guide Strategies for Action

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The purpose of the current study was to explore graduate students' mental health and educational experiences during the COVID-19 pandemic. Graduate students (N = 28) in Canada completed an online survey consisting of both closed- and open-ended questions related to their mental health, degree progress, and access to campus workspace. Data were analyzed using both quantitative and qualitative approaches before being synthesized through a pillar integration joint display to merge study findings. Based on self-report data, approximately 60% of participants were experiencing poor-to-moderate mental health at the time of the survey. Participants also expressed dissatisfaction with online learning and felt uncertain about their degree trajectory due to changes and restrictions associated with the pandemic. Based on the participants' responses, recommendations for assisting graduate students during the pandemic were presented. Highlighted by these recommendations was the importance of accessing workspace on campus and the challenges associated with university mental health resources. Overall, nearly 16 months into the pandemic, participants' mental health was negatively impacted by the restrictions. Although the study findings may not be generalizable to all post-secondary institutions, they could be used to inform university administrators regarding the continued challenges faced by graduate students during the pandemic.

Keywords: graduate students, mental health, coronavirus, higher education

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On March 11th, 2020, the World Health Organization (WHO) characterized COVID-19 as a pandemic (WHO, 2020). Many countries across the world closed non-essential buildings, restricted gatherings, implemented physical distancing protocols, and ordered shelter-in-place mandates to reduce further spread of the virus (Dodds & Hess, 2020; Maranda & Yakubovich, 2020). Individuals rapidly shifted from in-person interaction to physically distanced or online methods (Jenei et al., 2020). Abiding by restrictions presented difficulties in many facets of life (e.g., personal, social, professional). As the calendar turned to 2021, COVID-19 restrictions and stay-at-home orders continued to present challenges for individuals globally; yet the conversation began to change. Rather than focusing solely on restrictions, the conversation extended to the impact such restrictions were having on various aspects of life, such as education and mental health (Cheng et al., 2020; Elmer et al., 2020).

One population that may have been susceptible to the challenges presented by such restrictions were graduate students. Limited research pertained to graduate students' experiences during the COVID-19 pandemic; the majority was based in China, Switzerland, and the United States with few studies examining graduate students in Canada. Although Canada shared similarities with these countries, findings from other countries may not have been generalizable (Son et al., 2020). For example, as of June 2021 in the United States, some states had removed many COVID restrictions like shelter-in-place and mask mandates (The New York Times, 2021), while many provinces in Canada remained under stay-at-home orders with masks mandated in all indoor spaces (Government of Ontario, 2021)[1]. Such variations in restrictions between countries demonstrated a need to consider the educational experiences of graduate students in specific geographic locations. From the lens of comparative education, such understandings were critical to ensure graduate students were not 'left behind' while others entered a new normal (Oleksiyenko, 2020; Oleksiyenko et al., 2021).

Additionally, it was important to consider the mental health and educational experiences of graduate students from specific Canadian provinces, as restrictions differed from province-to-province. In particular, the educational experiences of graduate students in Ontario was of interest given it is the most populated province in Canada (Statistics Canada, 2021) and faced extended restrictions (Government of Ontario, 2021). For example, on April 3rd, 2021, Ontario entered its third state of emergency, initiating a province-wide stay at home order and on January 5th, 2022, restrictions for businesses, gatherings, and public events were reinstated. Understanding the challenges faced by graduate students in Ontario may provide graduate program administrators with insight to inform strategies to support their students for the duration of the pandemic (Cohen et al., 2021; Imeri et al., 2020).

This study focused on the experiences of graduate students from one university located in Southwestern Ontario that took a robust approach to dealing with COVID-19. While many universities initiated extensive return-to-campus restrictions (Oleksiyenko, 2020), the university in the current study maintained such restrictions well into the 2021-2022 academic year for a variety of reasons (e.g., consultation with the local health unit, regional increases in positive COVID-19 cases). However, as gradual return-to-campus measures were initiated, it was unclear which departments and individuals (e.g., faculty, staff, undergraduates, or graduate students) would be granted access to the campus. While the experiences of graduate students from this university may not be reflective of graduate students at all other universities, understanding their perspective may provide critical insight regarding the impact of pandemic-related restrictions.

Maintaining restrictions into 2022 may have been in the interest of community health and reducing the spread of the virus. However, the impact these extended restrictions had on graduate students' mental health and educational experience/progress overtime was unknown. The purpose of this study was to explore graduate students' educational experiences at a university in Southwestern Ontario that took a robust approach to health and safety during the

pandemic. The following objectives were addressed: (1) to determine the state of mental health among graduate students; (2) to examine how the mental health of graduate students was affected by the pandemic; and (3) to understand how the pandemic impacted graduate students' degree progress and educational experiences.

Literature Review

As many North American universities transitioned from in-person to online education (e.g., VanLeeuwan et al., 2020), students faced significant challenges like interruptions to degree progress, financial insecurity, isolation from peers and professors, and uncertainty about the future) Jenei et al., 2020; Kee, 2021; Maranda & Yakubovich, 2020; Oleksiyenko, 2020; Suart et al., 2021). These challenges prompted universities across the globe to consider online pedagogy and its effectiveness, and the financial impact faced by students (Oleksiyenko, 2020; Oleksiyenko et al., 2021). Moreover, the general uncertainty surrounding the pandemic did impact individuals' mental health (Usher et al., 2020). While students were at a heightened risk for poor mental health before the pandemic (Son et al., 2020), trying to navigate the ever-changing mitigation responses to the spread of COVID-19 may have amplified the potential for poor mental health among post-secondary students (Cheng et al., 2020; Kee, 2021). Additionally, post-secondary students experienced increased mental illness during the pandemic, particularly when struggling to adapt to remote learning (Chirikov et al., 2020). In the United States, a survey of 195 undergraduate students showed the majority experienced heightened stress and anxiety, disrupted sleep, social isolation, and had concerns about academic performance due to the pandemic (Son et al., 2020). Taken together, many university students experienced difficulty responding to the changes that occurred during the pandemic.

While undergraduate students comprise much of the post-secondary student population, graduate students make up roughly 14% (Statistics Canada, 2020) and 19% (National Center for Education Statistics, 2021) of all post-secondary students in Canada and the United States, respectively. Interestingly, when compared to undergraduate students, graduate students often occupy dual positions at their institutions as both students and employees (e.g., teaching assistants, research assistants) (Zahneis, 2020). Thus, graduate students may have experienced unique challenges during the pandemic, given their dual role (Jenei et al., 2020; Zahneis, 2020). Imeri et al. (2020) reported that pharmacy graduate students experienced several negative effects after shifting to online learning, including limited professional and social support, reduced collaboration with peers, cancelled or modified research projects, a lack of mentorship, and difficulty maintaining work-life balance.

Recently, researchers in Canada explored how the pandemic impacted graduate students and postdoctoral fellows engaged in laboratory-based research programs (Suart et al., 2021). The participants reported high levels of distress, poor communication from administrators and supervisors, barriers to working from home, and concerns regarding future employment opportunities (Suart et al., 2021). While highlighting important effects the pandemic had on graduate students, the study targeted only individuals in laboratory-based research programs. However, graduate students who conducted research outside of a laboratory, or who were enrolled in course-based programs, may have experienced challenges during the pandemic.

Furthermore, the numerous ways in which the pandemic impacted graduate students may have significant psychological consequences (Cheng et al., 2020; Jenei et al., 2020). Prior to the COVID-19 pandemic, graduate students were six times more likely to suffer from anxiety or depression when compared to the general population (Evans et al., 2018). Of further concern, in a one-year span from pre- to early-pandemic (2019-2020), the prevalence of generalized anxiety disorder was reported to be 1.5 times greater and major depressive disorder doubled among graduate students within the United States (Chirikov et al., 2020; Imeri et al., 2020). Graduate students across

disciplines reported difficulty concentrating, and felt socially isolated, fearful, angry, anxious, and helpless (Kee, 2021; Suart et al., 2021). This early evidence lent support for debilitating mental health among graduate student populations. Further, graduate students reported feeling overlooked by their institutions (Kee, 2021; Suart et al., 2021; Zahneis, 2020), and in some cases needed to request that their universities established mental health hotlines (Oleksiyenko, 2020). Taken together, investigation into the challenges faced by graduate students during the pandemic is both timely and imperative.

Method

Study Design

Pragmatism suggests that using multiple approaches will lead to enhanced understanding of a phenomenon (Onwuegbuzie & Leech, 2005). Using a pragmatist perspective, a survey design was employed to explore graduate students' educational experiences during the pandemic. The survey included a series of quantitative items to explore students' educational experiences during the pandemic and qualitative open-ended questions to gather a more comprehensive understanding of the quantitative data (Hagger & Smith, 2019). The sample was limited to a Kinesiology department at one university to control for the resources offered to, and restrictions on, graduate students during the pandemic. All authors consisted of graduate students or faculty members who were well-versed in the institution and government restrictions faced by the participants.

Participants

Participants included 28 graduate students (M_{age} = 25.63; *SD* = 2.87) from a Kinesiology department at a university in Ontario, Canada; representing 40% of this program's enrollment. Most participants identified as male (*n* = 15; 53.6%), White (*n* = 11; 39.3%) or Caucasian (*n* = 12; 42.9%) and were enrolled in a dissertation/thesis-based program (*n* = 20; 71.4%; see Table 1 for complete demographic information).

Table 1
Complete demographic information

Participant Demographic Information (N = 28)

Demographic Categories		Frequency n *(%)*
Gender		
	Female	13 (46.4)
	Male	15 (53.6)
Race		
	White	11 (39.3)
	Caucasian	12 (42.9)
	Arab	1 (3.6)
	Black	1 (3.6)
	Métis	1 (3.6)
	Mixed Race	2 (7.1)
Living Situation		
	Alone	8 (28.6)
	Family	17 (60.7)
	Partner	2 (7.1)

Housemates/Roommates	1 (3.6)
Caregiver	
Yes	2 (7.1)
No	26 (92.9)
Level of Study	
Master's	24 (85.7)
PhD	4 (14.3)
Program Type	
Thesis/Dissertation	20 (71.4)
Internship	8 (28.6)
Year of Study	
1	7 (25.0)
2	17 (60.7)
3	4 (14.3)
4	0 (0.0)

Procedure

Following university research ethics board clearance, an anonymized online survey was distributed to graduate students. Recruitment occurred via social media posts from the department's graduate student association and an email sent by the department. The survey was administered through Qualtrics™ and took approximately 30 minutes to complete. Midway into data collection, a second email was circulated by the department to recruit additional participants. Data collection occurred from May 26 to June 16 of 2021. For most of this time, the province of Ontario was in a lockdown (i.e., April 8 to June 11, 2021; Government of Ontario, 2021). This lockdown consisted of a province-wide stay-at-home order wherein citizens were only permitted to leave their homes for essential services (e.g., groceries, pharmacies). On June 11, 2021, Ontario moved into Stage One of its "Roadmap to Reopen" framework (Government of Ontario, 2021). In Stage One, residents were provided access to some previously closed services, such as outdoor dining; however, many indoor services remained closed (e.g., indoor dining, gyms).

Measures

Participants were asked to complete a survey including 16 closed- and nine open-ended questions to assess their mental health, online learning, degree progress, and access to campus facilities during the pandemic.

Mental Health

The Mental Health Inventory-5 (MHI-5) contains five items that measured current states of mental health (Berwick et al., 1991). Specifically, the frequency with which participants felt happy, calm and peaceful, nervous, downhearted and blue, and so down in the dumps that nothing could cheer them up in the previous month. Items were scored on a 6-point Likert scale ranging from 1 (*none of the time*) to 6 (*all of the time*). Scores were transformed into a variable ranging from 0-to-100, wherein higher scores indicated optimal mental health (Theunissen et al., 2011), with those less than or equal to 60 reflecting poor-to-moderate mental health (Kelly et al., 2008). The validity and reliability of the MHI-5 have been tested with post-secondary students (Faisal et al., 2021), wherein construct validity (Elovanio et al., 2020), internal reliability (Trainor et al., 2013), and predictive validity (Thorsen et al., 2013) were supported.

Additionally, three closed-ended items were administered regarding participants' mental health and access to resources related to mental health. These reflected self-reported changes in mental health throughout the pandemic, usage of mental health resources provided by the university during the pandemic, and changes in mental health due to restricted access to the university and its resources. Further, participants were asked three open-ended questions on mental health. Specifically, they were asked to elaborate on any mental health changes, report whether the provincial government's restriction changes affected their mental health and share how they believed the university, department, and graduate student association could have helped their mental health.

Degree Progress and Online Learning

Participants completed five closed-ended questions on their degree progress during the pandemic and their experiences with online learning. These included whether participants considered ending (or ended) their graduate studies permanently and/or temporarily, if they would end their studies temporarily or permanently if the 2021-2022 academic year remained online, and if their anticipated degree completion had been affected by the pandemic. If participants reported anticipating delayed degree completion, they were asked to report the number of extra semesters they required. One item assessed participants' level of satisfaction with online learning. Further, open-ended questions assessed the challenges of completing their degree during the pandemic, the challenges associated with online learning, the impact of online learning, and whether and how they felt the university, department, and graduate student association could have removed or alleviated these challenges.

Access to Building

Participants were asked to report when they last accessed the department building. Further, closed-ended questions related to department building access were asked. These included (1) their status for applying and/or receiving access to return to conduct research on campus, (2) their interest in working in the department building, and (3) how likely they were to return to the department building if allowed. Participants were administered one open-ended question regarding any benefits they perceived to being in the department building.

Data Analysis

Descriptive statistics were calculated to analyze responses to closed-ended questions. Means and standard deviations were calculated to determine levels of satisfaction with online learning and interest in returning to the department building. Frequencies were calculated for the remaining closed-ended questions. Scoring of the MHI-5 was explained above.

Open-ended questions were analyzed using a reflexive thematic analysis (RTA; Braun & Clarke, 2019). RTA is an approach used to identify, analyze, and report themes across a dataset allowing for a conceptual story to be told from the data (Braun & Clarke, 2006, 2019) and a tool for researchers to explore people's perceptions and experiences. The goal of RTA is for researcher(s) to engage with the data in a reflexive and thoughtful way throughout the analytic process. Conducting an RTA has been conceptualized through six phases wherein researchers (1) familiarize themselves with the entire dataset, (2) engage in coding, (3) generate initial themes, (4) develop and review such themes, (5) refine, define, and name themes, and (6) write up findings (Braun & Clarke, 2006, 2019). In sum, this process acknowledges and appreciates the researchers' role wherein codes and themes are not *found*, but rather *develop* through a reflexive, and often collaborative, analytic process.

Following the analysis of closed- and open-ended questions, both types of data were integrated together through a joint display (e.g., Johnson et al., 2019). Researchers have advocated for using

a joint display when sharing data from multiple forms of analysis to integrate the data in a meaningful way (Guetterman et al., 2015). The present study utilized a pillar integration which is a joint display method that synthesizes the findings by visually organizing and combining data from multiple methods. This process was particularly helpful to answer the second research question - "how graduate students' mental health has been affected by the pandemic?" - as responses from questions related to both mental health and educational experience (i.e., degree progress and online learning, access to building) were used to address the question. Research questions one and three were addressed by mental health questions and educational experience questions, respectively.

Results

Mental Health

Scores of the MHI-5 reflect that many participants (n = 16; 57.1%) had poor-to-moderate mental health (M = 58.33; SD = 17.92). When reflecting on the previous 16 months, more than a third (n = 10; 35.7%) of participants reported their mental health had fluctuated, while half (n = 14; 50.0%) indicated it had worsened. While some participants (n = 8; 28.6%) experienced changes to their mental health in relation to a perceived lack of support from on-campus mental health services, the majority (n = 15; 53.6%) had not attempted to access these services; others experienced no change (n = 2; 7.1%) or were unsure (n = 3; 10.7%). Regarding the resources that were offered by the university, only a few participants (n = 5; 17.9%) mentioned utilizing these services, while the majority (n = 23; 82.1%) had not.

Open-ended responses from participants reflected several themes around mental health, such as poor mental health, challenges working from home, and confusion regarding restrictions. Poor mental health was seen through participants having difficulty with daily functioning (e.g., getting out of bed, dressing), experiencing symptoms of anxiety and depression, feeling hopeless, lacking a sense of purpose, and having poor work-life balance. Participant 14 illustrated how COVID-19 impacted various aspects of their life and well-being:

> *My mental health has decreased significantly . . . I have seen a therapist throughout this time to mitigate the impact it has had. I've struggled with drinking . . . to get out of bed . . . to see the point in anything. I've struggled maintaining relationships with friends and family due to my depression. I rarely find joy in things that I used to. I have lost sight of why I'm even pursuing this degree and its overall significance.*

Participant 18 attributed their mental health challenges with working from home, which was further compounded by issues such as the closure of mental health outlets:

> *It has been nothing but negative. Trying to balance everything while only being online, and at home with no proper workspace and separation from work and personal life is nearly impossible to manage while trying to maintain decent academic success. While being completely online is one challenge, the compound effect of gym closures, social event closures, and anything that can help improve mental wellness being closed completely derailed everything.*

These quotes demonstrated participants' mental distress and the ways in which restrictions negatively impacted the well-being of graduate students. While Participant 14 noted they had been seeing a therapist to cope, Participant 18 highlighted the loss of coping strategies due to COVID-19 restrictions (i.e., closed gyms, restricted social engagements). The inability to access previously established coping resources may have contributed to decreased mental well-being reported in this study and the literature (e.g., Imeri et al., 2020; Suart et al., 2021).

Moreover, participants described the changes to the Ontario COVID-19 response framework as confusing, frustrating, and disappointing, and had difficulty navigating such changes. For example, Participant 13 expressed distrust in the loosening of restrictions: "… even when things are open, I have not wanted to go out - why bother trying to go out and get used to it when we're just going to go into another lockdown." Additional sentiments of distrust and hopelessness towards restrictions were articulated by Participant 8: "The switching back and forth [between different restrictions] has negatively impacted my mental wellness. I would say it has completely erased any sense of hope." Difficulties navigating the framework and restrictions led some respondents to disengage from actively staying up to date with changes to restrictions. For example, Participant 6 mentioned, "I honestly can't keep up with the restrictions so I just assume we can't do anything." Frustrations with Ontario's COVID-19 response framework may have exacerbated poor mental health by fostering feelings of distrust and hopelessness met with disengagement that led to participants self-imposing or making assumptions about restrictions. While the government's response to the pandemic needed to be dynamic and flexible, participants' responses potentially indicated a desire for organizations, such as the provincial government and universities, to produce guidelines that were clear, stable, and easily understood.

Degree Progress and Online Learning

When asked about their satisfaction with the online learning environment, most participants indicated they were unsure (n = 11; 39.3%) or dissatisfied (n = 11; 39.3%). Many participants considered ending their graduate studies temporarily during the 2020-2021 academic year (n = 12; 42.9%), while others contemplated the prospect of both a temporary and permanent leave at some point in the last 16 months (n = 5; 17.9%); however, no participants indicated ending their studies during the pandemic. However, despite most participants suggesting they considered ending their studies, 89.3% (n = 25) reported they would continue their studies during the 2021-2022 academic year if it continued online. Nonetheless, most participants (n = 17; 60.7%) anticipated they would require additional semesters to complete their degrees due to the pandemic.

Several themes related to participants' degree progress and experiences with online learning were noted, including a lack of social connection, barriers impeding degree requirements, and technical and logistical challenges. As demonstrated by the following quote from Participant 14, online learning hindered formal and informal social connection, and learning experience:

> *It has made the learning experience lifeless. By which I mean lacking experiences and conversations inside or outside of the classroom that hold a great deal of value to me . . . it has hindered my motivation to the point of apathy.*

Further, participants mentioned how restrictions created barriers that prevented them from completing their degree requirements. Participant 9 described the impact the pandemic had on fulfilling internship and research requirements:

> *My internship was scheduled for the summer of 2020 and was completely cancelled before it began. I considered a leave of absence, but instead enrolled in a summer course. My internship was rescheduled for summer 2021, but again has been cancelled . . . This does threaten my ability to graduate on my hoped-for timeline.*

In addition, several participants provided examples of technical and logistical issues associated with online learning and meetings. Examples included inefficient communication with peers, poor internet connection, difficulty navigating software, extensive screen time, difficult/distracting living situations, and financial burden. To illustrate, Participant 2 cited communicating virtually as a challenge:

> *I think the delay in communication may have been a challenge. Online you can't just pop into someone's office to ask a quick question or have colleagues available in lab. Everyone is a text or email away but there is a mental barrier with asking quick questions over tech.*

The challenges associated with the virtual environment were reiterated by Participant 19 who experienced anxiety when navigating online interfaces: "It was a huge challenge and very anxiety inducing to present online as it was incredibly difficult to gauge others' emotions and social cues during class." By limiting their ability to access and engage in formal (e.g., feedback, internships, presentations) and informal (e.g., conversations with peers) learning opportunities, COVID-necessitated online learning may have devalued the educational experience for graduate students. The negative feelings and barriers encountered by participants may have led to several negative outcomes for graduate students, such as reduced mental health, delayed degree completion, financial instability, and general uncertainty surrounding their future (Jenei et al., 2020; Suart et al., 2021).

Access to Campus

Most participants (n = 22; 78.6%) had not accessed the department building since March 2020 or earlier; one participant (3.6%) had never accessed the building during their graduate degree. While three students (10.7%) reported receiving clearance to conduct research on campus and five (17.9%) had submitted applications for clearance but were awaiting approval, the majority (n = 20; 71.4%) had not applied. Although few students applied for, or were granted, access to campus facilities, most participants (n = 16; 57.1%) were interested in working from the department building such as a graduate student workspace. Four participants indicated they had no interest in working from campus (14.3%) and eight were unsure (28.6%). Most respondents suggested they were very likely (n = 17; 60.7%), likely (n = 3; 10.7%), or somewhat likely (n = 4; 14.3%), to work from the department building at least once per week if granted permission; while two were not likely (7.1%), and two would never (7.1%) work from the department building.

The researchers established themes associated with access to the graduate students' department building which included benefits to campus access, achievement of a work-life balance, and reasons why some participants did not intend to access campus moving forward. Beginning with the benefits to accessing the department building, participants believed access would provide them a sense of purpose, research preparation, opportunities for socialization, and improved concentration, motivation, and productivity. Participant 5 indicated that:

> *Getting to go work in the [department] building, even if only a couple times a week, would increase my productively, sense of purpose, and help with my routine. I think this may be the single thing that would drastically improve my overall mental health and productively.*

Further, Participant 8 discussed how returning to the department building would positively influence their work-life balance:

> *It would help me separate work from home life. When I work from [the department], I am able to leave the stress and anxiety at the school and enjoy being home. Only working from home has made it nearly impossible for me to relax as I am constantly reminded of the things I could be working on.*

Although most participants indicated a desire to access the department building, some respondents expressed they would not access campus as they had moved home (i.e., away from the university), had childcare considerations, or simply did not have a need. As illustrated by Participant 21: "I moved back in with family so the [department] building is an hour drive. My

research is ongoing, completely virtual, and I plan on being finished within the next few months so I probably wouldn't return to the building."

Prior to the pandemic, some graduate students had the option to work from home or on campus, which allowed them to choose the location that best suited their wants or needs. The students who preferred to work from home prior to the pandemic may have encountered fewer challenges when restrictions forced universities to close classrooms and lab spaces and shift to online education. While some participants noted they preferred to work from home, most participants expressed a desire to work from the department building noting that it would have improved their mental well-being. The participants who wanted to work from campus, but were unable due to restrictions, had trouble achieving work-life balance potentially further contributing to reports of poor mental health that were evident within this study.

Data Integration

A pillar integration joint display was created to synthesize and merge the study findings (e.g., Johnson et al., 2019; see Table 2 and 3). The open-ended questions often provided additional support or explanation to the closed-ended questions. The overarching themes will be explained in the discussion.

Table 2
Integration of closed- and open-ended questions organized by research question

Closed-ended category →	Pillar building themes	← Open-ended category
Research Question #1: ***The state of mental health among graduate students in one academic department in Ontario for the month of May 2021***		
MHI-5 - Finding: 57% of participants scored 60 or less Description: Almost 60% of participants were experiencing poor-to-moderate mental health for the past month.	Mental health during the pandemic was poor with feelings related to anxiety and depression.	Quote: "At least every other month, there are 1-2 weeks where I feel severely depressed." Description: Participants felt hopeless and depressed, while struggling to find purpose.
Research Question #2: ***How the mental health of graduate students has been affected by the pandemic***		
Online Learning - Findings: Very satisfied (0%) Satisfied (22%) Unsure (39%) Dissatisfied (39%) Very dissatisfied (0%) Description: Most participants were dissatisfied (or unsure) with the online learning environment.	Dissatisfaction with online learning relative to in-person learning.	Quote: "It has made the learning experience lifeless . . . lacking experiences and conversations inside or outside of the classroom that hold a great deal of value to me . . . it has hindered my motivation to the point of apathy." Description: Participants felt online environments stripped their learning experiences.
Long-term Academic Enrollment Impact - Findings: End degree permanently (0%) End degree temporarily (7%) Continue degree (89%) Unsure (4%) Description: Most participants indicated they would continue their degree, even if the 2021-2022 academic year remained online.	Students remained committed to pursuing strategies and adaptations to maintain academic trajectory.	Quote: "My internship was rescheduled for summer 2021, but again has been cancelled . . . I am, however, staying with the organization and have reconfigured my role to be one I can complete from home... This does threaten my ability to graduate on my hoped-for timeline." Description: Despite challenges to degree progress, participants continued to pursue their degrees by attempting to adapt their studies.

Closed-ended category	Pillar building themes	Open-ended category
Changes in Mental Health since Restrictions - Findings: Improved (4%) Worsened (50%) Fluctuated (36%) No change (11%) Prefer not to answer (0%) Description: Most participants perceived their mental health worsened or fluctuated since restrictions began.	Unstable mental health due to and compounded by pandemic related restrictions.	Quote: "It has been nothing but negative. Trying to balance everything while only being online, and at home with no proper workspace and separation from work and personal life is nearly impossible to manage while trying to maintain decent academic success. While being completely online is one challenge, the compound effect of gym closures, social event closures, and anything that can help improve mental wellness being closed completely derailed everything." Description: Constraints of working from home, compounded by closures of mental health outlets, deteriorated students' mental health and academic success.
Research Question #3: ***How the pandemic impacted graduate students' degree progress and educational experience***		
Academic Enrollment Impact – Findings [a]: Considered temporarily ending their degree (43%) Considered temporarily and permanently ending their degree (18%) Continued their degree without interruption (39%) Description: More than 60% of participants considered taking a temporary leave from their degree.	Many students face a turbulent academic trajectory due to the pandemic.	Quote: "My internship was scheduled for the summer of 2020 and was completely cancelled before it began. I considered a leave of absence, but instead enrolled in a summer course." Description: Uncertainty of participants' ability to achieve degree progress led to contemplations of degree termination.
Impact on Degree Completion - Findings: Believe degree will be completed later than expected (61%) Degree will be completed on-time (18%) Unsure (21%) Description: Most participants felt that their degree would be delayed due to the pandemic.	Students believed their degree progress would be, or has been, negatively impacted.	Quote: "My hours will take longer to complete, my research ethics application for my original study needed to be amended, and the delivery of my survey for my research is being setback." Description: Various constraints such as internship availability, revision to ethics applications, and ability to conduct research all impacted participants' ability to complete their degree.

Closed-ended category	Pillar building themes	Open-ended category
Extra Semesters - Findings: None (18%) 1 - 2 (46%) 3 + (14%) Unsure (4%) Missing data (18%) Description: 60% of participants believed they would require at least one additional semester to finish their degree.	Degree completion was expected to be prolonged due to adaptations necessitated by the pandemic.	Quote: "I've completed my coursework and am now focused on my thesis. If everything continues to be online, I will have to significantly adapt my research idea or take time off until it is safe to complete research again." Description: Uncertainty surrounding degree progress left students contemplating future studies with a need to create contingency plans.

[a] No students reported ending their degree or considering ending degree permanently.

Table 3
Integration of closed- and open-ended questions organized by research question

Closed-ended category	Pillar building themes	Open-ended category
	Recommendation #1: ***Remove ambiguity around, and provide access to, graduate student workspace on campus***	
Approval to conduct research or work on campus -Findings: Yes (11%) Applied with no approval (18%) No (71%) Prefer not to answer (0%) Description: Almost 90% of participants did not have access to work from the department building, more than a year after pandemic related restrictions were put in place.	Ambiguity related to access of the department building and the criteria for receiving access.	Quote: "I know some departments on main campus . . . already have a lot of their students back on campus because they can claim they need to be for research purposes. However . . . some of the students that have campus approval go to campus to work even if they do not need to be there for research . . . I think the department could advocate for students who want to be on campus even though their research can be done from home." Description: Participants expressed a desire for campus access above and beyond research purposes demonstrating confusion regarding restrictions to accessing campus facilities.
Interest in working from campus - Findings: Yes (57%) No (14%) Maybe (18%) Unsure (11%) Description: The majority of participants expressed an interest in working from the department building.	Students have interest in working from the department building and feel it would have a variety of benefits.	Quote: "It would help me separate work from home life once again. When I work from [the department], I am able to leave the stress and anxiety at the school and enjoy being home. Only working from home has made it nearly impossible for me to relax as I am constantly reminded of the things I could be working on. Moreover, working in [the department] would help me feel more connected with other students again . . . knowing other people are around helps me feel connected and engaged in learning." Description: Access to the building could help foster work-life balance and mental health, not just a means for conducting research.

Closed-ended category	Pillar building themes	Open-ended category
Likelihood of attending campus at least once a week - Findings: Very likely (61%) Likely (11%) Somewhat likely (14%) Not likely (7%) Never (7%) Description: Most participants would choose to work from the department building at least once a week if provided access.	Students are willing to be flexible and accommodating in attaining access to workspace in the department building.	Quote: "I am having a hard time separating my personal form work life. . . . work[ing] in the [department] building, even if only a couple times a week, would increase my productively, sense of purpose, and . . . routine. I think this may be the single thing that would drastically improve my overall mental health and productively." Description: Participants expressed a desperation for even limited access to campus workspace.
Recommendation #2: ***Ensure university mental health resources and services are meeting the needs of graduate students***		
University resources - Findings: Have used (18%) Have not used (82%) Description: Most participants have not utilized any mental health resources provided/offered by the institution.	University mental health resources were unutilized.	Quote: "The counselling services is quite busy with long wait times, so I have gone elsewhere." Description: Some participants noted the use of mental health resources internal (e.g., student counseling services) and/or external (e.g., therapist) to the university
Changes in mental health due to restricted access to university resources or services - Findings: Yes (29%) No changes (7%) No attempt to seek services (54%) Not sure (11%) Prefer not to answer (0%) Description: More than half of participants had not attempted to utilize mental health resources provided/offered by the institution.	Students cited several concerns regarding the use of university resources	Quote: "I think offering counselling services in person would be more beneficial than online. I felt like the services did help a lot but I felt like I had to whisper in my house for no one to hear my confidential information and that maybe my emotions and body language did not transfer the same as in person. I believe there is a safe way to set this up, I don't understand how you can get a massage or go to the chiropractors to get physical treatment but cannot meet with a therapist in person." Description: Restrictions or modifications to university services left participants' feeling vulnerable about speaking from their home, confused about why such restrictions were in place, and detached from the therapists whom they saw.

Discussion

This study explored graduate students' educational experiences approximately 16 months into the pandemic. The educational experience of graduate students was overwhelmingly and negatively impacted during the pandemic, evidenced through poor mental health and challenges with online learning. Importantly, participants expressed ways in which their educational experience and mental health could have been improved. These included removing ambiguity around access to campus workspaces and ensuring the university's mental health resources and services met the needs of graduate students.

Participants reported experiencing poor mental health at the time of the survey. These findings were consistent with research wherein graduate students reported poor mental health (Chirikov et al., 2020), heightened stress (Imeri et al., 2020), and anxiety (Kee, 2021; Suart et al., 2021) during the pandemic. Moreover, these previous studies featured a data collection period of April to June 2020 (e.g., Suart et al., 2021). As such, these studies recorded the mental health of graduate students shortly after the pandemic began. In contrast, data were collected in this study nearly one year later (May to June 2021) and suggested that graduate students experienced poor mental health well into the pandemic. Suart et al. (2021) cautioned that with time and distance from the onset of the pandemic and initial lockdown, negative feelings from the pandemic may continue to persist and deepen among graduate students.

While these findings indicated that feelings of poor mental health were persistent among graduate students 16 months into the pandemic, the source of mental health challenges may have changed from early in the pandemic. Based on data collected in 2020, graduate students were fearful and anxious regarding the health-related implications of COVID-19 for themselves and their families (Kee, 2021; Suart et al., 2021). However, the current study may suggest the root of continued mental health concerns was based on how the pandemic impacted the educational experience of graduate students. Specifically, graduate students remained dissatisfied with online learning (Imeri et al., 2020; Kee, 2021) with some describing their learning experience as "lifeless" and/or purposeless. Such feelings align with work by Kee (2021) wherein graduate students preferred in-person learning environments, suggesting online learning had not replicated the interactive experiences students desired.

Despite dissatisfaction with online learning, almost 90% of participants reported that they would continue their studies even if online learning continued. Thus, it could be postulated that graduate students accepted online learning as their new reality. One way to interpret this idea of acceptance is through the Kübler-Ross model of grief. The Kübler-Ross model of grief outlines five stages of grief individuals experience when faced with tragic or difficult life changes (Craytor & Kübler-Ross, 1969). These include denial (i.e., disbelief to unexpected news), anger (i.e., frustration due to the unfairness of the situation), bargaining (i.e., focusing on what could have been done to change/prevent the situation), depression (i.e., a sense of loss once one acknowledges the situation cannot be changed), and acceptance (i.e., learning to live with this new reality) (Craytor & Kübler-Ross, 1969). Suart et al. (2021) used this model to explain the reactions of graduate students following the closure of laboratory spaces due to the pandemic. They suggested that graduate students were largely in the bargaining stage following laboratory closures, but that participants also felt depression in relation to working from home. Roughly 16 months into the pandemic, the graduate students in this study seemingly moved-on from the bargaining stage and were balanced between the stages of depression and acceptance. That is, graduate students remained in the depression stage (manifested through feelings of apathy and helplessness) but were also trying to accept the new reality that was online learning (evidenced by continuing their studies). However, the acceptance stage is often characterized by feelings of calmness and being at peace (Craytor & Kübler-Ross, 1969), which did not seem to be present among participants. Acceptance without the presence of positive feelings may be concerning as graduate students could have accepted online learning, despite the dissatisfaction they feel

towards the experience. If graduate students felt a need to accept this new reality, despite the negativity they perceived towards the online learning experience, this could foster decreased mental health and cause serious challenges to graduate students having a positive educational experience.

The pandemic also appeared to impact the degree progress of graduate students. Many participants reported facing a turbulent academic trajectory, evidenced by thoughts of leaving their academic program or the cancelation of internship opportunities. Such experiences could have been indicative of graduate students' uncertainty towards their future academic and professional careers (Jenei et al., 2020). Graduate students believed their degree would be, or had already been, negatively affected by the pandemic, resulting in delayed graduation for most participants. Unfortunately, such delays in degree completion were seen in other studies (e.g., Suart et al., 2021; Zahneis, 2020). Researchers have suggested that changes to the learning environment (Kee, 2021), forced adaptations to research projects (Imeri et al., 2020), and limited access to research materials (Zahneis, 2020) contributed to the challenge of fulfilling degree requirements during the pandemic. These circumstances demonstrated the difficulty the pandemic, and the variability of its associated restrictions, had on graduate students and their ability to progress in their academic careers. This lack of, or delayed, progress could have placed graduate students in difficult financial situations (Jenei et al., 2020) and increased feelings of stress towards their future (Suart et al., 2021).

These results can be used as leverage to make recommendations for actions that will best support graduate students. To begin, although restricted access, complete closures, and lockdowns play an important role in mitigating physical risk, graduate students may have been primarily concerned with the psychological harm caused by ongoing isolation from their department workspaces (Suart et al., 2021). To offset this, our *first recommendation* is to prioritize graduate students' access to workspace within their department building; within the constraints of capacity limits. Prioritization usually follows: 1) essential workers, 2) students attending in-person class and their instructors, and 3) occasional staff, faculty, and students. Having the latter category formally include graduate student access to workspace, outside of cleared research space, could have been an important strategy moving forward. Researchers in comparative education have suggested that the actions and inactions of universities in response to the pandemic could, in part, have demonstrated the value placed on certain groups over others (Cohen et al., 2021; Oleksiyenko; 2020). These new pandemic-created norms in higher education may have unintentionally created new inequalities that needed to be considered and alleviated (Oleksiyenko et al., 2021). For example, Suart et al. (2021) found that over half of graduate students and postdoctoral fellows did not have their own dedicated workspace at their home; thus, it would seem having space on campus would have been helpful to provide equal opportunity to all graduate students. Further, participants highlighted a variety of benefits associated with working from their department building, such as fostering a work-life balance and improving their mental health.

Graduate students were aware of the logistical challenges surrounding the re-opening of campus workspace and reported a willingness to be both flexible and accommodating in attaining access. While it was apparent that there was no 'one way' to re-open university facilities, laboratories, and workspaces (Suart et al., 2021), there was a need for university administrators to be transparent and intentional when communicating such information (Chirikov et al., 2020; Kee, 2021). Participants felt ambiguity related to who can access their department building and the criteria required to receive access. To offset feelings of jealousy or frustration towards individuals who were permitted access (Suart et al., 2021) and mitigate the perception that their role at the university is of lesser importance than their peers (Zahneis, 2020), administrators should have communicated a clear and transparent process for graduate students to access department workspace.

A *second recommendation* is related to the use of university mental health resources. Graduate students may choose not to engage in psychological counseling for a variety of reasons, such as stigmatization or a lack of awareness (Liu et al., 2020). During the pandemic, researchers found similar trends, with low engagement in mental health services among post-secondary students (Liang et al., 2020). Similarly, more than 80% of participants in this study did not attempt to access university mental health resources, despite the prevalence of poor mental health among participants. On one hand, it was apparent universities could not mandate the use of such resources. On the other hand, one should consider *why* graduate students were not utilizing such resources (Chirikov et al., 2020; Kee, 2021). One explanation was the potential barriers associated with virtual counseling sessions, as participants noted not having a safe space in their home from which to speak openly. Kee (2021) suggested that if traditional face-to-face counseling services were not possible, universities needed to be creative in how these services could be provided (e.g., virtual communication). However, offering online mental health resources and services may not have been enough (Chirikov et al., 2020), especially if what was provided was not in a modality that worked for graduate students. Thus, we recommend that university administrators (e.g., graduate coordinators) work with graduate students to develop strategies that could be utilized and increase awareness of mental health services. This aligns with discussion in comparative education to "build back better" as we continue moving through the pandemic (Cohen et al., 2021). That is, to take this opportunity to update the ways in which certain aspects of our universities operate as opposed to simply re-installing the pre-pandemic systems.

Although this study offers insights into the experiences of graduate students, institution- and department-specific factors may have limited the generalizability of the findings. While these recommendations may not be directly generalizable to every university, they demonstrated the need for universities to consider the unique needs of their graduate students (Suart et al., 2021). Further, the geographic location of the university may have also affected the experiences of graduate students and the response the university took towards navigating the pandemic. Suart et al. (2021) suggested that institutions needed to deliberately tailor how they address COVID-19 issues based on the needs of their specific university. Thus, institutions should have been mindful of the circumstances their graduate students faced and understand graduate students may have been impacted differently across the world. Another issue of generalizability was the lack of diversity among participants, who, while representative of their department's graduate student population, predominantly self-identified as White or Caucasian. Researchers have noted that minority graduate students may have experienced exacerbated mental health issues due to inequalities or discrimination within their program (Miller & Orsillo, 2020). Therefore, these results may not be reflective of the experiences of diverse populations of graduate students.

There are areas of future research related to the educational experiences of graduate students during the pandemic. Researchers could explore if the experiences documented in this study were similar to other universities; providing knowledge on strategies that best address pandemic-related challenges from multiple perspectives (Suart et al., 2021). Also, of interest is whether graduate students who had been brought back to campus had improved mental health compared to those who continued to work from home. Further, researchers could explore if one's living situation (e.g., live with family, live independently) had an impact on mental health when working from home. Again, such insights could inform universities on the importance of allowing on-campus workspace, and how this may have affected graduate students' mental health. Last, researchers should more closely examine why graduate students remained committed to their degree, despite their apparent dissatisfaction with online learning.

Conclusion

In summary, nearly sixteen months into the pandemic, graduate students' mental health, degree progress, and educational experiences were negatively impacted due to the pandemic and related restrictions. Recommendations for assisting graduate students during these times include: (1) prioritizing graduate student access to workspace within the constraints of current capacity limits in university buildings, and (2) collaborating with graduate students to develop effective mental health strategies with a high potential for uptake.

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Blurred Boundaries: An Examination of Learning and Working in the Home During the COVID-19 Pandemic

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The unprecedented social disruptions resulting from the COVID-19 pandemic have resulted in rapid change within the family and home. This paper uses semi-structured interviews with parents around the globe to examine the following research questions: 1. How have the spatial and temporal organizations of learning and working in the home been altered throughout the COVID-19 pandemic? 2. What are the alterations in the educational processes and the role of the family in response to the changes caused by the COVID-19 pandemic? We found that typical boundaries, those between the roles of family members, between work or school and home, and between leisure time and work time have been fundamentally blurred. While some of these boundaries are more porous than others, families report fundamental shifts, temporary and permanent in the way they organize their home and family, spatially and temporally, and the roles they take on within the family.

Introduction

Since the onset of the COVID-19 pandemic, society has experienced tremendous social, economic, and cultural deviation. The societal changes that emerged as a result of the pandemic have demanded profound alteration in the overall social system that humanity has built over the past 100 years. With the rise of remote work and schooling came the need for a radical change with regard to the ways in which we use our living spaces, and for families with school aged children, this meant rearranging space and parental responsibilities in order to facilitate children learning at home and becoming more flexible in the way we use our time. This reconfiguration, supported by technology, has created massive changes in the organization of learning and living within the home and for this reason, observations regarding the needs of families with school age children throughout

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the pandemic have provided an opportunity to focus on new possibilities for education. Education, which has experienced relatively slow transformation in the pre-pandemic era, has undergone major changes in terms of the shifts in the perception of educational stakeholders and the heightened awareness of the structural vulnerability of the traditional education apparatus.

The effects of the virus on education and family life are being felt differently in different locations based on public health and policy realities. In the U.S., there is public sentiment and government support attached to the notion that humanity must 'learn to live with' endemic viruses. This means families and schools can experience unexpected shifts to remote schooling when the number of infected cases rises as a response to the various ebbs and flows of the virus. This too is resulting in the need to shift back and forth between remote work and schooling.

Correspondingly, as society contemplates COVID-19's potential evolution from pandemic to endemic, families and households have assumed roles beyond the typical functions of a traditional homestead (Kong, et al., 2021). In this period of time when social distancing — the public health practice of physically distancing oneself in social contexts to prevent the transmission of contagious diseases — has led to the mandated, at times erratic, closure of institutions such as schools, libraries, and workplaces, the dependence on information communications technology and hybrid models for adaptive solutions to the pandemic have transplanted these traditionally external roles into the home. With this in mind, this study captures a snapshot of the blurring of spatial and temporal boundaries and familial roles and relationships experienced by families living and working together during the public health crises. Hence, in evaluating educational responsibilities, we are focusing on academic education that has shifted to the home, as well as the socialization and enculturation that takes place in the home where children and families live, work and learn together.

This research study has been organized around the following research questions: 1. How have the spatial and temporal organizations of learning and working in the home been altered throughout the COVID-19 pandemic? 2. What are the alterations in the educational processes and the role of the family in response to the changes caused by the COVID-19 pandemic?

Boundaries

Lifestyle changes attributed to the pandemic have blurred boundaries of relationships, space and time, necessitating a discussion of the concept of boundaries. The academic recognition of boundaries as margins or demarcations across differing spheres has been developed by an array of scholars in diverse fields who have discussed themes related to perceived interruptions or violations of them, their degrees of permeability, and their spatial and temporal influences on roles (Cho, 2020; Kossek et al., 2021; Hunter et al., 2017; Ashforth et al., 2000). For instance, Löwy (1992) argues that boundaries can be discovered through the analysis of cognitive and social mechanisms for correlations in adjacent academic fields via an emphasis on collaboration and ideological exchange within and between groups. Star and Griesemer (1989) discuss boundaries in terms of "boundary objects", or objects which may take on a different identity within the paradigm of multiple social worlds, yet manage to facilitate contact between them as their areas of convergence are negotiated between social contexts and communities of practice. At times, boundaries have even been designated as the specific borderline or branch of a single concept or pre-completed structure (Bunge, 1992).

However, as set forth by Ashforth and his colleagues' (2000) boundary theory, boundaries and the blurring of roles across psycho-social domains, as a result of the micro and macro transitions undergone in daily life — such as those experienced on the commute from one's home to the workplace, a promotion at a job, or retirement — serve to illustrate the fragile and dynamic nature of boundaries as social constructs and their interface with their carefully maintained schemas in their various iterations and forms. These boundaries are then characterized by the delimitations of cognitive roles inextricably linked to space-time and their relation to their at times institutionalized, other times idiosyncratically, manufactured environmental partitions. Boundaries are identified by the level of their perceived permeability, or susceptibility to intrusion, and their degree of flexibility, or the level of restriction that dictates when and where a role is free to be enacted upon at any given time and in any given setting (Hunter et al., 2017; Ashforth, 2000). The permeability, or degree of porosity between boundaries, whether intentional or unintentional, exhibits perceived allowances for interference, disruption, and role violation between domains (Cheon & Su, 2018; Nippert-Eng, 1996).

Literature Review

This section will examine some of the existing literature around the ways education has happened in the home typically, factors that affect the spatial and temporal organization in the home, typical roles that family members take on. It will also examine previous relationships between families and schools.

Family Roles Within the Home

There is no single way to define "family." The meaning of this word varies from person to person, making it somewhat amorphous to study. For the sake of this discussion, we will focus on two conceptual framings of family. Cohen (2017) describes families as being defined by boundaries and the presence of an "out group". In order to know who is in the family, it must be clear who is outside the family. This flexible, inclusive definition of family is beneficial for this discussion as we seek to honor all family constellations.

Cohabitation is one metric that can be used to describe family (Becker, 1991). When considering the lockdown phase of the pandemic, all social, educational and professional activity shifted to within the home, defining family by cohabitation is particularly useful. This allows our discussion of role boundaries to include all members of a cohabiting family unit, which may include extended family members or exclude members of the nuclear family who are living away from the home.

In any given household there is a typical division of labor for various jobs maintaining the household and caring for children. Gender plays a role in this to some extent, as do other factors such as level of education, relative income, and whether or not there are children in the household (Fuwa, 2004). This varies from household to household and also, importantly, according to cultural trends predictable by country. Regardless of family constellation, once established this division of household labor and carework is fairly static (Moore, 2008). Members of a household take on their specific tasks and continue to perform roughly the same tasks over time (Yavorsky et al., 2015).

There is also a traditional separation of functions between the school and family (Getzels, 1975). Although they have typically both taken on the roles of socialization and education, the way they address these goals can form a disconnect in behaviors and expectations between the home and school (Getzels, 1975). With schooling taking place in the home,

the boundary between these two spheres has effectively disappeared. As an unmitigated side-effect of the public health crises, the blurring of roles and boundaries at the onset of the pandemic across contexts is the result of the disruption of work-family and schooling arrangements (Desrochers et al., 2005; Kossek et al., 2021). This blurring of perceived roles seems to have emerged out of the need to redefine the function of institutions — traditionally characterized by Getzels & Guba (1957) as purposive, peopled, structured, normative, and sanction-bearing — and the reconfiguration of roles and expectations attached to the family's mediation of educational experiences and their relationship to the school (Leichter, 1979). Parents and families have traditionally been expected to undertake the responsibilities attached to child-rearing, which include the maintenance of physical health, socio-emotional and cognitive development, and enculturation, alongside a slew of other duties that vary contextually (Ceka & Murati, 2016).

Spatial and Temporal Organization of the Home

The pandemic has led to an acceleration in the transformation of the existing traditional social structure with regard to work and school, which is best considered in terms of the heightened pressure to extend further the use of communications technology for teleworking and distance learning purposes within infrastructures unprepared for such large-scale digitization (Kerimova, 2020; Yeremenko et al., 2020). The result was a radical dependence on video conferencing platforms such as Zoom, and GoToMeeting, among others, which not only complicated the temporal and regulatory dimensions of learning and telework but changed the spatial organization of activities that once took place outside the home and placed them in close proximity to others in the household (Cho, 2020; Riedl, 2021; McNeilly & Reece, 2020). This movement of all activities into the home has perpetuated a shift in the way time is allocated and perceived, resulting in the creation of rituals as temporal markers in timeless days. Therefore, the implications of these shifts in time and space on boundaries remain to be understood and are the foundational concern of this research design.

Increased use of technology for both work and entertainment has led to a shift in the way we understand physical and spatial boundaries. Michael Bull's (2005) concept surrounding the conscious separation of physical and conscious space illustrates how features of boundaries in the digital dimension function, which has ramifications for online work and school. From the ensuing disruption of school, work and non-work-related boundaries emerged a perceived lack of physical space experienced by families during the pandemic which reflects a pattern similar to the individual separation of meanings for space created by members of urban structures in the pre-pandemic era and associated with contemporary mandates for social distancing (Bull, 2005; Hall, 1963; Holt et al., 2021; Nia, 2021). Social distancing requirements have impacted perceptions of personal space so that they are now more closely attached to *perceived* rather than *actual* risk of infection due to a hyper-awareness of privacy and space attributed to new standards for pandemic proximity which have in turn, resulted in a conspicuous enlargement of both the boundaries of personal space in the metaphysical realm and in virtual environments (Holt et al., 2021; Mehta, 2020; McNeilly & Reece, 2020; Welsch et al., 2021). Therefore, these shifts in the spatial and temporal organization of the home point to a reconfiguration of family roles that have further blurred the boundaries between technology and the work-family context (Schieman & Badawy, 2020; Leichter, 1979). This can also be interpreted as Bull's solitary movement (2005, p. 343) and Simmel's (1997) sense of privacy, defined as a metaphysical divergence of physical space where divergence occurs around the shared space. In this process, the physical structure is deviated to form a space in which they co-exist simultaneously.

As indicated by previous scholars who have studied the effect of technology on the lived experiences of families and drawn attention to the spatial and temporal dimensions of said impacts, this convergence of virtual work and nonwork roles attributed to the voluntary and nonvoluntary transition to schooling at home, when considered contextually, attests to the supposition that the organization of space throughout the course of the pandemic is tied to perceived notions of personal spatial sovereignty (Gubina & Kirillova, 2020; Kossek et al., 2021; Leichter et al., 1985; McNeilly & Reece, 2020; Schieman & Badawy, 2020).

Methodology

The purpose of this study is to gain a deeper understanding of this issue by reviewing, assessing, and exploring how learning and social interaction has changed within families as "a setting in which education invariably takes place" (Leichter, 1975) during the COVID-19 pandemic and focuses on the additional educational responsibilities that are now based in the home by focusing on the spatial organization of the home and the use of technology to create learning spaces for children and families.

To address this purpose, this study employs qualitative research methods, namely, individual ethnographic interviews, which were conducted between February and September 2021. Morse (1991) posits that one characteristic of qualitative research is "...a need exists to explore and describe the phenomenon" (p. 120). Individual interviews were used to explore and focus on the COVID-19 phenomenon, collect individual experiences, and narrate perceptions towards the COVID-19 home-work situation. The semi-structured interview offered an instrument to collect data and contents. The semi-structured interview has been suggested as the "best method to explore perceptions" (Barriball and While, 1994, p. 334).

Participants

The study draws from parents, caretakers, and guardians 18 years and over in order to focus on the adaptive response of the adults' educational responsibilities for children having been or currently engaged in distance learning during the pandemic. Participants were recruited through a combination of random samplings and convenient samplings. Recruitment advertisements were distributed at numerous social media platforms, including Facebook, Instagram, and WeChat. There was no financial compensation provided to participants.

There were 14 interviews with parents or caregivers of (at least) one child under the age 18, who attended school outside the home before the pandemic. Ten mothers and four fathers were interviewed. Parents were informed of the purpose of the study and their potential contribution. All the participants received higher education at different levels, and nine (9) out of them received advanced degrees, Masters, or Doctoral degrees. Most of the participants are working professionals, and their education level and employment status benefit for the understanding of the research focus.

The interview lengths ranged from 30 minutes to 60 minutes, during which time themes related to the focus of the study (additional educational and work home-based responsibilities as a result of the Public Health Emergency) were examined.

The following table showcases the list of participants, each given pseudonyms.

Table 1
List of participants

Participant Pseudonym	Location of participant	Gender	Education Level	Number of Children	Employment status	Employment in or out of the home
Yeong-Hwan	USA, Korea	M	Doctorate	2	Yes	Working from home
Joseph	USA	M	Masters	4	Yes	Working from home since last spring, now working outside the home
Jeremy	USA, Canada	M	Doctorate	2	Yes	Stay at home parent
Natalia	USA	F	Associates	1	Yes	Working outside of home
Dangyang	China	F	Masters	1	Yes	Worked from home last year, now working outside the home
Weijia	China	F	Bachelors	1	Yes	Worked from home last year, now working outside the home
Eric	USA	M	Masters	2	Yes	Working from home
Jessica	USA	F	Masters (IND)	3	Yes	Working from home
Laura	USA	F	Bachelors	3	Yes & No (Lost job during the pandemic)	Stay at home parent
Chikako	Japan	F	Bachelors	2	No	Stay at home parent
Qifeng	China	F	Masters	2	Yes	Working from home
Xinyuan	China	F	Masters	2	Yes	Working from home
Nuo	China	F	Bachelors	3	No	Stay at home parent
Yao	China	F	Bachelors	1	No	Stay at home parent

Data Collection

At this stage, semi-structured interview protocols (Robson, 1995; Mckernan, 1996) were researched, designed, and developed from a review of literature on the family as educator and family education (Leichter, 1975, 1979). We also formulated our protocols based on preliminary data we had collected through digital ethnography before the interview,

which relied on the analysis of publicly available posts on social media platforms that brought the insight of the societal impact and temporal change due to COVID-19 within each family. These social media posts allow researchers to view aspects of the tiniest details of people's lives (Hine, 2011) or at least those details they choose to share. The researchers took advantage of this unobtrusive method (Lee, 2000) to gather initial found data from social media websites including, but not limited to, Twitter, Instagram, Tiktok, and Weibo.

Interview questions were open-ended to generate a dynamic exchange and enhance participant's confidence and engagement to reduce the potential for bias and increase accuracy in the data. Interviews were conducted in either Chinese or English at the request of the interviewee. The semi-structured audio interviews were conducted internationally and remotely on video conferencing platforms, such as Zoom, due to the requirement of the IRB during pandemic. Questions related to how responsibilities and execution of children's and family members' academic education shifted from the traditional school environment to home, the changing nature of social interactions in the home due to COVID-19, and the shifting perception and reaction towards the change of family education experiences. As Creswell (2003), Rossman and Rallis (2016), and Veltri (2019) all emphasized, qualitative research is "emergent" rather than "tightly prefigured."
In tandem with the interview, participants during the research phase were asked to photograph their family's work and living spaces. Adult family members showed us their photographs during their interview and were asked to elaborate upon the instructional space, where learning and working took place in the home, and any challenges presented. These images were used to add context when analyzing interview data. Our analysis phase revolved around coding collected and transcribed data using inductive and deductive codes that had emerged during the data collection phase (Bogden & Biklen, 2007). The following conceptual frameworks were generated during group discussion: 1) Concept of Boundary in general; 2) Physical Boundaries; 3) Relationship boundaries; 4) Boundary out of the home and in the home.

Emerging themes include changes in home life spatial organization, technological accessibility and adaptation challenges, and parental assumption of the primary responsibility for childhood education. Further concerns as to the socialization of children with other children, inability to access outside spaces, misuse of technology, disruptive changes in children's behavior over extended time, behavior management, and subsequent transition to a post-pandemic 'new normal' were raised.

Findings and Discussion

Family boundaries have seen significant functional alterations during the COVID-19 outbreak. As a period of unprecedented social change, the existing integrated social structure has converged, and therefore, peripheral family functions have seen an overlap with those of the family. The heavy reliance on new media platforms and information communications technology has changed boundary management practices and converted nonwork spheres into multidimensional physical spaces where the porosity between boundaries has become normative. This 'new normal', a result of the public health crises and the increased permeability between roles and boundaries, has directly influenced how families have experienced transitions between roles and adapted to interruptions. The ambiguity of the boundary between family and society brought about by the pandemic, the online/offline boundary where the asymmetry of time is reinforced, and the overlapping of social roles between individuals has shown degrees of permeability across social roles. Restrictions attached to the composition of physical space and

communicative practices had to be reassessed and viable solutions for said challenges had to be found to ameliorate concerns associated with the perceived effectiveness of distance protocols and their real-time effects on the functions of the family dynamic. In this context, as the basic unit of society, the family has been expected to not only maintain its traditional dynamics, such as those functions attached to emotional socialization but to support the integration of remote learning in the home. Therefore, this discussion will focus on the following three ways in which boundaries within the family have blurred: interpersonal boundaries (structured by social relationships), spatial boundaries (structured by space), and temporal boundaries (structured by time).

Interpersonal Boundaries

One effect of the increased togetherness that came from everyone working and learning in the home was the need to negotiate and renegotiate roles. Additional responsibilities in the home, such as education and the need for care-work were increased due to the unprecedented degree of augmented proximity within the household. We found that some boundaries between family members were highly porous, resulting in shared or shifting responsibilities, while others remained more rigid and, therefore, less permeable.

Families as Educators

In the existing social structure, the value of education, arguably one of the most distinguishable indicators of social capital, has been concentrated within schools. However, before the pandemic, the family played only an ancillary role in the educational function as a socialization process. These changes heightened the educational function of the family.

During the pandemic, when children's primary space for the carrying out of daily routines in traditional schools was transferred to the household, the main responsibility of academic education shifted from teachers to parents. Acute pressure was placed on parents to differentiate and merge their work roles and caregiver responsibilities on account of the reconfiguration of space during periods of quarantine and mandated shutdowns. The role of parents as educators expanded and became broader during the pandemic as it included, but was not limited to, the aforementioned addition of academic responsibility caused by the disruption of in-person schooling.

The need to act as a teacher, IT technician, or mediator for distance learning led to an expressed increase in family engagement or involvement in academic affairs that was brought up in each of the interviews. Whether families chose to supplement remote learning through the use of external resources or by increasing communication with school actors, it was evident that in order to help ameliorate the educational needs of their children, due to the shift in the locus of responsibility away from professional educators, families were tasked with developing alternatives for engaging in pre-pandemic leisure activities and pedagogical functions. Some families divided the labor of at-home education between the two primary caregivers, while in others, one parent remained solely responsible. For instance, Yeong-Hwan and his wife present an example of a joint-division of labor between two primary caregivers when he says, "If I focused on social studies, my wife [becomes] a math teacher. Especially after the first child [has] done his homework, our main job [is] to check before submitting it online". Essentially, the distribution of educational activities between Yeong-Hwan and his wife are divided according to their relative strengths. On the other hand, Jeremy, a stay-at-home parent, remained primarily in charge of his children's education while his wife worked from home. He viewed his role as an educator as one more aligned with that of a secretary's or

teaching assistant's based on an article he had read advising parents on how to help their children through the pandemic.

> *[I] try to help them keep organized with all the technology that's been thrown at them all of a sudden, right? They're going to get lost, they're gonna have assignments left and right. If [I] can keep track of it for them, just tell them "hey, you know what — have you looked at English?"*

Furthermore, in an effort to facilitate the adoption of Learning Management Systems and digital platforms used for emergency remote and hybrid schooling, many other parents also expressed the need to familiarize themselves with educational technologies that at times required high levels of parental support. Chikako, a stay-at-home mother who also considered herself the primary caregiver responsible for accommodating her children's at-home learning experience, goes on to express how even though the school was in charge of managing platform subscriptions and the creation of digital accounts for educative purposes, she still had to learn "how you can get logged in and see all your work and how you should respond to the activities you are given, too" in order to better supervise and help support her children's learning. Meaning that not only did she have to familiarize herself with the technology, but, in doing so, she also had to learn how to troubleshoot it due to the emergence of technical difficulties. Like Jeremy, Chikako's work as a stay-at-home caregiver also required her to transition between what used to be "clean[ing] the house and then pick[ing] up the kids at 2:45 PM" and her role as a facilitator of online learning.

This perceived shift in roles attributed to the increased permeability between macro and micro boundaries illustrates the abrupt reconfiguration of the school-home interface and, as exhibited by Yao, the inter-role conflicts attached to them. Like Chikako, before COVID-19 Yao mostly took care of her son's daily schedule and aspects of his daily life, such as taking him to school, cooking meals, and completing other household chores. However, at the onset of the COVID-19 outbreak, alongside the sudden repositioning of all in-person classes to remote models, her role as a primary caretaker had to append an academic function to that of her pre-pandemic parenting role. The subsequent technological issues during the online learning process only served to further complicate this shift.

Nevertheless, in spite of the complications, Yao goes on to describe how she developed study goals alongside her son to help him meet his school's curricular benchmarks and, upon settling on a strategy and compiling their extracurricular resources, they actually surprised themselves by accomplishing in two weeks the goals they planned to accomplish in one month. Yao relates how "through the combination of teaching and guidance, his learning self-discipline and listening skills have both been improved and developed, while his study habits have also been established." Yao's description encapsulates how, though not a professionally trained academic educator, increased parental involvement in children's educational activities has yielded a more critical evaluation of compulsory schooling programs on behalf of the parents. Parents also had to try a number of measures to better prepare themselves for such a sudden role change. For example, Yao read self-help books regarding how to 'handle' her son and help him develop good habits. At the same time, she sought help from other parents who could share with her their own real-life experiences when it came to child-rearing. The subsequent need to reevaluate schoolwork and learning outcomes was also disclosed by many other parents in the study, such as Natalia, who chose to use external digital platforms and learning applications to help "reinforce" her daughter's learning.

Furthermore, parents were also charged with accommodating classes that were, ultimately, difficult to replicate online, such as physical education. They did this in a variety of ways. Joseph's strategy was to get the kids outdoors, to the beach if possible. Yeong-Hwan, on the other hand employed the use of video games to help support his children's physical education during the pandemic. Yao mentioned that the pandemic allowed her to notice that her son "has many shortcomings in sports" and was "reluctant to do physical exercises". She used positive reinforcement strategies, among them a fiscal allowance, to encourage the habit of regular exercise.

As parents took on the role of educator during periods of remote learning, many expressed some of the perceived benefits attached to having their children learn from home. For example, Natalia, with regards to her daughter, goes on to express how it is "easier" for her daughter to learn with her "than it actually is with the teacher at school" because she can give her daughter "that one-on-one attention." Xinyuan relates how she was surprised by her daughter's progress while teaching her English through reading books, "She felt online learning was very boring, so she always stayed next to me. I can't help with her homework but read books with her… She read it with me in those two months, and her English improved a lot". All in all, though the accelerated reconfiguration of the pre-existing structure of society brought with it many challenges, the role of the family as educator is one whose influence has changed the dialogue on the implementation of family engagement and involvement strategies.

Building New Habits Together

Character-building, the breaking and creating of habits, and behavioral changes among parents and children alike could be seen during and after the pandemic. In light of this, the role of parents in the strengthening and development of character through modeling, moral education, and guidance, upon being cut off from outsourced childcare, led to alterations in behavioral patterns that stemmed from efforts to adapt to the 'new normal'.

For instance, Chikako and her family invested in a gaming console in order to dedicate time as a family to strengthen their communication skills and familial bonds by playing together. Other parents, such as Dangyang and her husband, also disclosed how they needed to take of the role of friend due to the closure of schools. Their son, an only child, had no other children in the home to socialize and play with. Though online gatherings may have temporarily abated the issue, technology could not fully solve the problem. Owing to this, Dangyang and her husband became worried about their son's mental health and the development of his social skills due to his inability to interact with his school friends in person for a couple of months. Through play, they took it upon themselves to see if they could fulfill the roles attached to those typically realized by his friends.

Another example of social education by parents can also be found in Nuo's interview. Her son was diagnosed with mild autism and goes on to recount how the pandemic gave her a chance to support his social skills.

> *Because he used to get along with other children on his own, and we were not with him. This time I have the opportunity to be with him. When he is getting along with other children, if there are conflicts or other situations, I can provide him with some assistance and support him.*

Negotiating Care Work

While some families, such as Yeong-Hwan's, who had a fairly equitable division of care and housework, did not much alter their care-work habits, others were altered due to an increase in the presence of adults in the house.

Jessica points to this modification of parental roles when her male spouse is present in the household when she says, "We can do the night routine together for kids and all those things are really helpful in that I loved him being at home, even though he's — he wants to travel".

Jeremy indicated a reduced care-work load. Before the pandemic, he was primarily responsible for the cooking, cleaning, and household chores in his household. However, when he and his family moved in with parents, his mother maintained total control of the kitchen, and thus cooking because "She likes her kitchen her way". Moreover, because his kids were spending much more time at home, they became involved in vacuuming and laundry in an effort to learn the responsibility of cleaning. He even had his children help with shoveling snow in the driveway: a novel and unpopular task for New York City natives who happened to spend a portion of their time in Canada during the pandemic.

In Weijia's case, her parents and sister stayed with her family of three during the quarantine. Due to the increase in the number of family members, while the educational responsibilities still mainly fell upon her husband, other household chores were altered, such as cleaning and cooking, on account of the presence of others willing to reduce Weijia and her husband's traditional care-work duties.

Spatial Boundaries

The changes brought on by the pandemic resulted in an increased number of activities, from working to exercising, being moved inside the home. This necessitated the reimagining of the use of household spaces, a theme that emerged in several of our interviews. Spatial boundaries that used to distinguish the dining room from the bedroom suddenly became less clear. Although the spatial boundary of each room played an atypical role before the pandemic, the convergent and divergent transformation of said boundaries and the expansion of digital technologies provided new functions for pre-pandemic spaces.

During the pandemic, many of the households interviewed used their living room or kitchen spaces as a place for school classroom activities. This seems to have changed how the shared space is internalized by excluding the bedroom, the most personal space for relaxation. For example, in Joseph's home, family members required modifications to their spatial rearrangement. Joseph said,

> *It was tough first. So I would work in the bedroom mostly. The older boys did their schooling in their own bedrooms. The twins did their schooling at our dining table with [my wife] there. And then, if [my wife] needed to have a meeting, usually she would go to the bedroom.*

The division of space and drastic readjustment of personal proximities not only overlapped standard functions of physical space but repurposed the use of digital spheres for the sake of transforming the space writ large. In light of this, problems attached to architectural spatial restrictions were also identified. In Yeong-Hwan's case, his complaints revolved around the overall lack of perceived personal space he had while living in a condominium, a typical city-dwelling type.

> *Everyone had to be quiet when the first child was teaching online. In particular, there were many times when I told my second child, who is not going to school, to be quiet. One time, I covered the door gap with a towel because it was too noisy.*

Qifeng further expounds upon this phenomenon throughout her description of her need for an extra study room. Qifeng goes on to say,

> *The second issue of [boundaries] is the space — because my current apartment does not have a study room … When I have a meeting, for example, if I have a meeting at 8 am, and — due to the time difference with New York — and the family [haven't] gotten up yet, I would work in the living room. When my children [get] up, then I [run] to their room for meetings… Then we said, afterwards, that we must bring a study room.*

For this reason, Qifeng presents a case of entering an entirely new space and using the existing spatial arrangement. The spontaneous change of personal space into multi-purposed space illustrates this reliance on the permeability of the spatial boundaries in the home. Alternatively, in her home, Jessica's spatial modification was developed to accommodate the spatial composition of the house and reflect the needs of family members. For example, Jessica goes on to say,

> *My second daughter, we put her in the bedroom [on the second floor], but then she did not want to be so far away from everybody, and then she wanted easy access to the kitchen. So, we moved her down to the first floor and then we put her desk in the master bedroom.*

In this case, even if their second child decides to continue her online school in the master bedroom, the interviewee could accept it. This deliberate micro-management of space accounts for the subtler shifts in family dynamics.

These reimaginings of family space were not always welcome, as described by Laura, whose family transformed their living room into a universal non-family activity center. Laura described her pandemic rearrangement experience as "a crazy idea". Specifically, Laura makes a point to express that the living room (the second living room in this case) should be her private space and, therefore, makes a conscious effort to regulate access to it in order to avoid any potential disruptions or boundary violations. On account of this, a piano was used to partition the living room and the connecting to the kitchen. Laura then goes on to detail how her two kids say that "nobody plays the piano" and how, as a result, her younger son wants to "put his desk against the piano" and responds by "getting rid of one old chair". This mitigation of space to uphold Laura's perceived boundary satisfaction touches upon the compartmentalization of physical space for the maintenance of boundaries.

The need to address boundary violations, whether aggravated by perceived disruptions of privacy or auditory interferences, within family members' recognized personal space parameters also attested to the cross-domain effects of boundary violations. For example, Natalia, a working mom, and a student, describes how the spatial organization of her home during the standard Monday through Friday school-work week highlights some of the more permeable boundaries. When discussing the transition between roles and her work-home interface, Natalia says,

> *So we bought [my daughter] a desk that we have on one side of the living room and she will do her schoolwork there if it's something that she can do by herself…. And then — I have*

> *a computer. I tend not to listen to any of the videos because I have to put a headset on. So, it's a little bit harder for me to study if the professor gives any videos to watch because I can't focus on the video and her at the same time. But, my desk is on the opposite side of the living room, but we're [Natalia and her daughter] kind of like 10 feet away from each other.*

On the one hand, the reconfiguration of space allows her to more closely supervise her daughter's education activities. On the other, it decreases productivity due to an increase in spatial boundary permeability and porosity between her role as a parent and her role as an educator.

Though Natalia's case presents an example of how the blurring of spatial boundaries may have led to a perceived decrease in productivity and, therefore, disadvantage, Jeremy sheds light on how the convergence of spatial boundaries also had the potential to be advantageous depending on the context. While his wife worked upstairs in one of the bedrooms, he had his preteen son and daughter working on the dining room table. He uses the limited separate spaces to check the behavior of his children and help them stay on task. "I purposely kept them together so, in a sense, they could kind of keep an eye on each other. [laughs] Someone's always willing to rat out the other person." To minimize social and environmental disturbances tethered to their close levels of proximity to one another, while one of the children must wear headphones so that the competing sounds of the child not wearing them during class time does not disrupt the other's learning. In Jeremey's words, "Whoever is not paying attention at that time, I usually try to hear their lesson so at least I can tell why they're not listening." In this way, he uses his access to his children's learning space as an academic orientation tool.

Temporal Boundaries

Another effect of the pandemic has been the blurring of the temporal organization of activities within the home. The need to transition school and workspaces to the home facilitated the blurring of temporal boundaries. For instance, Jeremy describes the way his son's school and leisure time have integrated.

> *My son has fully integrated between the two and leisure is somehow intertwined now with school time.… I look over and I don't see him in science class, I see him on YouTube I think. …They were doing class presentations and… he's not paying attention to the other people's presentations. …You know, so he takes advantage of the time to do what he wants to do. That's his leisure time, in a sense.*

Since children were spending more screen time on online classes, some parents controlled their children's leisure screen time to make it shorter because they were worried about their eyesight being affected and did not want them to stare at the screen for too long. For example, in Weijia explains,

> *Actually, I let her watch TV a little less than the other kids. The original is basically about 1~2 times per week to watch TV, and we do not watch TV at home either. During the pandemic, first of all, she took online classes, so she had to look at the TV. At first I didn't do the screen sharing, she was looking at the laptop… And the time of watching cartoons at noon was controlled at about 15 minutes.*

A few of the families we interviewed were negotiating schedules on multiple continents. At the time of the interview, Yeong-Hwan was located in Korea while his son was attending virtual school in New Jersey. This involved adjusting their sleep schedules so his son could attend school from 10 pm-3 am local time in Korea. This meant adjusting

his whole sleeping and eating schedule to allow his son to attend school while juggling local Korean time as well. Meanwhile, Qifeng also raised an issue regarding the working parents rather than her kids that she encountered during the pandemic as she says:

> *Then another problem is that when everyone is at home, the boundary is very unclear, one is the time, for example, when you go to work and then work is work, and when you finish work, then it is the end of the work of the day, thus it was clear that when is work and when is off work. But if you're all at home, sometimes you don't have a clear boundary. You might be checking your email or doing something at night, and then you might do other things during the day, and it's all mixed……I do not think that I was that efficient while working at home.*

Conclusion

The lockdowns and other mitigation efforts associated with COVID-19 pandemic have created changes in all aspects of our lives. This paper has examined how the shift to working and learning in the home has blurred the lines that once organized time, space and human relationships. The pandemic has caused both temporary and lasting changes on the way people work, learn and use space in their home. It has also shifted relationships within the family and in the home/school relationship. These interviews provide a snapshot into the homes of families during the pandemic, but they are only one moment in an ever-evolving phenomena.

The resultant impact of COVID-19 upon families was the enhanced blurring of boundaries within the family dynamic, particularly, muddled interpersonal, spatial, and temporal boundaries. The COVID-19 Public Health Emergency and its aftermath enhanced the traditional importance, function, and recognition of the family and the household as the center of the learning activities. During interviews, common themes were generated and aligned with the accepted academic literature. The studies' findings echo Leichter's earlier observation that "the family is always a setting in which important educational encounters occur" (1975, p. 2).

Almost universally, educational activities occurred within the home space, especially in China, which implemented more rigorous governmental restrictions and protocols for testing, quarantine, and restrictions of personal mobility. The impact of government health policy and resultant restrictions necessarily increased the responsibilities of domestic caregivers.

The intensified family dynamic and limitations of movement required families, parents and grandparents to establish a learning schedule for children, set forth specific educational activities, and become better versed with applicable educational technologies. The pragmatic impact of these new educational demands upon the family had consequences in unanticipated ways: participants claimed extra space was required for family educational activities, families needed to redesign home living space, and previously designated family space was converted for fulfilling varying educational multi-purposes.

This is a preliminary analysis of the data we have collected thus far. Because this research focused on a small group of parents and caregivers predominately from China and the United States, if we intend to conduct a global study, we will need to consider recruitment and interviews of people in other countries. Secondly, the data we presented is limited in the scope of time.

As we pass the two-year anniversary of the pandemic and witness waves of the virus circulating the globe, it leads us to questions which will shape our future inquiries. Which changes documented here are permanent as a part of the 'new normal'? What will return to the way it was in the pre-pandemic era? Which boundaries are dissolved, and which ones remain? We plan to continue researching this topic to gain a better understanding of the longitudinal changes that have occurred societally. Future research should move aggressively beyond these limitations. Researchers should examine parents from additional countries allowing for more diverse cohorts of subjects. An additional area of further research may be to recruit a broader range of interviewees (not only the parents) as the uniqueness and relative strength varies from person to person and their relationship to the children. Increased diversity of interviewees may increase the richness of the dataset.

Finally, as the WHO has started preparing for the post COVID, the family study should reflect on a new social order. Rather than focusing on the elements that can define the family's character at the standard or structural level, this study shows a tendency to pursue authenticity and qualitative value as a family. It is an important reason not only in the social environment in which the traditional family does not form the majority but also in the emergence of a new type of family.

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COVID-19 and Higher Education: Crossed Perspectives in the Construction of Knowledge and the Rise of Citizen Science. Theoretical reflections and practical approach in the 11th Encounter of CeiED researchers.

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Ensuring that learning is participatory and even further democratized seems particularly important at a time when people are kept apart because of a COVID-19 pandemic that thrives on proximity. Whilst learning is based on exchanges, it also benefits from the existence of a learning community, the access to which needs to be equal and taking account of learners' diversity. How is Higher Education equipping itself to adapt to new learning conditions? How can it ensure that it can meet new types of needs? To address these questions, a workshop was organized at the Interdisciplinary Centre for Research on Education and Development (CeiED), Lisbon, on an emerging area of research called 'Citizen Science'. Citizen Science has been gaining popularity in many disciplines. Here, we are interested in how it could help to improve education and learning, as well as how current research in education might also help approaches in Citizen Science to move forward. Reflections on theory were carried out in parallel with a one-day practical online workshop on 'operationalizing Citizen Science', involving researchers in the center's three areas – education, museology, and urbanism. This article explains the outcomes of this event.

Keywords: Citizen Science in education; distance learning; inclusive social learning; Design Thinking practices.

Introduction

In July 2021, the annual research meeting of the Interdisciplinary Research Centre for Education and Development (CeiED) involving its three areas of interest (education, urban planning, and museology) focused its 11th edition on Citizen Science (CS). Entitled *'Do cientista cidadão a ciência cidadã: olhares cruzados na construção do conhecimento'* (From Citizen Scientist to Citizen Science: Crossed Perspectives in the Construction of Knowledge), it encompassed, on top of plenary sessions, a visual art exhibition, a series of parallel sessions dedicated to doctoral research and a one-day practical workshop on design thinking and operationalizing CS. The latest were organized around various themes which triggered specific questions in relation to CS. The dialogical process between the various components of the conference was based on questions triggered by the COVID-19 crisis and the need to improve teaching and learning conditions in a world

where students are gaining more and more autonomy whilst still needing to belong to a supportive community of learners and teachers.

For a new approach inspired by CSto unfold in a satisfactory, professional, ethical, and scientifically rigorous manner, initial and open debates about its objectives, usefulness, methods, and beneficiaries are necessary. Based on this great aggregating theme, CeiED invited doctoral students, researchers and professors in Education, Urbanism and Museology, to participate. The objective was to highlight that, thanks to a wide range of Information and Communication Technologies (ICTs) and the will to build knowledge differently and to understand better each other's perspectives, 'learning experiences' and, by extension, 'education systems' could be enriched, and approaches such as CS could help to do so. Table 1 presents how the CeiED's research relates to CS.

Table 1
Links between CeiED's areas of research and Citizen Science.

Term	Useful references	Description	Relevance for research in Citizen Science
Museology	Pierroux (2020); Hetland et al. (2020); Noel-Cadet and Bonniol (2015); Atwood Mason (2014); Sancho Querol (2021)	The study of the history of the museum institution and of its changing role in the society during centuries. (Dictionary IGI Global)	The shaping of societies and mentalities occurs, partly, through culture. Citizen Science encourages the creation of inclusive museums that can reflect and express people's needs, art, and aspiration.
Urbanism	Franco &Cappa (2021); Simon et al (2022); Paulos (2009); Colston et al. (2015); Roger and Motion (2021); Saundlers et al (2018); Soanes & Lentini (2019).	The study of how inhabitants of urban areas, such as towns and cities, interact with the built environment. (Dictionary IGI Global)	Research in urbanism is seeking ways to make urbanism more 'social' and participatory i) in view of making it more democratic and ii) to benefit from people's knowledge and encourage the co-creation of urban spaces.
Education	Roche et al. (2020); Golumbic & Motion (2021); Hitchcock et al. (2021); Mitchell et al. (2017)	The process of imparting or acquiring general knowledge, developing the powers of reasoning and judgment, and of preparing oneself or others intellectually (dictionary.com)	Reforms in education encourage moving away from the 'transfer of knowledge' from experts to 'non-experts', aiming to value different types of knowledge, forms of learning, and informal versus formal education.

Pedagogical approaches	Kloetzer et al. (2021); Bonney et al. (2009b); Crain et al. (2014); Herodotou et al. (2028)	Educational decisions made by the instructor to support student learning, engagement, and instructor-student, student-student, or student-content interactions (Dictionary IGI Global).	Reform in pedagogical approaches encourage inclusive processes through debates, teamwork, experiential learning – all investigated in Citizen Science – in order to expand the field of knowledge and scientific literacy.
Participatory approaches	Pateman et al. (2021); Bonney et al. (2009a); Skarlatidou & Hacklay (2021); Freire (1987); Krazny & Bourney (2005) https://www.participatorymethods.org/page/about-participatory-methods	Participatory methods (PMs) include a range of activities with a common thread: enabling ordinary people to play an active and influential part in decisions which affect their lives.	With CS, people become better heard, their voices shape outcomes. Because respect for local knowledge and experience is paramount, the result is interventions that reflect local realities with better supported long-lasting social change.

This annual meeting not only constituted an important moment of knowledge sharing among the Center's scientific community, but it was also a reminder of the relevance of our individual efforts and our collective contribution to a science centered on the common good, cognitive justice and citizenship. This paper presents our conclusions and findings. The results from the thematic debates are presented in Part 1, whilst Part 2 focuses on our attempt to operationalize CS using an online participatory 'mural' involving students based in different countries to reflect on learning and teaching conditions and requirements in a 'hybrid' world where universities are physically semi-open because of the pandemic.

Theoretical considerations

The emergence of Citizen Science

Citizen Science (CS) established itself as a field of research and practice in the 1990s and refers to the active engagement of the global public in scientific research tasks. It emerged from a variety of participatory approaches that had already been developed, illustrating a strong need to not only democratize decision-making processes and involve people who would be holding projects but also to improve the quality of data gathered when making policies that lead to societal changes (Vohland et al., 2021). Originally conceived as a way to facilitate good quality large-scale data gathering, CS has now the potential to revolutionize how we envisage education (Aristeidou & Herodotou, 2020; Hitchcock et al., 2021; Mitchell et al., 2017) and learning processes (Kloetzer et al., 2021; Herodotou et al., 2018) as well as scientific research and its impacts (Krazny & Bonney, 2005; Schaefer et al., 2021). Whoever provides data as part of scientific research should also have a say concerning the scientific approach, and the benefits research should bring. The collective creation of knowledge through exchanges between experts and practitioners is

questioning roles and giving a voice to those who, despite often being viewed as the 'passive public', often know best. For this reason, CS is considered as encouraging social inclusiveness, on top of contributing to enriching the 'sharing of knowledge' already boosted through the use of ICTs (Hacklay & Francis, 2017; Pateman, Dyke & West, 2021; Skarlatidou & Hacklay, 2021). Traditionally used in natural sciences, CS is now extending its range of activities to social sciences and gaining popularity, including in areas related to education and the construction of knowledge (Crain, Cooper & Dickinson, 2014). Research in all disciplines could benefit from it and contribute to its advancements – the question is how. More specifically: How do we (methodologically) organize inclusive and fair participation and the representation of perspectives and needs? How can we ensure that sensitive data remains confidential, that being an enthusiastic participant doesn't make you a cheap source of extensive "big data", and that your opinion is correctly interpreted? How do we integrate the principle of reciprocity at the beginning of the project so that participants really benefit from the research projects being carried out? How do we make scientists admit that they also (not just the participants) benefit from the participatory process of CS in the co-creation of knowledge? How can CS contribute to reforming learning processes and the education system?

Bonney et al. (2009), who started working on the potential of linking CS to the field of science education and learning more than ten years ago, put a special emphasis on Informal Science Education (ISE) – an insightful improvement of the PUS ('Public Understanding of Science') concept, born in the 1940s and 1950s, which was mainly focused on the "delivery of content rather than on helping the pubic experience and understand the process of research" (p.10). To address this concern, Bonney et al. involved citizens in the co-creation of knowledge through PPSR projects (Public Participation in Science Research) and through non-formal education and reviewed a wealth of scientific projects that successfully generated knowledge over the long run. The experience they relate is also inspiring for more formal education settings and could, in particular, contribute to reforming interdisciplinary education on sustainability, for instance. Higher Education institutions still do need to improve such an area which has, so far, been presented in way too conceptual manners to students who do not see a clear link or relevance with their life and needs and are not invited in the co-creation of knowledge in this field (Brundiers et al., 2021). The benefits to students that CS could bring by better being integrated into Higher education have been explored by NASEM (2018) which mentions, as part of those, an increase in students' engagement, opportunities to engage students in authentic research, bringing an applied relevance to the content of the courses, introducing students to the principles and processes of research activities, and creating pathways for inclusion of science in students' lives outside of courses. These benefits, especially the improvement of students' learning and skills acquisition through CS, have been further explored by Hitchcock et al. (2021).

Corroborating what we discussed during our research meeting, Roche et al. (2020) highlighted that important challenges still exist when integrating CS in Higher Education, further enhanced by the COVID-19 pandemic. The authors identified several dilemmas facing the field, "from competing for scientific goals and learning outcomes, differing underlying ontologies and epistemologies, diverging communication strategies, to clashing values around advocacy and activism". They also stressed that "Although such challenges can become barriers to the successful integration of CS into mainstream education systems, they also serve as signposts for possible synergies and opportunities" (p.1). They key objective is to find ways to reform educational practices and settings in constraining pandemic times to empower citizens to take ownership of their science education and learning.

Thematic sessions

Doctoral students were invited to present their work and explain to what extent it related or could relate to Citizen Science. After receiving all proposals, it became clear that we could group the various works into various thematic sessions. We entitled the latter as it follows: Teaching profession: the educator's perspective; Inclusion; The role of education and learning for societal changes; Learning, professional training, and difficulties and constraints in becoming a learner; Pedagogical approaches; Participatory approaches; Learning with ICTS. You will recognize these groupings and titles in Table 2. They included work on education, urban studies, and museology, the three PhD programs of the CeiED.

Linking CeiED doctoral work and Citizen Science

To animate discussions that would help people relate their work to Citizen Science, a series of reflective questions were suggested to the moderators that emerged from an analysis of the references (see Table 1) on each area of research of the CeiED linked to CS by the author. These were intended to help moderators to trigger discussions. The seven axes that we focused on were identified after collecting the various presentations and grouping them in ways that would enable an interdisciplinary exploration of CS, linking doctorates in education, urbanism, and museology. These questions are presented in Table 2:

Table 2
Linking CeiED doctoral research axes with CS considerations

Questions raised on the theme of 'teaching profession: the educator's perspective':	**How is this issue generally perceived and treated in theory and practice in CS?**
Are educators facilitators of learning, or do they transfer knowledge? Are urban planners participating on an equal footing with other stakeholders in a social urban approach? New advances in museology invite people to participate in museum life and exhibitions: are 'spectators' really part of the exhibition itself? How do actors who facilitate a participatory process position themselves in the process? Can CS help key actors in education, urbanism, and museology to better understand what their role will be if their research involves more citizens' participation?	In CS, the role of the facilitator is difficult. Whoever initiates an action-research project occupies a difficult position, remaining on the sidelines, but nevertheless having to be active in the participatory process in which everyone needs to be involved. While "participatory processes" can encourage people's participation from start to finish - to impact public policy -, there remain some important boundaries to appreciate and respect. A decision-maker has been trained to make decisions. A participant, while enjoying being involved, may not want to be placed in the position of a decision-maker.
Questions raised on the theme of 'inclusion':	**How is this issue generally perceived and treated in theory and practice in CS?**
Can CS approaches help research towards a more inclusive perspective? Reciprocally, research in education, museology and urbanism can offer some illustrative examples of inclusion that can enlighten CS research from the perspective of: Methods (How to be more inclusive and how to encourage inclusion? How can you be sure that everyone can express themselves equally?); Motivation; Ethics and reciprocity:	CS is concerned with ensuring that groups of citizens –generally silenced in one way or another - can be realistically integrated and express what they think, know and need. The question is how to invite and motivate them to participate; do some people need training, or better access to technology; do they speak the same 'language'? How can they feel welcome? Genuine inclusion in CS is difficult to perfect and requires honesty, trust, conflict negotiation

How can we ensure that all participants get the same benefits out of working together?	skills and a very clear sense of the importance of inclusive processes in society.
Questions raised on the theme of 'participatory approaches':	**How is this issue generally perceived and treated in theory and practice in CS?**
In education, urbanism and museology, the value of participatory processes is increasing, albeit in different forms and degrees for all three domains. Can these three areas learn from each other in terms of participatory approaches? Can they be used as examples of application of participatory processes to demonstrate the usefulness of CS in different areas of research? Or, to illustrate the various ways CSs carry out different domains, applications and with different stakeholders? Can different types of citizen participation be identified to contribute to "different types of scientific results"?	CS includes several participatory approaches. In some of them (in particular contributory CC), participants provide specific information without being in contact with other participants, nor necessarily knowing how the data provided will be used. In other approaches, it is agreed from the outset that the participants will be part of the discussion about the process of analyzing the results, their dissemination, and the final objective. The participatory approaches used undoubtedly affect the participants' motivation, the quality of participation, whether they remain in the process until the end or not, etc. The success of CS depends on the quality of participatory processes.
Questions raised concerning 'the role of learning in societal changes':	**How is this issue generally perceived and treated in theory and practice in CS?**
Will greater participation in research help with social change? Many recent research initiatives have proven that social projects do not go very far if people do not have the autonomy to appropriate projects, from their conception to their completion and long-term maintenance. This is often the reason for encouraging more participation. Has this been demonstrated in the areas of education, urbanism and museology? For example, does participatory urbanism help to create more sustainable cities? Will social change be more successful if initiated as bottom-up, top-down, or participatory processes?	In some CS projects, the value of citizen participation is considered as important not only because policy makers have realized that many people in the general public have a certain practical knowledge and know-how that they themselves do not have and that that specific knowledge is necessary in making certain decisions to transform society, but also because these people can bring really useful insights into how social change can be encouraged. Enabling and inviting CS Project participants to give their opinion on general changes in society, rather than merely being asked to provide data is important – though not generalized for all CS projects.
Questions raised on 'lifelong learning, professional training, and difficulties and constraints in becoming a learner':	**How is this issue generally perceived and treated in theory and practice in CS?**
Being a student in an educational institution can present some 'barriers to entry' and it can be difficult to overcome them. Do more participatory forms of education present the same barriers?	Deciding to participate in a CS Project can be difficult and uncomfortable, but it can also be just the opposite. Once involved in it, staying involved in it all the way through can also be challenging.
Questions raised on the themes of 'pedagogical approaches':	**How is this issue generally perceived and treated in theory and practice in CS?**
To what extent is "participation" taken into account in learning approaches? How is it reflected in new pedagogical approaches? Participation and pedagogical approaches are designed to encourage it by questioning	The process undertaken from the beginning of a CS project to the end can vary considerably. Some CS projects encourage citizen participation throughout the project, while others view "participation" as the discreet

the roles of participants (are there still experts vs students or do we all have something to learn and teach? How is this reflected in the way we share and learn? Can pedagogical approaches compromise participation?	provision of data by participants (Contributory CS). The "pedagogical" approach used in computer science can strongly affect people's motivation to participate, as well as the trust built with Project facilitators. Citizens need to feel that the value of their contribution is recognized.
Questions raised on the themes of 'learning with ICTs':	**How is this issue generally perceived and treated in theory and practice in CS?**
Does technology facilitate exchange of perspectives, knowledge and know-how, discussions between different types of students who do not normally learn together? Are teachers/educators as technologically literate as their students? Learning processes are changing – because of the pandemic, but also of a whole range of new online tools. Do technology-enabled learning experiences automatically promote citizens' involvement in social change? If so, how are the online learning experiences connected?	In CS, digital technologies are widely used (Apps, online participatory platforms, participatory Geographical Information Systems, etc.) and are considered ways to make citizen involvement easy and even inviting (because 'access' to participation is in the hands of the citizens, mixing data, words, images, videos. However, issues such as digital divides or technological literacy (or illiteracy) may exclude some. In the case of complex problems involving various and different stakeholders, conflict management and negotiating online techniques might be needed.

Conclusion on the outcomes of the discussions on existing research at the CeiED
Each parallel session led to very rich debates and exchanges of ideas. Moderators orientated those towards feeding a reflection on the link between research being carried out at the CeiED and research on Citizen Science. The outcome of such reflection is presented below, for each of the parallel sessions.

In the session focused on the *teaching profession: the educator's perspective*, several participants referred to the beneficial changes brought by the COVID-19 pandemic, particularly the change in methods and the broader use of digital tools. For many, CS is a way of humanizing the teaching-learning process. The teaching profession must be part of this and become an agent of transformation and transmission of science. Within the 'construction of knowledge' process, teachers have a fundamental role to play in the training of participative and active citizens. Teachers and schools (although they often feel their role is not valued) are an essential part of creating a more reflective, critical-thinking society.

The session *inclusion* emphasized the call to better communicate the results to citizens participating in research projects, and the importance of putting knowledge at the service of all. A citizen-centered research calls for qualitative research methods or, when such methods are adopted, these intend to contribute to a better knowledge of socio-educational phenomena and, consequently, to serve as a basis for inclusive interventions. This session gave further insights into the need to improve the contexts and practices of inclusive citizenship, paying attention to ethics and data protection, and that the trans-nationality and transculturality of research focuses and instruments are useful dimensions for inclusive citizenship.

The session *the role of education and learning for societal changes* focused on learning processes (inside and outside educational institutions) and their impacts on society. Participatory approaches that could improve learning and social change were explored. For instance, the project "Museum as Social Technology" looked at CS, social technology,

and social innovation while emphasizing that the place of technology is not of digital technological resources, but of knowledge sharing processes, knowledge accumulation, collective and participatory construction, and acknowledging these methods as technology. These themes, as well as the interest of students in developing skills from «experimental learning», were also explored in another project on urban agriculture and sustainable cities, which highlights the fact that, without the contribution of CS, it will be difficult to make cities 'sustainable' in socially meaningful way. The project on eco-museology reported the importance of the *territory* and co-creation alongside the potential of CS to increase their values. The project International Movements for a New Museology, with a focus on Latin America, stressed the role and (missing) place of women, native peoples, Quilombolas, and Afro-descendants and the importance of reciprocity of knowledge between academia, museums, and civil society.

From the session focused on *learning, professional training, and difficulties and constraints in becoming a learner* raised the call for acknowledging that, in the various institutional training processes, people and their individual learning processes are deeply articulated with collective objectives. Listening to people's various experiences is thus crucial, and this can be done through interviews, questionnaires, or other tools. Other related themes addressed the experience of initial or continuing educational courses, community inclusion in the construction of knowledge, the role of families in teaching and learning, and the need to create stronger links between educational centers and other institutions and stakeholders.

The session on *pedagogical approaches* concluded that CS is best used if there is an evaluation of investments made (in education and museums), and the life experiences and previously constructed knowledge should be better integrated into learning. Both make the call to turn the process reflexive and become part of pedagogical processes. Other issues raised are the interconnections between the various dimensions of the territory and the school along with the various dimensions of social inequalities, which once better understood could be better integrated into learning, which in turn can lead to the creation of social identities.

To sum up the core of lessons and practical advice from the debates, we can see first, CS as an umbrella platform under which incipient issues and «old acquaintances» emerge and overlap. Second, the discussion and experiences stressed the importance of *participatory approaches* in all three areas (education, museology, and urban planning), and third, to face the challenges and opportunities digital advancements for the production of knowledge. This is especially important as digital and mobile technologies are increasingly becoming ubiquitous, and their usage is becoming more than task- and work-related, as pointed out in Smaniotto et al. (2019). *Digital and mobile technologies* are opening more and new opportunities to *facilitate participatory processes*; this is associated with both positive and problematic aspects, such as lack of access to technologies and unequal perception of ICTs' potentials. Under this guise the following needs are identified:

- To develop methodologies and strategies that help ensure processes that are really participatory.
- To establish the dialogue and sensitive listening, traced back to authors such as Paulo Freire (1987). This is also associated to the call for crafting dialogue strategies and joint activities between different stakeholders, museums, and schools, in order to foster and enhance mixed types of learning.

- Involve the community in the processes of collecting, interpreting, and reflecting on decisions and actions relating to them since the construction of the city, society and care for the environment are issues that concern every single person.
- The importance of deconstructing adult-centered actions and exploring the agency of vulnerable groups, such as children, elderly, native peoples, minorities, etc., for a more complex and wealthier socio-spatial development.
- The way in which collective artistic practices can be an efficient way to empower disadvantaged communities. Urban art projects can develop social relevance (through the visual and thematic content they produce and through the collective bond they create) and deliver important working principles for CS.
- To rethink the role of cinema in today's society, beyond entertainment, as a factor of critical thinking, of participation, and as a promoter of social relationships. The preservation of cinematographic heritage can be understood as critical citizenship.

Finally, the debates underlined the need to re-examine the philosophy and methodology at the base of each discipline. The awareness of these needs and the principle to return the results of studies and research to society calls for improving education and setting CS into a reflecting pedagogy, both reinforce the multidimensional nature of CS.

Operationalizing Citizen Science: the example of the Hackathon

CS in practice

In view of making this event both stimulating conceptually and theoretically but also practical and more lively, we decided to carry out a practical activity that would involve the participation and creativity of all. Since the CeiED is, above all, concerned with modes of learning, how these can evolve and under which circumstances, and how learning goes beyond educational science towards more interdisciplinary approaches (the CeiED is, indeed, the *Interdisciplinary* Research Centre for Education and Development), we focused on an activity where all of us would learn from each other. In our view, CS is mainly about this: improving our collective knowledge to improve decision-making in society (Vohland et al., 2021) and helping each other to improve our understanding of each other's' perspectives and needs.

The CeiED has not developed a specific CS method, or tool (yet). Contributory CS (Poisson et al., 2019), traditionally used in natural sciences, invites participants to provide specific discrete hard data (numbers, statistics) to contribute to overall research, for instance on biodiversity. In other cases, participatory GIS (Hacklay & Francis, 2017) can be used in which participants can provide on-the-ground information that cannot be collected otherwise very easily.

The literature on CS highlights the existence of various interpretations of what CS is about (Eitzel et al., 2017) and, also the fact that there is not one right way to carry out Citizen Science. However, as Heigl et al. (2019, p.1) have stressed, "*CS has amazing potential as an innovative approach to data gathering and experimental design, as well as an educational and outreach tool*". The CeiED aims to explore further how our research could contribute to CS and how we could use CS tools that already exist.

Table 3 gives an overview of terms that are being used during the practical workshop and will help the reader to get a better grasp on their meaning in the context of CS.

Table 3
Key terminology in the practical workshop

Term	Useful references	Description	Relevance for research in Citizen Science
Design thinking	Brown (2019); Razzouk& Shute (2012); Mueller-Roterberg (2018); NASEM (2018) www.sda.ac.uk	Design thinking is a non-linear, iterative process that teams use to understand users, challenge assumptions, redefine problems, and create innovative solutions to prototype and test.	Using design thinking is generally a participatory exercise and facilitates the exchange of knowledge, skills, expertise. It also allows the various participants to get to know each other and to understand different perspectives.
Divergent thinking	Brown (2019) and Service Design Academy https://asana.com/resources/convergent-vs-divergent	Divergent thinking involves creativity to generate ideas and develop multiple solutions to a problem.	The creative process encouraged by divergent thinking allows citizens to be open, to innovate, to take part in the creation of knowledge and to suggest policies and strategies.
Convergent thinking	Brown (2019) and Service Design Academy https://asana.com/resources/convergent-vs-divergent	Convergent thinking focuses on reaching one well-defined solution to a problem.	The narrowing-down process that characterizes convergent thinking helps to crystallize what, in the end, matters most and for whom, and to negotiate strategies.

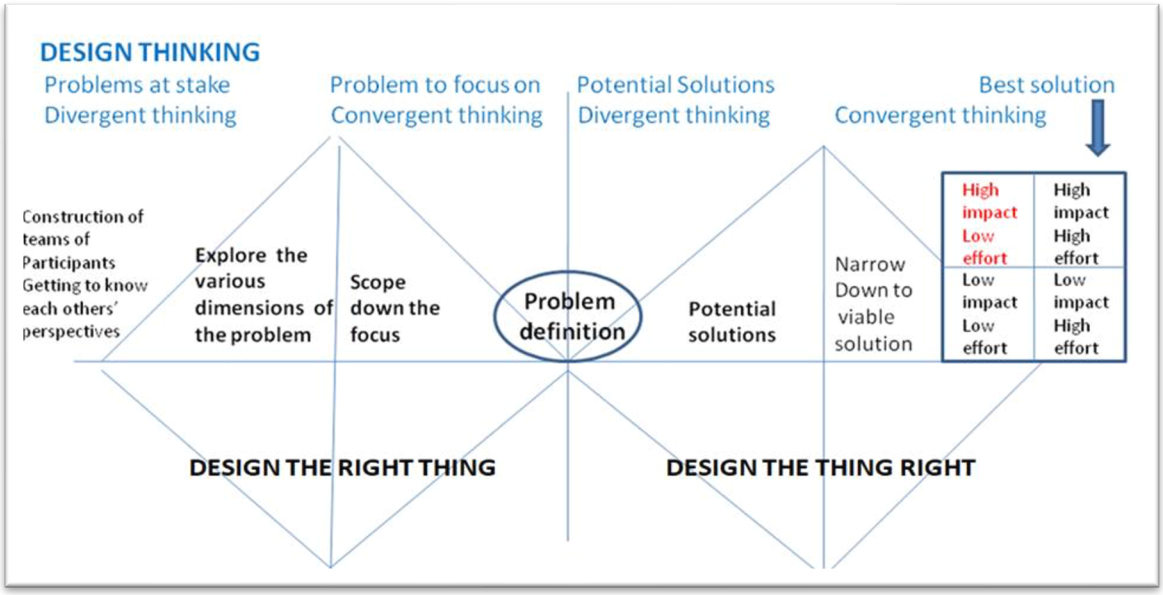
Methodology
The hackathon resorted to designing thinking methodologies and worked on concepts such as divergent and convergent thinking, leadership skills, the use of digital tools, and the ability to creatively present the proposals thought up by the participants for the problems they pointed out. Each team had the support of a facilitator, a member of the Organizing Committee, in guiding and supporting the various steps and tasks of the activity.

Design Thinking (Brown, 2019) can arguably, be considered one useful tool in CS. The use of Design Thinking (DT) (Brown, 2019) can help to identify which solutions could help to get out of a situation that seems to be going no-where by guiding how to both define a

problem (by refining its definition and understanding better various stakeholders' perspectives on this problem), and then, on how to identify a potential solution that responds to people's needs.

The Double Diamond model (Figure 1) derived from this is generally used to visualize the creation process in design thinking, namely, to grasp better the idea of how we move between divergent and convergent; first to understand the problem and then to create the solution.

Figure 1
The use of Design Thinking to identify a high impact – low effort solution.



Source: adapted from Brown (2019) and service design Academy (www.sda.ac.uk)

The idea behind this methodology is to carry out a participatory process that allows stakeholders to think of both many aspects of a problem and many solutions (through 'divergent thinking', where brainstorming sessions are encouraged and people are free to open their imagination), and also to identify which specific aspects of the problem people should focus on and why (this happens during the convergent thinking phase during which more focus is required and understanding from which perspectives solutions will be identified needs to be discussed).An alternation between divergent and convergent phases of reflection, facilitated around specific questions, then leads to identifying the solution with the highest impact and lowest effort.It is on this approach that we decided to start experimenting.

The importance of this practical activity is illustrated by the fact that an entire day was dedicated to it (a third of the workshop event). The idea was to work together on finding a solution to a problem.

Teams
The practice of CS in the 'hackathon' (practical workshop with a presentation of the results at the end of the day) was organized in interdisciplinary teams made of undergraduate,

master's and Ph.D students and CeiED researchers. Throughout the day, the teams worked around a challenge launched by the Organizing Committee, with the objective of choosing a problem in a given context and present respective proposals for solutions to an interdisciplinary jury in three minutes. The activity took place online due to restrictions imposed by the COVID-19 pandemic.

At the end of the day, each team presented the result of its work to a jury made up of experts in the three scientific areas that make up CeiED – Education, Museology, and Urbanism. The jury commented on the proposals and forwarded several recommendations derived from them to the University's management bodies and course directors so that the voice of the participants was considered in the decisions for the following school year.

The challenge

The scenario we suggested our participants to focus on (and extract a problem and derive a solution from) is presented in Frame 1 below. We wanted to make sure that our students could relate to it, have various perspectives on it, and would be able and willing to work on it.

Frame 1

Scenario selected for our participatory activity

Challenge: the so-close/so-far dilemma

Many months have passed since the beginning of the COVID-19 pandemic, the successive confinements, and de-confinements and the abrupt leap to online education that we were forced to make. We are now experiencing a phase of progressive return to face-to-face activities, although we have to maintain a physical distance that the pandemic has imposed.

This dilemma forces us to rethink how we live together and share common spaces, like the university campus, for example. While we have developed strategies for teaching and learning with various online tools, the college campus experience continues to be important to the academic community. It is equally important that we take advantage of all the potential technological tools have to offer.

Within higher education, face-to-face and online approaches need to be carefully balanced so that the experience is enjoyable, productive, reflexive, and social. These precious years also need to encourage students to gain individual and professional confidence as they find their place within the young adult community and progressively build a professional network.

While it is possible to learn at a distance, individually and even collectively, aren't we missing some important dimensions arising from the experiences of «physically learning together»? What will be the new role of the university campus as a physical space in this new context of return to presence? How can we make new uses of this space? How does it mediate the various needs of students - those we have long been familiar with and others that may have emerged from the COVID-19 crisis?

Through this hackathon, we are invited to reflect on the various problems that going back to the university campus raises. We will work together to formulate creative and innovative solutions that can help give new impetus to how we use this physical space that welcomes us as members of a broader learning community.

We will exercise our creativity in small interdisciplinary teams, including undergraduate, masters, and doctoral students, with the aim of putting into practice participatory research

processes in citizen science but also highlight how collaborative research can strengthen our creative capacity, and the opening of mind to the new and the multidisciplinary identity of CeiED.

Guidelines and expected outcome
Some of the guidelines given to support creativity, divergent thinking, and generating lots of ideas included:

- Developing other people's ideas by starting to accept them and investigating possibilities to combine ideas.
- Actively listening to create opportunities to build and elaborate.
- Working on the basis that, to start with, 'more is more'; in the first (divergent) stage - it's all about quantity and it is important to focus on getting as many ideas as possible, rather than striving for really "good" ideas.
- Postponing judgment by suspending inner criticism and resisting the urge to evaluate ideas as soon as they appear. It is important, at that stage, to let the ideas flow and consider them all valid. Analysis time is for later.
- Remembering that the team is everything and therefore making full use of all potential, ensuring that every team member is included.

The expected outcome, out of this process, was twofold. Firstly, we wanted each team to collectively formulate a proposed solution to the problem they selected in the context of the proposed challenge. Each solution was presented to the jury, at the end of the day, in three minutes. Secondly, we also wanted to explore how such a participatory process could work and what lessons could be learned in the context of research on CS and research using Citizen Science.

Students were invited to connect to the conference zoom platform to communicate orally as well to a MURAL platform (resembling Figure 1, allowing people to enter the text as if they were writing on post-its and placing them on a wall during a workshop) to write down their thoughts and suggestions. Each team had its page on the MURAL platform – the interactive work platform where they found information for each process phase.

Results
The tables below summarize the results of the work developed by the different teams themselves, based on the challenge launched:

Table 4
Results Teams 1

	Team 1
Problem	There is a lack of socialization with equity, considering the physical and social distances and the different needs involved.
Proposal	Develop a support network for the technological transition, so that you can become familiar with the different digital platforms and have a virtual environment for interaction by video call, with scheduling for groups.

Benefits	The trait of innovation and understanding of social and cultural differences associated with emotional intelligence as a way of offering interaction through digital platforms, enhancing the use of digital tools, re-establishing social skills.
Competitiveness	Some constraints: Access to digital media; Lack of training for the use of digital tools.

Table 5
Results Teams 2

	Team 2
Problem	Social exclusion at the university in the face of new contexts.
Proposal	Greater solidarity among the university community and economic support for the most vulnerable people. For example, expand the help already provided. The most important thing is to contribute with technological literacies, carry out campaigns to collect food, clothing, make monthly payments more flexible, and help with access to technology.
Benefits	Time for students to organize themselves in general terms, improving their daily lives and adapting to the new social context.
Competitiveness	The team did not comment on this issue.

Table 6
Results Teams 3

	Team 3
Problem	How to guarantee the safety of groups on campus, and maintain a quota of physical presence, of students and teachers, during the school year?
Proposal	. Conduct lectures with students, faculty, and staff. to contribute with their testimonies, on the importance of vaccination. . Raise awareness of the importance of complying with hygiene and safety rules, so that everyone can physically be in college. . Give hygiene and safety kits to students. . Give an incentive in the tuition fee to students who get vaccinated and provide proof of the same, for example 5% of the tuition fee, and that a part of this amount, for example 2.5%, reverts to the fund for vaccination in the PALOPs. . Guarantee a minimum quota of face-to-face classes for those who can attend classes physically, depending on the state of the pandemic.
Benefits	. Education on the problems; . Increased level of trust and security. . Contribution to increasing collective well-being within the university.
Competitiveness	The team did not comment on this issue.

Table 7
Results Teams 4

	Team 4
Problem	How can we get back together at ULHT?
Proposal	. Facilitating the mobility of foreign students: Develop ULHT's interaction with the Ministry of Foreign Affairs and other entities to speed up student mobility. . Respect physical distance needs: Delimit the number of students per square meter. Alternate class days according to each training area . Disseminate information about health care: Post information boards in strategic places. Promote debates on new forms of contact. Improve common hygiene spaces . Implement more friendly procedures in the administrative and academic fields: Improve student service. Expand dialog channels
Benefits	The team did not comment on this issue.
Competitiveness	The team did not comment on this issue.

Table 8
Results Teams 5

	Team 5
Problem	Insecurity
Proposal	Provide accurate and scientifically correct information on bios security measures to address the issue of insecurity for the entire educational community. Raise awareness of the risks and the need to adequately address the pandemic. Improve communication within the school community. Increase the adhesion of the educational community to the return of school activities. Reducing the emotional impact of the pandemic.
Benefits	Avoiding the impact of COVID-19 transmission for the healthy permanence of educational activities.
Competitiveness	The team did not comment on this issue.

Note that the information given in Tables 4-8 was provided by the teams themselves and that the 'competitiveness' component – which really referred to constraints – was only addressed by Team 1. We do feel that the term '*competitiveness*' suggested by the methodology was somehow unclear.

Lessons learned

The collective activity took the whole day, including the presentation of results to the jury. It was a very rich experience that students enjoyed because their opinion was valued and because teams took time to know each other and to understand each other's perspectives. The challenge proposed for the hackathon and the work methodology used was intended to provoke the participants to extrapolate the barriers of the predictable and imagine possible and viable futures for the use of the university campus. At the technical level, it required the simultaneous use of two work platforms, one of which was never used by them. In terms of teamwork, it was necessary to listen to and respect different opinions and reach a consensus in choosing the problem to be worked on and its respective intervention proposal. To all these requirements, we must add the time management of tasks, which must be fulfilled.

Considering this scenario, we noticed difficulties in achieving the proposed objectives, namely in the innovative nature of the proposals, which in general remained at the predictable level, in the context of the personal difficulties of the team members and existing interventions, very focused on the immediate fight against the pandemic. It is possible that the different types of activity requirements, specifically those of a technical level, and the short execution time, influenced these results. On the other hand, another possibility of interpretation can be evoked: our concrete actions are conditioned by the work methodologies of our area of training and performance. In Education, one issue discussed by participants in the activity, the «time-lapses» are longer, and the conceptual changes envisaged over the long run are more difficult to imagine, given the relatively crystallized nature of the effectiveness of educational models in societies and the necessary critical reflection around new educational models and contents.

Despite a few difficulties in carrying out the practical exercise, several positive outcomes should be highlighted. With the hackathon, we witnessed an exercise in the simultaneous mobilization of different skills, from the use of digital tools, the ability to take leadership initiative, to reflect on a current topic, to present intervention proposals in reality, taking a more active and critical stance, and making the voice of students heard.

The role of the facilitator proved to be crucial since negotiation is key to the whole process: people need to learn to clarify their statement(s) and idea(s) and to ask other people to clarify theirs, if needed. Also, even though the mural is quite intuitive and easy to use, this mode of operates is not familiar to everyone and occasionally needed to be further explained. Interestingly, creativity requires time – sometimes more than expected, since people are less used that one would hope to open their imagination and come up with 'as many ideas as possible'. Self-imposed constraints or else constraints imposed by society or others, often limit the range of options and scenarios one could imagine or hope for. Developing the 'divergent thinking' phase, whilst staying focused on the issues at stake, is an exercise itself. 'Converging' seems more in our habits, even though both selecting one specific problem and then, later, one specific solution, still presents its own difficulties – notably that of remaining within the remit of the scenario originally presented.

There is, of course, a high level of subjectivity both in the reduction of all inter-connected problems characteristic of the presented scenario and in the presentation of potential solutions and the selection of the high-impact / low-effort solution. Further research could be carried out to better document these choices, and, of course, a citizen project would not, a priori, exclude this.

Conclusion

The 11th 'Encontro' of the CeiED researchers, which took place in July 2021, focused on learning and the (co)creation of 'knowledge' and chose to do so by exploring to what extent research being carried out at the CeiED does relate, could/should relate, and might contribute to research in an emerging field – that of Citizen Science. Since CS focuses on various forms of participation of citizens in the construction of knowledge, the scientific research process, and even on the policy impacts, exploring it further in the context of research on education, museology, and urban studies makes perfect sense.

To some extent, introducing this idea in a meeting primarily targeted at graduate, master, and doctorate students was important too: it attempted to empower further young researchers who belong to a generation who is so respectful of the education system and experts behind it that it hardly dares questioning it. Yet, both educational structures and how knowledge is being approached need reforming.

The context in which we are working is one within which online learning and exchanges, digital tools, and open-access abundant information are in use and circulation. In our view, working at identifying clear objectives concerning the ethics and scientific rigor behind the construction of knowledge, as well as constructing co-operative tools (Herodotou et al., 2018) to identify the objectives behind the construction and use of knowledge, deserve special and careful attention – a whole new research agenda, indeed, both in formal and informal educational settings (Mitchell et al., 2017; Hitchcock et al., 2021).To this end, generating a dialogue between theory and practice is crucial since it values a type of knowledge that is 'experienced', contrary to expert, 'generalized' knowledge that occasionally drifts away from the 'true, gritty reality'. CS can help in doing so, and so do the three areas of CeiED – education, museology, and urbanism – which, despite their diversity, all point to topical and urgent areas for the 21st century: social learning, creativity, and the co-creation of public spaces.

Although we agree with the fact that "the future of how CS will be integrated into education and learning will continue to be influenced by globally-accessible digital platforms" (Roche et al., 2020:7), the outcomes of the conference we organized (both from a theoretically and from a practical perspective) taught us that the challenges presented by the COVID-19 pandemic on learning and the creation of knowledge go well beyond this. At the heart of it is the question of whether students, through becoming more autonomous learners throughout the COVID-19 pandemic, aspire to be more independent and individualists or whether they value 'communities of learners, the power of negotiation and of cooperating in learning and, ultimately, the extent to which they believe that what they learn at university must realistically emerge from the collective co-creation of knowledge.

Keeping an overview on research in CS that is contextualized, critical and interdisciplinary has been the editors; objective of a comprehensive book on CS (Vohland et al., 2021). Herodotou et al. (2018) put a special emphasis on iterative processes observed in learning processes developed through CS. Simon et al. (2022) focused on identifying

research pathways in CS. Furthermore, Schaefer et al. (2021) helped understand the difficulties in evaluating the outcomes and processes of CS, itself a 'moving target'. More than ever, CS allows us to remind ourselves that learning, knowledge, and education are not static and that, instead, they constantly evolve as triggers to, or consequences of, societal changes. The critical lesson to capture from this is that higher education needs to ensure that it becomes more flexible and receptive to such changes to facilitate the co-creation and the recognition of up-to-date and 'inclusive knowledge'.

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Reimagining Education: Restore, Rebuild, Curate, Uplift, and Celebrate

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In this paper, a principal and two lead teachers describe the ways their school community has reimagined the learning environment at their NYC urban, public, K-5 elementary school throughout the COVID-19 pandemic. In March 2020 they were forced to immediately switch to fully remote learning, a platform they had never previously experienced. Since then, they have engaged in hybrid and now fully in person learning through a worldwide pandemic. The school community, whose focus before the pandemic was on social emotional learning and culturally responsive pedagogy, utilized those practices and the strong relationships between staff, students, and families to persevere. The pandemic disproportionately impacted communities of color, like the one this school community is located in. Other inequalities such as food insecurity, job loss, sickness, financial strain, and death impacted the community. Racial trauma and political unrest that was exacerbated during the pandemic also placed a toll on the school community. The staff, families and children of the community joined together with a mission to support one another, strengthen relationships, practice self-care, address trauma and crisis, tackle unfinished learning, and focus on celebrating the community wherever possible to find joy, survive and thrive.

Introduction

In this essay we examine, as leaders and educators of a small urban, Harlem, NYC elementary school, our collective approach to reimagining the learning experience we provide for our school family. Operating currently in year 3 of pandemic schooling that started with fully remote learning year 1, hybrid remote and in person instruction year 2 and fully in person learning this school year, our approach is in a constant state of evolution. The COVID-19 pandemic shed a harsh light on the disparities that exist for many students across the nation, specifically in the community we serve. In Harlem, as in other similar communities across the nations, the long-term effects of sickness, loss of income, anxiety, trauma, stress, death rates, grief, depression, and racial unrest, have impacted communities of color in disproportionate ways (McPhearson, Grabowski, Herreros-Cantis, Mustafa, Ortiz, Kennedy, Tomateo, Lopez, Olivotto & Vantu, 2020). City and state education leaders increasingly encourage and promote trauma-informed practices that support the social-emotional development of students and families. During this 3rd year of pandemic schooling, while educators are experiencing the effects of their own burnout and fatigue, we are experiencing the need to not only address the unfinished

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learning our students have experienced but also the need for social, emotional, mental health and wellbeing supports, not only for the students but for the adults who care for them inside and outside of school. Through a collective and collaborative process that included surveys, virtual town hall discussions, PTA meetings, faculty meetings and student discussions, we created an approach to learning that curated our best practices and those we researched to provide a reimagined learning experience that centers the student, and resulted in an uplifting their cultural identities, allowing for joy and celebration and fostering relationship building while we addressed unfinished learning and a wide variety of individual academic needs.

The idea the following sections highlight what we put in place that contributed to our students' social emotional well-being and learning. There are 3 tenets we uncovered while working as a team on the ways we would support our students. We have summarized them in the following paragraphs.

Social Emotional Learning: Our inspiration

In more recent years, there has been a movement towards ensuring that social emotional learning is grounded in a culturally responsive approach so as not to cause additional harm to students through the use of SEL as a method for behavior control. SEL is actually a way to encourage, not suppress effective expressions of emotions. Social emotional learning that centers culturally responsive practices allows for a deeper connection with students that connects to their identities and socio-political contexts in order to teach them SEL competencies with cultural sensitivity (McCallops, Barnes, Berte, Fenniman, Jones, Navon & Nelson, 2019). Our school leader decided, in collaboration with a lead teacher, to begin addressing the well-being concerns of our students, staff and families 10 years ago through the piloting and implementation of the RULER Approach from Yale Institute for Emotional Intelligence as a schoolwide practice and expectation. Over the years we have supplemented the SEL practices with mindful practice, Yoga and an integration of SEL with our culturally responsive instructional focus and school culture. A trailblazer in social emotional learning (SEL), physician, psychiatrist, founder, and chairman of the School Development Program (SDP) at Yale University, current Maurice Falk Professor of Child Psychiatry at Yale, James Comer began his work in SEL in 1968 at Yale University. Around that time, he developed the "Comer Approach" which placed the collaboration of students, families, teachers, and administrators at the center in advancing the outcomes for students. The approach was born out of his knowledge of child development and with the community and family at the center, his approach focused on the holistic support of the students as a basis for their learning experience. The approach, which is the foundation of much of the current SEL movement, created relationships between educators, their students, and their families in the social and emotional support of the students. Under these conditions, a sense of connection and belonging is fostered. This being the ideal environment for students to thrive academically within (Roach, 2013). Goleman (1995), defines emotional intelligence as the ability to recognize and identify emotions, recognize, and regulate emotions where necessary, ultimately resulting in an ability to express them effectively which impacts their relationships and experiences with others.

Camangian & Cariaga (2021) ask us, "Are we teaching individual students to manage their emotions and behaviors simply for the sake of upward mobility or are we teaching students to recognize and re-claim their emotions and relationships as fuel for political inquiry, radical healing, and social transformation (p. 16)?" In response to this question, we believe we are delivering to our students a life skill and an ownership over their

emotions and relationships that will allow them access to joy and success. We are providing our students a path to healing, strategies to manage life's daily stresses, and the ability to experience positive relationships and connections with one another through self-awareness, empathy and belonging.

Cultural Responsiveness: Our Muses

We employ a culturally responsive approach to learning at our school that lives within all fibers of our school culture and the learning experience we provide. Over the years we have utilized the work and wisdom of the scholars and research-based practices to help build our knowledge as educators on best practices in CRSE. Our school was opened in 2005 through the vision of Dr. Calvin O. Butts III. Dr. Butts' vision was that students should experience models of excellence in leaders, artists and characters that looked like them to provide them an increased positive self-concept that would combat the negative imagery they were exposed to and instead access to success and achievement. The founding principal of our school Dr. Sean Davenport executed this vision through leaders and artists of the month of color, CRSE curriculum, poetry, and the arts. As when the school began, students still participate in daily culturally responsive rituals and routines, such as reciting Langston Hughes and Maya Angelou, reciting their school creed and sharing positive affirmations. Current principal Dr. Dawn Brooks DeCosta, has continued the vision and legacy through arts partnerships, professional development for staff in culturally responsive pedagogy, continued curriculum enhancements, culturally responsive texts, and the integration of social emotional learning. She also engages a variety of community based partnerships that maximize and enhance the learning experiences for the students such as urban farming and plant based cooking with Harlem Grown, culturally responsive STEM lessons with Yvonne Thevenot's NYC STEM Kids, an expanded school day through their community based partner SoBro and arts education through The Studio Museum in Harlem and the Museum of Modern Art. Dr. DeCosta also regularly opens the doors of the school to share practices with school leaders across the globe who wish to learn about CRSE and SEL in action. She is currently supporting a cohort of schools through her Culturally Responsive Social Emotional Leadership (CRSEL) framework in collaboration with Harlem Community School District 5 and the Harlem Renaissance Education Pipeline and has led a nationwide webinar series on the same topic with one of the school's beloved partners in mindful practices and brain breaks, Pure Edge Inc. Currently, staff are regularly engaged in article and text studies around CRSE to build their repertoire. Staff and students have engaged in critical self-reflection around race and identity. Parents have also participated in culturally relevant family projects and a book study, as did the staff, of Dr. Gholdy Muhammad's Cultivating Genius. Dr. Muhammad's Historical Literacy Framework is what is used in literacy lesson planning. The staff are currently utilizing research to construct a culturally responsive social emotional math curriculum through a grant from the DOE Office of New School Design led by a co-author of this article Michael Cornell, the school's Math and Technology Lead and 5th grade teacher. All classes participate in monthly culturally responsive schoolwide writing tasks, and all utilize culturally responsive texts in their classroom libraries. One of the authors of this article Danica Goyens Ward who was mentored for 2 years by Dr. Gholdy Muhammad, serves at the school's Peer Collaborative and Culturally Responsive Lead Teacher and Mentor, supporting school staff in the implementation of CRSE through a lab classroom.

Gloria Ladson-Billings, coined *culturally relevant pedagogy* based on her research study a work of teachers in the early 1990's. Using culturally relevant texts and culturally competent lesson planning approaches, Ladson-Billings explained that teachers used the

culture of the students as "a vehicle for learning" where parents and family members engaged to share their "cultural knowledge" (1995, p. 161). In her own evolution of the concept she coined, Ladson-Billings encourages us now while we exist in this pandemic, to, "pursue a new vision of what it means to educate all students" (1995, p. 170). In her Culturally Relevant Remix 2.0, Ladson Billings (2021) charges us to move beyond instruction that is culturally relevant but culturally sustaining and ever evolving. This remix reimagines how we can amplify student voice and encourage that they actively question the perspectives, policies and practices that directly impact their lives. Ladson-Billings (2021) encourages us to continue to "remix" the approach to effectively meet the continued evolution of student needs and experiences. Geneva Gay's (2018) definition of culturally responsive pedagogy is "using cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning encounters more relevant and effective for them" (p. 29). This attends to the intellectual needs of the students while also attending to the need for an identity-centered focus. Hammond (2014) went further to identify "affirmation and validation" as part of her Framework for Culturally Responsive Teaching. She noted in the framework the need for building a "sense of self-efficacy, positive mindset, reducing social emotional stress, providing care and a push, building a socially and intellectually safe environment and using a restorative justice frame" (p. 17). The work of these scholars is even more relevant today as we work during a time of crisis. We strive to stay focused on what students need most, even more so while anxiety, stress and uncertainty have become a part of the daily experience.

Combating Racial Trauma: A Motivation to Empower

Recent incidents of racial unrest as well as the pandemic, heightened the levels and our awareness of racial trauma in our students. The murders of Breonna Taylor, Ahmaud Arbery and George Floyd, the riots on January 6th and the repeated images that were regularly played through media during a time where staff, students and parents were home for remote learning, resulted in trauma and pain. Students were in search of answers to what they were seeing and hearing. One 5th grade student asked after a racially biased incident he experienced in a local restaurant, "Why do they hate us?" As educators and parents, we were also traumatized by the events, compounded by years of similar incidents without a sense of justice. We needed tools and strategies to discuss race in developmentally appropriate ways for our children, ways to discuss discrimination, racial violence and oppression and an outlet for our school community to process and express the emotions they were feeling and their hopes for change. We utilized resources from PBS Kids, Learning for Justice, the Morningside Center for Social Responsibility and platforms for community expression and sharing such as Flipgrid. We provided our students with the truth, with compassion and empathy while we allowed them to share their pain, their confusion and hopes as we shared ours, and this provided us with an optimism that we could be agents of change. Prior to these incidents, through our curriculum, rituals, and routines, we were already grounding our students in their identity, finding joy and connection in their heritage and knowledge of diverse cultures which provided them the positive self-concept that would shield them from some of the harm of racial trauma. This is in direct correlation with what Ladson-Billings (2021) advocates which is for educators to provide opportunities for students to question and resist the policies and practices that marginalize them. This is healing for our students, staff, and families. Liu & Modir (2020) assert that one "significant protective factor against racial trauma is cultural identity, or a positive sense of oneself as existing within and belonging to a certain culture" (p. 440). This research correlates with the students' positive self-concept that we foster at our school and how this focus on cultural identity and sense

of belonging provides some level of protection for our students against racial trauma. Each year, all classes participate in schoolwide writing tasks, where they learn the developmentally needed writing skills for their grade levels through studying and writing about topics that infuse social justice. Two of the schoolwide 4-6 week units include one called The Future of Black Liberation where they learn about movements from African Americans and others toward the efforts to fight against injustice through activism, scholarship and the arts. Another unit is Children as Revolutionaries: Youth Activism, which engages the students in the awareness of young people utilizing their voices in social justice issues such as racism and climate change.

French, Lewis, Mosley, Adames, Chavez-Dueñas, Chen & Neville (2020) discuss "radical healing" as rooted in "identifying the ways people thrive and become whole" through "Liberation psychology" which "centers the struggle of oppressed individuals in society". The encouraging news that informs our practice in focusing on social justice learning is that the healing process also requires "active resistance" (p. 20).

How Our Students Learn

As we press forward through pandemic schooling, continued uncertainty, working within a system where extreme creativity is required to build connection and relationships through face masks, desks in rows and social distancing, combined what we are learning about how students learn best through a multifaceted approach. Understanding how to address unfinished learning, stress, anxiety, social emotional disconnections, racial and personal trauma while attempting to create an environment where students, staff and families can still experience joy is no easy feat. Linda Darling Hammond (2021) outlined in a Forbes article on accelerating learning, the key components needed to address unfinished learning which included: relationship building, allowing students to construct their own knowledge in their social emotional, socio political and cultural contexts, physical activity, joy and self-expression. Darling Hammond (2021) also emphasized the need to care for students' self-perception of their own abilities during this delicate time where they are working to catch up and needing to feel self-esteem in that process. The need for schoolwide healing daily can be found in moments of joy and celebration. We utilize this learning from Dr. Darling Hammond by engaging our students and staff in daily guided meditation, mood check ins, affirmations, and yoga. We celebrate publicly, lessons that build connection through CRSE and SEL, staff and student achievements, artistic and innovative practices and moments of student, staff and parent agency with our school and wider community. Practices that fill voids, that are healing centered and connected to real world experiences are a key part of our approach. Through a partnership with Systemic Transformation of Inquiry Learning Environments (STILE) and Teachers' College Columbia University, classes are engaging in real world project-based learning where they are practicing being active changemakers in their community. Students need daily learning experiences that are culturally affirming, opportunities to amplify their voices, and creative in building relationships and belonging through celebrations of identity. As a school community we center the voices of our students through identity reflection and student leadership as self-awareness leaders and student council, our teachers and support staff through leadership roles and collaborative decision-making opportunities, our administrators through professional development and collaborative systems and structures and our families through support groups, self-care tools and an open line of communication. We share our individual and collective needs, hopes, fears and dreams for the culture of care we want for our students. We created a process and approach to learning that is ever evolving and adapting to the needs of the community.

We operate as a family, working through challenges to meet everyone's needs with love and a culture of care.

The subsequent sections outline our approach as we faced schooling during a worldwide pandemic. We took the 3 tenets mentioned above, social emotional learning, cultural responsiveness and combating racial trauma through empowerment and created a series of approaches, structures, and systems at our school to meet the needs of all stakeholders in our school family while learning through a pandemic during remote, hybrid and in person learning. We have developed 3 "solutions" that we will continue to utilize post pandemic that allowed us to continue striving towards our aspired vision of excellence, care and belonging for all members of our school community. The solutions include the following: **Solution 1**-Reimagine the learning experience through the curation of new school wide policies and instructional practices, **Solution 2**-Reimagine ways to thrive by engaging in joyful, culturally affirming, culturally responsive, anti-racist learning experiences, and **Solution 3**- Reimagine supports through relationship building, self-care, mindful practice, trauma informed health and wellbeing.

Solution 1 - Reimagining Learning Experience: Curating New School Wide Policies & Instructional Practices

The instructional practices at our school sit at the intersection of best practices in instruction and culturally responsive teaching and learning. We use a guided release model that includes the following components in sequence: "I Do" - this occurs at the beginning of the lesson when teachers explicitly model a new concept, skill or strategy; "We Do" - where student discourse and teacher facilitation around that new concept, skill, or strategy take place; and "You Do" - where students work independently with the new concept, skill, or strategy as teachers informally assess, asks probing questions, and check for understanding (Hunter, n.d.; Schmoker, 2018).

The impact of these research-based practices in instruction is amplified when couched in culturally responsive contexts that reflect students' identities, histories, and experiences. Therefore, our school integrates Dr. Gholdy Muhammad's (2000) HILL model into which includes the 4 pillars of histories, identities, literacies, and liberation. In integrating this model within daily instruction, our teachers consider the following pursuits: Identity, students' knowledge and affirmation of self and others; Skills, students' content area skills and proficiencies; Intellect, students' knowledge put into action; Criticality, students' understanding of oppression, equity, and anti-racism; and Joy, students' connection to joy within themselves or others. For example, in a fourth-grade literacy unit that studied living legends, students engaged in textual analysis and learned to cite evidence using a text that centered on Supreme Court Justice Sonia Sotomayor. Integrated with our gradual release model, the lesson rooted in the HILL framework expected the following outcomes of students consistent with the five pursuits mentioned above: Identity, "I can name Sonia Sotomayor as the first Puerto Rican Supreme Court Justice;" Skills, "I can cite text evidence that proves this fact from the book *National Geographic Readers: Sonia Sotomayor*;" Intellect, "I can learn about challenges and life in the city;" Criticality, "I can recognize that poverty can be connected to crime in neighborhoods;" and Joy, "I can learn how working hard towards a goal can give me joy." While this model is rooted in research-based best practices and reflects students' identities, histories, and experiences, additional supports beyond whole-group instruction are necessary to provide the highest quality education accessible to all students.

Therefore, within our blocks of instruction, we follow our gradual release model with small groups and time for reflection and sharing out. During small groups, teachers provide additional instruction and differentiation that may look like providing students multiple entering points into the same grade level texts or word problems, using various evidence-based scaffolds such as graphic organizers or process charts, and reteaching by breaking down the new concept, skill, or strategy into manageable chunks. Our small groups can be organized around various skills and strategies, or they can be based on mastery of standards. At the end of the instructional block, students have the opportunity to reflect on what they have learned and shared out. This helps students synthesize their understanding and create a culture of continuous learning from each other.

To be strategic with our groupings, we diligently monitor progress over time using various informal and benchmark assessments. (William, 2011). This can take the form of informal checks for understanding based on anecdotal observations and student discourse, exit tickets, performance tasks, and other forms of student work. Our benchmark assessments that are conducted three to four times a year in ELA and math provide comprehensive diagnostic data on student mastery of grade-level standards. Based on analysis of this data using an adapted data-driven protocol (School Reform Initiative, 2002), faculty determine how to best plan instruction and organize their small groups to meet the needs of all their students.

In addition, our school engages in a cycle of six-eight weeks, where teachers focus on a standard that data indicates needs to be mastered by the whole class or grade. These efforts run alongside our daily instruction and provide additional supports to students to master essential standards that are foundational to their respective grade. Faculty on grade-level teams analyze student work and collaborate on a bi-weekly basis throughout the cycle to identify student strengths and successes, errors and conceptual misunderstandings, the learning opportunity to advance student thinking, and an action plan rooted in research-based strategies to move student learning forward.

Supplementing these layers of support, our faculty collaborate with student teachers and other professionals to provide tutoring and extended learning time (ELT) at the end of the typical school day. The student data informs this work and provides us with a strategic approach to support unfinished learning.

It should also be mentioned that supporting students' learning is a partnership between the school and families, where each stakeholder has unique perspectives and strengths that are maximized when working together **(**Friend & Cook, 2010; Gestwicki, 2010**)**. Therefore, the school leadership and faculty communicate what students are learning and how they are performing on a regular basis. This is predominantly done through a school-wide digital communication platform; however, we also communicate with families via phone calls, text, email, and video conferencing, in addition to sending home monthly progress reports. Yet, student data, learning, and progress is not only discussed by the school and families, but also with the students as well.

It is important for students to understand their current status and progress with their achievement so they can set goals and take responsibility for their learning. Faculty regularly discuss students' data with them based on a variety of measures, including benchmark assessments, performance tasks, and focus standard work. Students maintain a data folder that is reviewed frequently throughout the school year. Students continuously analyze and reflect on the data, set goals, and monitor their progress. At

times, students also determine the steps needed to improve and advance their own learning.

This further establishes a classroom culture of continuous learning, which is also evidence in our approach to project-based learning and creating opportunities for real-world connections. Our classroom culture is also rooted in relationships and social-emotional learning. When students are valued and their experiences are validated, they are better able to learn and form healthy relationships with each other. At times, when interactions become difficult, we prioritize reflection and restorative practices to help students develop their social-emotional competencies and maintain harmonious relationships.

With COVID, we have had to be flexible and creative with how we implement the essential aspects of our instruction and learning experiences. Our school has made shifts to determine priority learning based on foundational grade-level expectations, incorporate technology to create digital learning environments and enhance communication and collaboration, and ensure social-emotional and culturally responsive learning drive our efforts.

Solution 2 - Reimagining Ways to Thrive: Engaging in Joyful, Culturally Affirming, Culturally Responsive, Anti-Racist Learning Experiences

Race may be a social construct. However, this idea does not make the effects and implications of a racist society any less real or harmful for Indigenous, Black, and Brown people. How can we live and thrive in an environment that is not consistently inclusive of our culture and identities? To do so, educators must reimagine ways that both students and teachers can thrive within learning and teaching settings. First, as school leaders we must consider our own racial autobiographies and narratives before we can begin to understand the diverse narratives of our students. We must begin to shovel deeper into our own past before we advise our students to start shoveling. As educators, we question the ways we might connect to what students may surface. How will we help young people reason or understand what they may find on this cultural excavation? Dr. Mark A. Gooden at Teachers' College has stated that writing a racial autobiography helps principals surface unexamined meanings of race personally and its impact on school leadership and America by increasing awareness of race, building community within and beyond the school, and taking anti-racist action to change structures (Gooden, 2021).

Culturally responsive and sustaining education is a cultural view of learning and human development in which multiple forms of diversity (e.g., race, social class, gender, language, sexual orientation, nationality, religion, ability) are recognized, understood, and regarded as indispensable resources of knowledge for rigorous training and learning (Peoples, Bolisetty, 2022). After reading the previous statement, one may conclude that the curriculum was not previously responsive or sustaining which may imply that education has been harmful to the students of New York State in the past. For these reasons, CRSE practices are a step towards acknowledging and addressing the systemic inequities that continue to impact Indigenous, Black, and Brown peoples of the world.

Empirical studies find that teachers who center students' culture in the classroom by promoting high expectations, cultural competence, and critical consciousness improve student academic achievement, capacity for critical thinking, empowered racial/ethnic identity, civic activism, and overall school experience (Arsonson & Laughter, 2016; Martell, 2013; Aldana et al, 2012; Thomas, Davidson, & McAdoo, 2008; Byrd, 2016). Culturally relevant teachers raise students' critical consciousness by addressing issues of social justice and racial inequality in the classroom. Through a culturally responsive

approach, teachers may encourage students to identify problems in their communities and discuss ways to address them. Teachers acknowledge societal oppression and encourage students to notice how those dynamics are evident in their everyday lives. Teachers trained in culturally responsive and sustaining education may empower students in the classroom and give students opportunities to participate in decision making that is relevant to their lives and experiences (Byrd, 2016).

There are research-based frameworks which support culturally responsive and sustaining pedagogy. One of these frameworks is Gholdy Muhammad's Historically Responsive Literacy framework referenced earlier. Muhammad's framework uses skills and proficiencies interchangeably to denote competence, ability, and expertise based on what educators deem to be important for student learning in each content area. Skills and intellectualism are separate facets when modeling this approach in the classroom. Knowledge and intellect, the third layer of this approach includes what we want students to become smarter about, not decoding and fluency which are reading skills. Another way to differentiate is that skills are typically found in curriculum and learning standards, and intellectual goals are derived from the content of the text. The fourth layer of this CRSE approach is criticality. This layer focuses on the ability to read print and non-print text with a lens of understanding how power, oppression, and privilege are present. A push for criticality in learning standards is helping young people, including those from backgrounds that may be historically marginalized, to investigate perspectives from marginalized standpoints (Muhammad, 2016). Classroom teachers must integrate the identities, intellectualism, and criticality of their students while supporting students in achieving proficiency of literacy skills in all content areas of instruction.

In this climate of high stakes testing and accountability, both visual arts and social studies often are marginalized in the elementary school curriculum (Samuels, 2019). Teaching and learning in these areas typically are not provided adequate instructional time in the elementary classroom and because social studies is not included in the testing agenda in district and state standardized tests, elementary teachers are choosing to spend time teaching other skills that will boost test scores (Burstein, Curtis, & Hutton, 2006.) In summary, it is imperative to model interdisciplinary instruction that includes a culturally responsive approach to provide adequate instructional time in elementary classrooms. Students who are already in marginalized positions do not deserve marginalized content or instruction. Thematic units of study and project-based learning can support teachers in meeting this instructional challenge. Teaching thematically inspires greater intellectual curiosity, promotes deeper engagement with the past, and empowers students to find their own answers to the problems of society. Thematic teaching is about students actively constructing their own knowledge, drawing on real-life experiences and incorporating issues of social justice that they face in their everyday lives (Samuels, 2019).

Solution 3 - Reimagining Supports: Relationship Building, Self-Care, Mindful Practice, Trauma Informed, Health and Wellbeing

Social and emotional learning (SEL) programs in our school focuses on developing a wide range of students' interpersonal, self-regulatory, and emotional competencies. We utilize mindfulness-based SEL programs that aim to develop these competencies through the cultivation of children's ability to pay attention to the present moment with curiosity and nonjudgment (Bakosh et al., 2016; Kabat-Zinn, 2003). Mindfulness-based SEL programs are increasingly being used with children and adolescents to support a range of health, academic, and social outcomes. This is an approach that is widely modeled at our school. Classroom teachers often begin with SEL goal setting. This is one pathway to students

developing a growth mindset. It is important for teachers to support students in expressing emotions and solving conflict in ways that are appropriate to themselves and others around them. Taking a brain break is another strategy that can support students in maintaining an emotional balance in the classroom. Brain breaks are planned learning activity shifts that mobilize different networks of the brain. These shifts allow those regions that are blocked by stress or high-intensity work to revitalize. Brain breaks, by switching activity to different brain networks, allow the resting pathways to restore their calm focus and foster optimal mood, attention, and memory (Willis, 2016). In our school community, brain breaks are practiced during our 90-minute Literacy and mathematics blocks to maintain student focus and engagement. These brain breaks teach children how to regulate their breathing and offer insight into additional mindful practices at our school community which is meditation and yoga. These practices are modeled in our day school and extended after school program as well. During the day, meditation is used before we begin classroom instruction. Each class has selected student meditation and self-awareness leaders who lead their peers through daily affirmations in the morning and in the afternoon once the lunch period has ended. In our afterschool program, all students in grades kindergarten through five can learn about the practice of yoga from a trained and certified instructor. Meditation and yoga provide students time to reengage with themselves and connect to their learnings. Establishing a partnership with Harlem Grown has enabled our school community to become more mindful about how we feel and what we eat. Our school community is learning that healthy food grows healthy minds. Harlem Grown empowers community members through sustainable gardens and directly impacts youth (www.harlemgrown.org).

Children spend more time in school than in any other formal institutional structure. As such, schools play a key part in children's development, from peer relationships and social interactions to academic attainment and cognitive progress, emotional control and behavioral expectations, and physical and moral development. All these areas are reciprocally affected by mental health (Fazel, Hoagwood, Stephan, Ford, 2015). At our school, there are interventions in place to support the mental health of all students and adults. A guidance counselor and a social worker are on site daily for students and faculty. The services offered by the school crisis team also extend outside of the school building to the family members of students as well. In addition, the school guidance counselor, social worker, and school administrators provide in person and virtual support via parent workshops and self-care sessions. These self-care sessions include meditation and yoga workshops, informational sessions on the middle school application process, and preventative strategies for handling conflict and stress in daily life. The special education team, school nurse, school crisis team, social worker, guidance counselor, yoga and meditation are practices that serve as an umbrella of support.

Family engagement as a motivator for student achievement is an important practice which has seen impressive results. Kraft (2017) discussed the effects of creating better communication systems to bridge the gap between homes and schools. This research demonstrates that when parents were engaged through phone calls more regularly, student achievement in completing homework increased. For these reasons, supporting families in the academic success of their child is essential to the thriving of the school community. Families in the school community receive academic support in multiple ways. Class Dojo is a digital application which assists teachers in communicating with parents. Teachers and co-teachers can share student work with families via digital portfolios on Class Dojo. This digital platform has become most valuable during the COVID-19 pandemic. Class Dojo enables classroom teachers, cluster teachers, school administrators, and extended families to remain engaged and knowledgeable about their

school community. Parents are also able to spend time in community with one another talking through their successes and challenges under the guidance and support of our school social worker at a weekly evening support group.

School systems have traditionally used a prescriptive and, oftentimes, punitive framework to address misbehavior. Otherwise known as zero tolerance policies, these frameworks include exclusionary practices (i.e., office referral, suspension, expulsion) that involve the removal of the offender from the context of the incident and isolating the student from others involved and their school community. Zero tolerance policies, introduced in the 1990s, intensified these exclusionary practices to maintain order within schools (Welch & Payne, 2012). Some methods of restorative practices used are the check in and check out, affective statements, peer mediation, and restorative circles. The first method, checking in and checking out, is a process that is done at the beginning and ending of each school day. This restorative practice provides opportunities for students to express themselves and consider the thoughts and emotions of their peers. Students use Yale Institute for Emotional Intelligence's RULER Mood Meter tool to describe their energy and pleasantness to their peers. The second method, affective statements, are sentences that contain a feeling, which is used in response to negative or positive events in the classroom or school. Students use affirmative statements during small group discussions and conflict resolution sessions with their peers. The third method is called peer mediation. During peer mediation sessions, two trained student mediators assist fellow students, who are in conflict, to resolve their problems. The peer mediators work in pairs and the discussion usually takes place in a calming corner on the upper floors of our school building. Teachers and the mental health team, which includes the guidance counselor and social worker, are aware of these scheduled meetings that take place in a private space and are nearby for additional support and assistance. The fourth method used at our school is called restorative circles. This method is used when three or more students have caused harm to others or have been harmed themselves. Students usually sit in a circle and address who has been harmed and what needs to be done to make things right. Sometimes students use a tool called The Blueprint which is part of the RULER program at Yale University. The Blueprint serves as a reflection tool for self-improvement and future conflicts. Lastly, these restorative circles are usually performed at the end of the week in our classrooms as needed.

Reimagining Partnerships: Engaging Stakeholders as Design Partners

Our school has many partnerships that support student learning and development. Some of them support academic achievement directly, such as Southern Bronx Overall Economic Development (SoBro), our afterschool provider that provides additional instruction and tutoring to support unfinished learning. Other partners support us in other ways, such as Juilliard, who provide music instruction and learning, Studio Museum in Harlem, who provide art instruction and learning, and The Meeting House, who support us with families. Additional partners such as the Yale Center for Emotional Intelligence support us with the implementation of RULER, a systematic approach to social-emotional learning that helps students to recognize, understand, label, express, and regulate their emotions and feelings (RULER, 2021). One daily practice that we employ is the use of a tool called the "Mood Meter." Each morning in each class, student self-awareness leaders facilitate a Mood Meter check-in where students reflect and share how they are feeling in the moment by using words that characterize the level of pleasantness and energy they are experiencing. Students also explain the reasons why they are feeling the way they do. This has led to greater self- and social-awareness, better self-management, and relationship skills, as well as improved decision-making. This is

evidenced by a reduction in dysregulation and challenging relationships between peers as well as an increase in constructive responses to conflict. WeWehave also partnered with local universities such as Barnard College and Teachers College, Columbia University, who provide our students with opportunities for project-based learning and open-ended tasks to develop inquiry and critical thinking around authentic problems. Currently, the Center for Technology and School Change (CTSC) at Teachers College has launched a four-year implementation research initiative called Systemic Transformation for Inquiry Learning Environments for STEM (STILE). Faculty in Kindergarten, second grade, fifth grade, and STEM are working with their researchers to design inquiry-based units of study around authentic problems relevant to students and their school community. The units are rooted in design thinking (Wiggins & McTighe, 2005) and encourage students to apply a line of questioning to fully understand challenges in their communities and potential ways to address them. Presently, the faculty participating in the initiative are collaboratively designing a unit that addresses the interdependence of living organisms as they explore the challenges posed by feral cats residing in their school yard. Early results from launching the unit have demonstrated an increase in student engagement, autonomy, problem-solving, critical thinking, and joy.

Also out of Teachers College is the Black Education Research Collective (BERC). BERC focuses on educational research at the intersections of Black history, culture, politics, and leadership. Currently, they are piloting a K-12 interdisciplinary Black studies curriculum for New York City schools. The program introduces students to topics "exploring early African civilizations, the continuum of the Black experience in America, the contributions and accomplishments of peoples of the African diaspora as well as the impact of systemic and institutional racism on all members of society" (Teachers College, Columbia University, 2021). At our school, the pilot is being implemented in kindergarten and fourth grade with great success. Recently, students learned about Adinkra symbols; symbols from Ghana that represent concepts or aphorisms that are used extensively in fabrics, logos, and pottery. The students' study has enabled them to learn how symbols express culture and facilitate understanding of beliefs or experiences. As the content is relevant to our student's lives and reflective of their histories and identities, we have seen an increased in student engagement and voice.

Furthermore, this year, we partnered with the Imagine Schools Office of School Design and received a grant to develop a school-wide culturally responsive mathematics curriculum infused with social-emotional learning. This initiative was launched to address unfinished learning in math, the subject where performance was hit hardest for us during COVID. A team of one faculty member of each grade was assembled to discuss the data and conduct research on how to make our mathematics curriculum more culturally responsive. A key aspect of this process was working together with families, students, and other faculty to survey their beliefs, perceptions, and feelings about math and our practices and how they could be improved. As a result, our revised unit plan and instructional templates now center on students' cultural experiences, identities, histories, and social-emotional learning. We are in the process of presenting our work to a broader stakeholder team that supports our school including the parent-teacher association, community-based organizations that support equity work, and the Imagine Schools Office of School Design. Based on their feedback, we will further revise our units towards implementing a pilot in Spring 2022.

During this time of COVID and even pre-pandemic, partnerships have played an important role in supporting student learning. They have allowed us to effectively leverage community resources to provide the highest quality educational experience to

our students that meets their academic, social, and emotional needs and validates their identities, experiences, and histories. Together, partnerships have enabled us to improve curriculum, instruction, and assessment practices and create a culture of continuous learning where each stakeholder makes unique contributions and student growth is at the forefront.

Conclusion and Recommendations: The Way Forward

The pandemic has forced many schools to re-evaluate the type of learning environment that is needed to address the new and varied supports required for our students and their families. Additionally, we must address, the ways in which we support and uplift our educators and support staff to ensure their mental, emotional and physical well-being during a time where our capacities have been forced to widen. We have found that at the core of all that we have and will continue to experience is rooted in relationships. The quality of the relationships we have as a staff, the authentic relationships we have with our students and their families and our ability to co-create and collaborate as a school community is key. We must continue to refocus our attention not on "learning loss" but a strengths-based approach to addressing "unfinished learning" that we know will take more than a year to rectify. Social emotional learning for students and the adults who care for them will be needed. The climate of strain on everyone's mental health continues to be an area we cannot avoid. The effects of trauma are ever present. Horsford 2021, reminds us that "repeated traumatic events over the last year have shined a bright light on the collective pain, loss, and suffering of the African American community. And it will continue to endure in ways we cannot yet apprehend". Providing our students, staff, and families a voice and avenue to express their emotions and engaging them in a curriculum that includes social justice can provide them a way to combat racial trauma. Our students, staff and families must be able to envision a light at the end of the tunnel if they are to continue pushing forward with purpose and optimism. We need to center our humanity and exercise compassion for ourselves and for others. We want to continue to reimagine the ways we can deepen and enhance a purposeful, targeted learning experience for our children through a sense of optimism and unlimited creative possibilities. This approach must be holistic, centering the social, emotional, cultural health and well-being for our full school community. And we must do this together.

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Shifting from the Hidden Shadow to the Bright Sunshine under the COVID-19 Pandemic: Implications for the Education New Normal from Hong Kong's Learning System

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The sudden and unprecedented outbreak of the global pandemic of coronavirus disease 2019 (COVID-19) has brought along a series of abrupt and sweeping disruptions to almost all learning systems around the world. The pandemic has simultaneously revealed many weaknesses and problems associated with the existing educational model, which serves as a timely and critical reminder that educators should start thinking and doing education in a very different manner. Nonetheless, this does not simply mean restoring long-standing norms, or reorganizing and perpetuating existing practices as "back to normal," but discarding and transforming many obsolete assumptions and conventional operations as a "new normal." As one of the high-performing learning systems around the world throughout the decades, Hong Kong has successfully transitioned from disruptive schooling to a "new normal" throughout the pandemic. By collecting concrete examples emerging and evolving across different layers of Hong Kong's learning system, this conceptual article aims to contribute to the field of comparative and international education by shedding light on ten key principles in terms of shaping a more responsive, resilient, and sustainable curriculum system for all students to thrive in the uncertain and unpredictable environment ahead of them.

Keywords: COVID-19 pandemic; student learning; curriculum studies; future education; learning system; Hong Kong

Introduction

Since mid to late January 2020, the unprecedented global pandemic of coronavirus disease 2019 (COVID-19) has brought along a series of unwanted disruptions to learning systems around the world (Di Pietro et al., 2020). Hong Kong was impacted by both the COVID-19 pandemic and the social unrest of 2019-2020 protests (Whitehead, 2021). Nonetheless, compared with many counterparts, Hong Kong demonstrates its flexibility and agility in prompt response to the crisis, especially in terms of supporting and optimizing student learning as well as enriching and diversifying student experience (Al-Sholi et al., 2021). As a high-performing education system, Hong Kong has consistently impressive student performance as reflected in many international large-scale assessments and reports, including Programme for International Student Assessment (PISA), Trends in International Mathematics and Science Study (TIMSS), and Progress in International Reading Literacy Study (PIRLS). Meanwhile, these outstanding educational achievements are further attested to in some international reports, such as the McKinsey and the Economist Intelligence Unit (Marsh & Lee, 2014; Tan, 2018). While the lingering pandemic is highly damaging, it is simultaneously a window of opportunity in terms of motivating and catalysing changes in habits or structures which would otherwise take decades in

merely a few months, given the fact that individuals can now refocus on their values and intentions as the underlying drivers of their behaviors (Richter et al., 2021).

Under the principle of "suspending classes without spending learning" as insisted by the Education Bureau, the overarching authority responsible for formulating and implementing education policies in Hong Kong, many teachers started with strong reluctance and surface transference or duplications. Teachers moved to gradual acceptance and progressive adjustments, and eventually led to constant experimentations and mushrooming innovations (Cheng, 2020). Throughout the five successive waves of the pandemic outbreak in the last few years, until the author's current time of writing, there have been prolonged and periodic school closure and resumption, which led to ongoing adjustment in response to the situations or resurgence of the pandemic (Chan, 2022). Hong Kong's educational community can recall how frustrated schools and teachers were at the beginning of the pandemic, and gradually become more adapted to the new context as demonstrated by the series of collective endeavors, pleasant surprises, and unanticipated successes that emerged from all of them (Cheng, 2020).

Crises like the pandemic are forcing the education sector to rethink, revamp, and design the entire learning system comprehensively and thoroughly (Pokhrel & Chhetri, 2021). While many of the responses are first primarily developed to address the immediate and urgent need for continuing schooling and teaching online in the short run, they should be seized by schools and teachers to rethink what makes the necessary and desirable education for the future generations in the long run (Zhao & Watterston, 2021). The reality is that the pandemic is merely a case in point, given the fact that there are far more world changes or even unprecedented crises that are currently taking place or will be emerging in the future (Sneader & Singhal, 2020). All these will not go away immediately, so the lingering discussion for educators around the world is to what extent is the contemporary younger generation prepared for the future of education (Organisation for Economic Cooperation and Development, 2020).

Hong Kong has had an ambitious and forward-looking perspective since the early preparation of its educational reform in 1999, which aims to transform the administrative-led system into a highly learner-centered one. The then government recognized society had changed and that education had to change accordingly, especially since the ultimate aim of education is for students' futures. The above logic underpinning the reform is indeed still maintained or even reinforced at the contemporary time of pandemic (Whitehead, 2021). All of these reflect the importance of drawing upon the series of emerging and evolving experiences of Hong Kong, to demonstrate how it has been moving from disruptive schooling to the "new normal" successfully. Drawing upon the author's personal observations and professional experience as well as relevant academic literatures in the field, this conceptual article aims to highlight ten key principles shaping a more responsive, resilient, and sustainable future curriculum system for students to survive or even thrive in the uncertain and unpredictable environment ahead of them.

While this paper is focusing Hong Kong as the specific location for a case study, it is important for the wider discussion of comparative and international education for several reasons. First, identifying some of the contemporary best practices around the world can help jurisdictions to better enhance, modify, or even transform their learning systems into a more effective, efficient, and equitable one (Arnove, 2013). Second, given the continuous and dynamic interactions between the global trends and local responses, the focus of a specific jurisdiction with an interpretative perspective can better reveal and understand how the learning system is responding to and interacting with the changing and

surrounding contexts (Adamson & Morris, 2007). Third, the key principles themselves can invite further professional discussions around transformative changes by revealing a wide range of possibilities, which nonetheless require a deeper understanding of the present before moving towards the consideration of the future (Broadfoot, 2000). All these illustrations are not aiming at privileging one system at the expense of others, but recognizing diversity and pluralism, especially the unique features and unconscious assumptions which are overlooked when one focuses primarily on his/her own system (Clark, 1986).

To make a better sense of Hong Kong's learning system, this paper takes reference from Marsh and Lee (2014) who focused on looking into the detailed educational structures and infrastructures, policies and practices, as well as values and ideologies reflected by and incorporated into Hong Kong as a high-performing system in Asia. The wide range of discussions in the edited volume reveals some of the common elements of a learning system, which mainly include policy formulation at the systematic level; quality governance at the organizational level; comprehensive planning at the curricular level; targeted support at the school level; professional development at the teacher level; as well as learning experiences at the student level. However, as a number of the principles put forward in this article are cutting across more than one of the above levels, this conceptual paper is hence structured based on the ten principles rather than these six levels. It is hoped that researchers can build on all these features for conducting further conceptual analyses and empirical studies to acquire more in-depth insights.

Principle 1: Putting Student Learning as the Overarching Focus

Education is an institution of learning which bears contextual underpinnings of the time, meaning that its design could easily become obsolete. Nonetheless, learning as a human instinct should serve as the core concern and business of education, regardless of the dynamics of the surrounding environment (Cheng, 2017). The ambitious and encompassing notion of "learning" is also associated with wide scope and inestimable possibilities for individuals to make sense of education from the past to the present and eventually to the future. Lamentably, while student learning is taken for granted as a priority, it is often neglected in everyday reality, especially when it is yet to be on the agenda of many government education policies. Worse still, many learning systems around the world organized in the industrial era for mass production still contain components and structures which are incompatible with what the science of learning advocates as being the best for student learning (Tucker, 2014). Nonetheless, in Hong Kong, the discourse of learning has been the focal point of all educational decisions and policy-making processes (Forestier & Crossley, 2015).

According to the Education Bureau (2021c), Hong Kong's curriculum aims to offer a quality and diversified education to prepare students for life-long learning and foster their whole-person development through a broad and balanced curriculum and diversified by students' needs, interests, and expectations. The notion of "learning-to-learn" is also the overarching rhetoric that the government employed throughout the entire bold and transformative, still ongoing, educational reform journey. The underlying implication is that students should be capable of setting their own goals, choosing their paths, and witnessing their success (Cheng, 2010). The distinctive strength of employing such mutual discourse of learning hinges on unifying all individuals within the educational community to develop shared understanding, interpretations, communication, and practices. This has also become particularly prominent during this uncertain and complex time of the COVID-19 pandemic (Maguire & Ball, 1994). The unknown pandemic to many

individuals, especially at the very early period of the outbreak, brings along a series of knock-on effects on various parts of the learning system, not to mention there is no precedent to guide individuals in navigating and acting out their ways, regardless of the decisions, routines, or processes (Kuhfeld et al., 2020). Therefore, if such idealized discourse is not fully shared across stakeholders, successful implementation would be challenging as there are often gaps in discourses in the educational domain (Lenhoff & Ulmer, 2016).

Throughout all these considerations and discussions about student learning, there will inevitably be competing tensions and conflicting claims as they touch upon the interests and concerns of different stakeholders within the educational community. This phenomenon is once again more prevalent during the pandemic. For instance, in Hong Kong, there are ongoing and intense debates over the adjustment of the school annual calendar and weekly teaching schedule, time allocation for asynchronous or synchronous learning, logistics arrangement for class resumption, as well as contingency plans for the Hong Kong Diploma of Secondary Education examination as the local high-stake university-entrance examination (Chan, 2020b; Low, 2021; Lam et al., 2022). Nonetheless, mutual discourse helps one to attain an optimal point through coordinating, reconciling, and balancing the polarized so that student learning is put at the center. This reflects a remarkable comment made that contemporary Hong Kong education policymaking can be largely characterized as driven by educational values and evidence but not ideologies and politics, as well as refusal to dichotomize choices but strive for dynamic balance (Forestier & Crossley, 2015).

Under the overarching rhetoric of enhancing student learning, all stakeholders within the educational community can come up with their contributions to realize this mutual goal, based on their unique expertise and experience (Vegas & Winthrop, 2020). This echoes the fact that as curriculum reform gets more mature, the Hong Kong government in recent years has claimed that the local curriculum has moved to a new phase of ongoing renewal, which involves focusing, deepening, and sustaining in response to the changing context (Education Bureau, 2021b). On the other hand, if the entire educational sector does not remain grounded in and committed to an explicit and clear rhetoric, the series of decisions and changes made would easily result in misalignment or even contradiction, not to mention the potential to undermine the recognition and positioning of the sector. This is particularly valid during the evolving and uncertain time of pandemic when many decisions and changes must be planned and executed within a short period or even at the same time. By keeping learning as the center, all stakeholders will continue to advance a learner-focused system in the best interest of all students as a coherent and continuous goal (Cheng, 2020).

Principle 2: Avoiding Being Slow and Stagnant to Adaptation

Currently, many learning systems around the world are still not forward-looking enough as the emphasis is still primarily focusing on teaching students to respond to immediate problems after they have emerged. A lot of them are advocating the addition of elements on top of what they are currently teaching, which are at most teaching old things in new ways. Such a line of thinking is lagging far behind as students receiving such learning will remain relatively slow, unresponsive, or even resistant to the wide range of changes and crises which remain ever-changing and multifaceted (Lui & Lam, 2022). There is now an imperative need to enable and empower students, who are possessing different talents, experiences, and passions, to conceive and create a future themselves, and explore and follow pathways towards new directions that they currently cannot yet foresee. This can

also bring students to the center of the learning experience as their capacities and capabilities are recognized and realized, so as to allow them to take a series of actions for initiating all sorts of positive changes in their own life (Ng et al., 2020). In the words of Ponnudurai and Ponniah (2020), this is focusing on "teaching for change" rather than "teaching change" as education is seen as the paradox of change. Similarly, Young and Muller (2013) urge curriculum designers to depart from the perspective of "what students have to learn" to "what will enable students to learn". According to Schleicher (2018), the focus on the future of education should be placed on cultivating the fundamental and core human traits that will enable education to stay ahead of all changes as well as students to accommodate whatever novel changes and ill-defined problems come along.

Meanwhile, students need to foresee what may be needed in the future as well as how actions taken currently might bring along implications for the future. As the future remains unpredictable, the future-oriented curriculum should never remain rigid and prescriptive, but fluid and dynamic, equipping students with the capacities and capabilities to deal with the new and unfamiliar situations and environments (Organization for Economic Cooperation and Development, 2018). Therefore, the curriculum should be better organized, resourced, and supported in the dimensions of knowing, doing, and being, such that students can make a better sense of the series of significant and future-oriented issues (Bolstad et al., 2012). According to Li et al., (2021), grounding the curriculum within an authentic context can better cultivate students' key dispositions and competencies, and facilitate their flexible and active thinking in an engaging and motivated manner. The lingering implication is making more explicit and clear the adoption of long-term and continuous perspectives on learning (Demirel, 2009). After all, the value and influence of learning and teaching are long-term, given that the inspirations, experiences, and reflections of students can be possibly remembered, retrieved, and utilized in the later parts of or even upon the completion of their studies (Bressoux & Bianco, 2004). With the description and illustration of progress or growth in learning over time, students can witness its continuous, progressive, and developmental nature, which allows them to better cope with the future ahead of them (Millar, 2022).

Principle 3: Delivering a Holistic and Competent Learning Experience

In Hong Kong, given the fact that learning is framed as the focal point, the curriculum is subsequently broadly defined as the totality of learning experiences, which implies that all components should be integrated as a comprehensive and competent education for students (Education Bureau, 2019). Under conventional learning, the dimensions of knowledge, skills, as well as attitudes and values are interacting with one another (Curriculum Development Council, 2014). Students need to connect and integrate academic knowledge, generic and specialized skills, as well as positive values and attitudes to think about and cope with various real-life problems, phenomena, and issues, especially when understanding and application are intertwined rather than isolated. The introduction of Liberal Studies, which is now revamped and renamed Citizenship and Social Development, allows students to understand, explore, and investigate different topics from multiple perspectives, so as to construct more knowledge relevant to various themes, and build up a more solid and concrete knowledge base (Curriculum Development Council & Hong Kong Examinations and Assessment Authority, 2021). The COVID-19 pandemic once again demonstrates that a single disciplinary perspective is far from sufficient when it comes to responding to complex challenges. Therefore, there is a need for further equipping students with interdisciplinary readiness which allows them to analyze, conceptualize, synthesize, and integrate diverse forms of knowledge and inquiry (Spelt et al., 2009).

The pandemic with its emphasis on social distancing as an important strategy of disease containment has led to the rapid emergence of home-based learning. Nonetheless, apart from academic learning, the non-academic dimensions which are normally taken within the school campus are equally important for ensuring a balanced and diverse learning experience. While there are concerns that some non-academic classes could not be conducted in an online setting due to limited equipment and space as well as insufficient supervision and support, the reality shows that home-based learning is not necessarily limited and constrained but can be far more versatile and resourceful (D'Agostino et al., 2021). Alsuwaida (2022) mentions that learning in the online setting can indeed foster creativity, strengthen relationships, and encourage collaboration among teachers and students. For instance, Hong Kong University Graduate Association College students continue to have their weekly non-academic classes in an interactive online setting. During physical education lessons, students would follow teachers' instructions and comments to do exercises such as squats, lunges, stretching, and running in place, while during music lessons, students are taught about topics like music history and composers, and conduct singing and instrument practices (Chan, 2020a).

The non-formal learning that is deemed to be undermined during the pandemic should also be reinforced, especially when many events and activities with face-to-face or social elements are often deferred or cancelled. Nonetheless, all these events and activities are crucial for students to build up confidence, friendships, and social networks in an informal setting, which contribute to their academic engagement and emotional health. Therefore, many schools have been shifting all these to the online setting in the hope of allowing students to continue benefiting from these learning opportunities, despite the ongoing school closure (Ng, 2021). Some illustrative examples include how Hong Kong Taoist Association Wun Tsuen School and Hong Kong Taoist Association The Yuen Yuen Institute No. 3 Secondary School have successfully started and bridged the learning of their cross-culture and cross-border students through organizing a wide range of orientation, immersion, and exchange programs. The spatial and temporal constraints associated with the pandemic have now unleashed many innovative responses where students could continue with their implicit learning in an online environment (Centre for Advancement of Chinese Language Education and Research, 2022).

As students have been isolated from society, the pandemic has reiterated the importance of life-wide learning, which focuses on letting students learn beyond their classrooms and schools, as well as to reach out to their immediate communities and the larger world. In Hong Kong, schools can utilize the life-wide learning grants offered by the Education Bureau to develop a wide range of partnerships for student learning with the business sector, non-governmental organizations, and other non-education bodies. Some of the illustrative community partners include theme parks (e.g., Hong Kong Disneyland and Hong Kong Ocean Park), museums and galleries (e.g., Hong Kong Museum of History and Hong Kong Science Museum), as well as non-governmental organizations (e.g., Worldwide Fund, Hong Kong Council of Social Service, and Centre of National History Education). As a result, many activities like excursions, field trips, visits, and student exchanges subsequently emerged (Education Bureau, 2022). Most crucially, these experiential opportunities and hands-on experiences allow students to decrease social isolation, improve engagement, nurture key developmental relationships, and champion youth agencies (Butler, 2022). Similar to home-based and implicit learning, this type of learning is made even more accessible and diverse online by reducing the friction of time and space boundaries that has allowed only limited capacity in on-site settings. One can see how schools sustain and expand such learning more easily than before and adopt practices not anticipated before the outbreak of the pandemic.

In the past, learning occurred largely within the confines of classroom settings and relatively rigid school timetables, especially in terms of academic dimensions. Nonetheless, this fails to realize the nature of learning as a broad, ongoing, and potentially life-long process (Laal & Salamati, 2012). After all, various levels and modes of learning can take place with anyone, at any time, and in anywhere. Meanwhile, the long-standing practice of school-based development grants each individual school the autonomy and flexibility to come up with their own rigorous, rich, and meaningful learning experience across intellectual, social, emotional, physical, and ethical dimensions for students based on their distinctive contexts and cultures as well as strengths and resources (Education Bureau, 2021a). Most importantly, this decentralized move has also allowed schools and teachers to come up with their own learning and teaching initiatives and strategies that cater to their own students' unique backgrounds, abilities, and needs (Yuen et al., 2018). According to Ng et al. (2020), different Hong Kong schools have been coming up with diversified and innovative modes of learning and teaching to support student online learning according to their unique school-based situations and students' needs.

Principle 4: Highlighting Mental and Emotional Adaptation

The COVID-19 pandemic crisis is associated with a series of negative emotional experiences which require one to recover from or even adapt to such stressful and anxious circumstances spontaneously and flexibly. Many empirical studies around the world have shown that children and teenagers, when compared to adults and seniors, are far more vulnerable to the emotional impacts brought by unpredictable and traumatic events like the pandemic, which disrupt their everyday lives and structured routines (Chai et al, 2021). For instance, many students struggle in terms of coping with and adapting to school closures, physical distancing, and quarantining time at home. Meanwhile, some experienced gaps in their learning and teaching conditions, progress, and outcomes (Schwartz et al., 2021). A lot of stakeholders have worked to ensure students feel safe and secure about their fast-changing future. This is manifested by advocating models and concepts like emotional intelligence, positive psychology, growth mindset, and psychological capital. For example, the Bei Shan Tang Foundation has initiated Positive Education Hong Kong (2018) for promoting positive education through training local education practitioners, offering accurate and evidence-based resources, as well as bringing together institutes and organizations for dialogues and actions. Another instance is JUST FEEL (2022) which aims to cultivate a compassionate communication culture in schools and families to enhance the emotional well-being of children. Furthermore, the Hong Kong Jockey Club Charities Trust supported the Faculty of Social Sciences (n.d.) of the University of Hong Kong to launch the Jockey Club "Peace and Awareness" Mindfulness Culture in Schools Initiative, which targets promoting mindfulness and improving students' mental well-being.

Nonetheless, the complexity of discomfort and frustration that emerged during the pandemic are equally valuable learning resources, which should not be immediately and easily dismissed for the sake of attaining control and harmony within the classroom and larger societal contexts. The homogenization, simplification, or even avoidance of these seemingly negative and destructive concepts might lead students to lull themselves into a false sense of security (Jackson, 2020). Students should be systematically and carefully guided by their teachers to confront and deal with their struggles, failures, and setbacks healthily and constructively, which can help them to attain fulfillment and contentment in the long run. This also remains crucial as many students unfortunately must cope with all these situations in their lifetime. After all, the future curriculum needs to further relate to the younger ones, and prioritize personal and social flourishing, such that they can

better cope with the situation without undesirable consequences in their mental health (Amorós et al., 2020). For instance, Just Feel offers a deck of 36 cards featuring various emotions like "scared," "curious," "ambivalent," and "ashamed," as well as 25 cards depicting different needs like "rest," "learn," and "trust." As a learning and teaching tool, it aims to facilitate and prompt students to identify their subtle feelings and underlying needs by offering an accessible starting point for describing and thinking about what they are currently experiencing (Chan, 2021a).

Principle 5: Rejuvenating Relationships and Connections

The collective nature of the COVID-19 pandemic reminds individuals of their underlying humanistic side, which subsequently lead them to move away from self-sufficient and independent to interconnected and interdependent units within their differences and diversities (Mazzocchi, 2021). Throughout the years, individuals often devote too much time and effort to comparing with and competing against one another when meritocracy and elitism are driving the larger climate, which lamentably deviates from or even violates the original purpose of education (Hughes, 2021). After all, genuine learning is all about having human interactions, dialogue, and exchange, especially when others are essential to facilitating and contributing to one's learning. This implies that the social space of the school with various forms of collective living cannot be replaced by distance or remote learning at the individual level. At the same time, students can encounter many others from diverse backgrounds who are not like themselves, whom they learn from and learn with, and who expand their understanding of the wide range of ways of being human (United Nations Educational, Scientific, and Cultural Organization, 2020).

At the classroom level, there should be a heavier emphasis on cultivating a community of inquiry with a productive knowledge-building environment, which helps enhance students' learning motivation and performance (Mok et al., 2021). According to Li et al. (2021), knowledge is socially constructed, and specific ways of thinking are mutually reinforced, meaning that collaborative, interactive, and participatory elements should be embedded into the curriculum. Learning is only meaningful when connections are made, especially when one acquires good personal thinking through thinking together with others. The most illustrative example would be student-driven knowledge building and creative inquiry across classroom communities that are gaining currency in recent years (Chan & van Aalst, 2018). Many of the online software and platforms that are commonly utilized for learning and teaching nowadays afford the cultivation of online knowledge-building communities. Some of the common examples used in Hong Kong classrooms include discussion threads in Google classroom, collaborative writing through Google Document, spontaneous discussions in real-time Zoom breakout rooms and chat boxes, as well as graphic visualizations in Google Jamboard and Padlet (Kumi-Yeboah et al., 2020).

At the school level, human connections and meaningful interactions should continue to remain an essential part of the learning experience, which can go beyond the academic level. Students should be offered abundant opportunities to socialize with their peers to elicit continuous support and seek help when needed, especially during the turbulent period of the pandemic. Throughout this process, students can build interpersonal cohesion and shared identity as well as emotional connection and intimate closeness (Elmer et al., 2020). Meanwhile, this can help them seek common ground within the differences, show tolerance and respect for diversity towards others' ideas and beliefs, as well as cultivate cross-cultural understandings, especially in a hyper-connected world with blurred lines and boundaries (Wang, 2020). Many Hong Kong primary school

students express that they still met a few friends for a meal or even met on Zoom during online learning. They also further show their strong desire for having school life and interaction with peers through in-person classes (Chan, 2021b).

At the family level, parents should devote more support to student learning. Since students are now staying at home for most of the time throughout the pandemic, apart from offering guidance and coaching on schoolwork, parents become a reliable source of comfort in easing pain and anxiety in the emotional dimension. They can offer ongoing support and timely intervention for students at times of uncertainty. As the core people who accompany their children as they grow up, they also have unique knowledge of and affection for their own children (Morelli et al., 2020). According to Law et al. (2021), parent-child communication and relationships are reported to be the single most important supportive and protective factor in Hong Kong students' well-being at home and in school. While there is a tendency for many parents to make schools or even the government fully accountable for student learning, the pandemic reminds educators and parents themselves of parents' unique roles and responsibilities.

Principle 6: Granting Students Sufficient Time and Space

The mainstream rhetoric throughout the COVID-19 pandemic invited teachers to come up with as many strategies as possible, such as distance learning, remedial curriculum, or shorter breaks, so as to mitigate and compensate for the learning loss due to school closures and remote learning (Engzell et al., 2021). However, one seldom appreciates the beauty of offering sufficient time and flexible space for students as an important strategy of "letting go." This involves reshuffling the curriculum by removing the extensive procedural practices, to retain the most fundamental principles and essential concepts. Students can thereby make flexible and personalized choices in terms of learning, exploring, and questioning based on their desires, targets, and pace. It is also an important way to engage and recognize students as partners of change and owners of their learning. Zhao (2021) points out that short-term, cognitive, and instructional outcomes do not necessarily translate directly into long-term, non-cognitive, and educational outcomes.

Learning is not only about delivering knowledge but also about how students grow throughout the process' various dimensions. Students will eventually make individual ongoing and lifelong progress towards the development of more sophisticated knowledge, deeper conceptual understanding, higher level of skills, or even more incisive and innovative thinking. Therefore, a progressive continuum of development rather than a static checklist of sequenced instructional objectives should be reiterated throughout curriculum design and implementation. For example, Fukien Secondary School Affiliated School comes up with a new educational model upon the resumption of face-to-face classes. On every school day, students can have all classes in the morning as the academic curriculum, and leaving the entire afternoon as the free time for personal development and growth. Students can freely choose to take classes on topics that interest them (Chan, 2021c).

Moreover, the reduction of a fully packed and highly intense curriculum allows students to own more comfortable spaces to undergo more nuanced and much deeper reflection and assimilation as they are responsible and accountable for their learning processes and outcomes. By making their mental models and sense-making active and conscious, students will become more aware of their positions, thoughts, feelings, and changes in their learning. As students will acquire very different learning experiences, they will develop their own worldviews. According to Lam (2020), as the world is changing, each

student's understanding of why and how things are changing are also simultaneously different, which signifies the need for students to understand and remain open to learning to get prepared for the future. Meanwhile, future education points to the fact that students will regularly encounter new and unique problem situations, and the process of coming up with novel solutions will offer a fertile ground for them to reflect on their actions. Such pluralism and diversity should be embraced and celebrated with clear thinking and strong sensitivity. An illustrative example is Wah Yan College Kowloon (2019), which encourages students to spend 10 minutes after lunch every day reflecting on their daily life. While this practice of Examen of Consciousness emerged because of Jesuit schooling, it still serves as a good example of showing how students can touch upon various deep yet important conceptual and personal questions like what life is revealing to them, what they have learned from their choices made or not made, as well as how they can better approach their anticipated challenges and opportunities.

Principle 7: Harnessing Technology and Digital Innovations

There are abundant discussions highlighting the importance and value of leveraging digital technologies in the learning system, so as to promote and advance student learning (Uttam, 2020). Meanwhile, many teachers claim themselves to be introducing various innovative learning and teaching initiatives. Nonetheless, the key here is not ritualizing and replicating the latest tools, practices, and trends or even reproducing the status quo, but employing them to stimulate and extend thinking towards student learning. Teachers should possess the ownership to enact, reflect, examine, and change their beliefs and practices when introducing all these innovations (Brown, 1997). For instance, from students' perspectives, heavy and continuous use of technology does not automatically lead to boosted engagement, direct translation to deeper learning and understanding, or better academic performance (Manca & Meluzzi, 2020).

The rapid influx of many educational technologies and innovations can easily lead one to focus on the dimensions of what and how but forget the dimension of why that is supposed to be the driving question. This presents the danger of bearing a catch-up mindset, which neglects the unique context and nature of the technology introduced (Means et al., 2014). While conformity may be perceived as easy, the subsequent trade-off is that one does not exhaustively utilize the underlying distinctive features and long-standing traditions to maximize learning outcomes. As a result, the introduction of a new educational initiative would simply be changing the surface artifacts passively and mechanically, which does not touch upon the more subtle and fundamental issues proactively and reflectively. Worse still, conformity can easily breed a sense of deficit which makes one to feeling not good enough all the time or think many things go wrong which requires endless fixes and modifications (Valverde-Berrocoso et al., 2021). In Hong Kong, many devoted educators are thinking carefully and thoroughly about how to use technology to enable experiential, inquiry-based, and adaptive learning for students, to offer personalized and inclusive support to students through building character and strengthening life skills, and to analyze, track, and assess students' learning progress (Morning Studio editors, 2020).

While there is a debate about whether technology or pedagogy should come first, arguably neither should be prioritized, as both go hand in hand and support each other. Therefore, an appropriate line of thinking is why technology benefits student learning, how it can serve these specific needs, and eventually what is needed to realize the outcomes (Genna, 2020). Technology and innovations should be deemed as dynamic catalysts for setting thoughts and associated practices to become free and diverse (Groff,

2013). Teachers should move along the lines of initiating principle-based pedagogical thoughts and proposing practically-oriented technological means with the central goal of improving both at the same time (Law, 2014). Most crucially, this signifies a strong sense of continuous and mutual improvement which motivate one to work together for attaining breakthroughs and new ventures.

The best way of maximizing the potentials associated with technology and innovations for student learning is to build on the unique strengths, be sensitive to the distinctive contexts, and be aware of the potential limitations when it comes to the planning processes of design and implementation. In Hong Kong, one can observe how many professional teachers remain thoughtful and articulate when introducing technology and innovations into various aspects of education. For instance, eCitizen Education 360 (2021) offers a series of school seminars, workshops, sharing sessions, and symposiums, which allow many devoted schools and teachers to disseminate and share their successful experiences and evidence-based practices with one another, especially in terms of utilizing educational technology to open new possibilities in digital learning. Another example is the 11th annual Learning and Teaching Expo (2021) which has a particular focus on gathering and showcasing a wide spectrum of educational terrains and education reforms driven by new and emerging technologies, which allow students to remain future-ready in the post-COVID-19 pandemic era.

Principle 8: Reconceptualizing Teachers as Designers and Facilitators

In disruptive times like the outbreak of the COVID-19 pandemic, learning can take place without teaching (Weimer, 2015). The democratization of knowledge under technology also allows students to get access to all sorts of knowledge from a wide range of channels and sources quickly and easily (Arocena & Sutz, 2014). It is also possible that some students are at times more knowledgeable about technology as compared to their teachers (Murray, 2011). Therefore, teachers should no longer merely act as an instructor who delivers and transmits knowledge, given the fact that this is merely shaping a teacher-centered rather than student-centered classroom (Keiler, 2018). Instead, they should target creating diverse learning opportunities and conducive learning environments for students grounded on the principles of science of learning, such that all of them can unleash their unique potential and attain individual success (Schleicher, 2011). With the involvement and companionship of teachers, the learning process can become more inspiring and less intimidating through guidance, scaffolding, and encouragement (Zakaria et al, 2016).

Therefore, teachers should make the best and full use of their valuable expertise and unique experience to shape a conducive learning environment that is favorable to novice students, especially when it comes to filtering information, discerning errors, and devising reasonable decisions (Krahenbuhl, 2016). An illustrative example is at Tin Shui Wai Heung To Secondary School, where the Science, Technology, Engineering, and Mathematics teacher guides students to solve tiny daily problems they have met in school, such as long queues at canteen, tissue paper running out fast in washrooms, through design thinking. This involves prototyping and testing various solutions, which strengthen their confidence and empathy. Another interesting instance is at Tang Shiu Kin Victoria Government Secondary School, where the Visual Arts teacher prepares some laser-cut Chinese character components so that students can assemble them to create makeshift characters (Institute of Design Knowledge, 2021).

In Hong Kong, by capitalizing on the potential associated with digital and multimedia technologies, many teachers have become agents of change and innovative designers, who reconceptualize and transform many of the curricular, pedagogical, and assessment initiatives and strategies in terms of their planning, implementation, and evaluation (Moorhouse & Wong, 2021). It should be noted that the intervention of technology is by no means marginalizing or replacing, but advocating and driving teachers to accompany, guide, and inspire students along their learning trajectory. Technology has seemingly become a mutual entry point for rethinking and redesigning their learning and teaching approaches and strategies (Chan, 2020c). Nonetheless, this exploration is extending beyond the technological dimension. For instance, throughout the pandemic, some of the prominent educational issues included the facilitation of self-directed and self-regulated learning, enhancement of student motivation and engagement, maintenance of mental health and well-being, and transformation of outmoded assessment practices (Education University of Hong Kong, 2021; Liang, 2022; Ng, 2020). At the same time, educational changes are enhanced by the rapid emergence of professional learning communities within and across schools. Teachers can subsequently learn from and work with one another in terms of developing school-based curricula, planning collaborative lessons, sharing resources and practices, discussing concerning issues, and conducting action research and evaluation studies (Ng et al., 2020).

Principle 9: Emphasizing Student Equity and Inclusion

The COVID-19 pandemic is further exposing and exacerbating educational inequalities in terms of student engagement and educational attainment, which are at times subtle or silent in every society (Frohn, 2021). The digital divide problem is evident when many students from poor and underprivileged backgrounds have no electronic devices and unstable Internet connections for online classes (Shek, 2021). In Hong Kong, well before the outbreak of the pandemic, the government, business companies, and non-governmental organizations have been mobilizing and allocating more resources to subsidize the purchase of hardware for those in need, to ensure no one is left behind. At the same time, another equally vulnerable group is students with special educational needs who often struggle to catch up with school classes due to issues of self-regulation, anxiety, and communication. Therefore, more support is offered by individual schools or even non-governmental organizations in terms of helping students to remain on task, understand instructions, and complete the work (Kok et al., 2022). Hong Kong has shown substantial efforts in tracking the progress and satisfying the needs of various student groups to close gaps and ensure that all students have access to high-quality learning and teaching.

The attainment of student equity is not simply about allocating more targeted resources, infrastructures, and services to the marginalized and vulnerable students, but recognizing the presence, participation, and achievement of every single student (Blackman, 2021). An inclusive curriculum is recognizing that while students are at different learning points and may require different learning support, they are all capable of excellent progress and ultimately high achievement under the appropriate conditions. Every student is unique and what matters most is how to find ways to facilitate their self-actualization. While there is still a common curriculum and standards in place for consistent and high-quality schooling, Hong Kong's case has shown how teachers can make curriculum and standards less centralized and prescriptive by recognizing and responding to individual learners' interests and aspirations, levels of attainment, rates of progress, and learning needs, as well as allowing students to see the meaning and relevance of their learning. Meanwhile, learning is made less passive and reproductive as well as more relevant and meaningful

to individual learners, which requires granting students more agency and control over their learning (Yin et al., 2020).

Principle 10: Mobilizing and Engaging the Whole Community with Synergy

The resilient spirit of Hong Kong citizens in employing collective effort throughout the COVID-19 pandemic can be attributed to the long-standing Lion Rock Spirit (Wu, 2020). These aligned responsibilities and efforts are important for supporting learning at all levels of the learning system and co-inventing the "new normal" together. While the government and schools are often seemingly playing relatively dominant roles when it comes to student learning, both stakeholders have their inherent limitations which require other equally prominent stakeholders to complement them, especially when the provision of education is a shared endeavor (Pang, 2004). Across all learning systems around the world, there is a need to perceive education from a more holistic and integrative perspective, which involves shifting from less egocentric principles and practices to more collective ones for the sake of cultivating a more sustainable and just system for the common good (Makrakis & Kostoulas-Makrakis, 2021). Thanks to Hong Kong's long-standing historical and social conditions, there is a very mature learning ecosystem cultivated within the educational community, which shows ambitious, coherent, and aligned aspirations, goals, and priorities regarding student learning (Pang, 2004).

In Hong Kong, there is a self-regulating interplay of public and non-public sectors in the provision of education as both are integrating and drawing on the resources and expertise of one another (Chan et al., 2004). The public sector largely engages and consults the whole community and various stakeholders in conversations about specific needs and expectations, and the design and implementation of relevant means and strategies. Meanwhile, the non-public sector, such as Hong Kong Jockey Club and Microsoft Hong Kong Limited, fills the gaps in policies and services, funds research and development, foresees emerging needs, and serves as think tanks. Both the top-down and bottom-up dimensions are interacting dynamically and resonate strongly to support and strengthen student learning (Education Commission, 2011). The most intriguing part of Hong Kong's experience is how these parties are taking up their respective roles and responsibilities actively and spontaneously, under the context that there are often no hard measures or policies, or monetary incentives introduced to advocate. Meanwhile, the close and continuous communication and interaction allow them to have a clear division of labor as they have a better sense of each other's positionings and contributions from time to time, such that all their devoted efforts will not be overlapping or even conflicting, and no dimensions will be left undermined and unattended.

Conclusion

Many of the challenges, whether perceived or real, can be turned into opportunities. The outbreak of the COVID-19 pandemic reminds all individuals that many institutions and practices they get accustomed to having already become largely obsolete (Zhao & Watterston, 2021). The pandemic as a once-in-a-century crisis forces the education sector to confront squarely and seriously the dysfunctional "old normal" and reimagine the "new normal" through shifting paradigms and transforming perspectives (Mbhiza, 2021). Mere modification of the time-honored rhythms and routines, as well as patterns and norms without any critical examination and questioning, can never allow the system to respond to the series of dynamic global and local changes at present and in the future. Instead, there is a need to reimagine and recreate human institutions, especially orienting towards both the dimensions of purpose and meaning driven by students (Zhao, 2020).

Hong Kong's experiences in coping with the pandemic as well as preparing for the future ahead demonstrates the viabilities and possibilities of various stakeholders coming together to initiate changes at all layers, sectors, and domains of the learning system. All learning systems around the world are exploring ways to constantly navigate, evolve, and adapt to the world. Nonetheless, there are admittedly still many structural constraints and deep-seated problems remaining to be resolved or even exacerbated throughout the journey (Bozkurt et al., 2020). The notion of "new normal" should by no means be merely limited to a facile or catchy slogan (Pacheco, 2021). This conceptual article makes an important attempt in unfolding the notion by both identifying and explaining the change patterns that Hong Kong has been and is undergoing since the outbreak of the pandemic. As addressed by the author at the very beginning, while this conceptual discussion does not aim to be an exhaustive one that captures all the instances and examples in Hong Kong, it still hopes to make a tiny yet important contribution to the field of comparative and international education by serving as a springboard in terms of capturing some of the most pertinent observations regarding how such learning system has long been bolstering educational attainment in the time of pandemic as an illustrative example of future unanticipated crises.

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Innovation in Times of Crisis: Using the COVID-19 Pandemic to Reevaluate Curricula

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Introduction

On March 13, 2020, I sat amongst my colleagues, awaiting the fate of the school year. As the dismissal bell rang, teachers were informed that classes would move online for the foreseeable future. As the COVID-19 pandemic progressed, districts and administrators worked to set teachers and students up with online platforms so that learning could persist. The more tumultuous the world seemed; the more teachers were instructed to push forward with lessons under the pretense that this was a constant students were craving.

The movement forward did not provide the comfort that it promised. It was an additional source of frustration for many families as they had to navigate unfamiliar technology, curriculum, assessments, and their personal lives. Dissatisfaction was not unique to families; urban educators committed to combating inequities saw how adapting curriculum and assessments online perpetuated educational disparities. In other words, the attempt to keep instruction consistent as the world was collapsing around teachers and students did not accomplish its goal; instead, it shed light on the ever-growing inequalities impacting American schools.

Understanding the issues that plague education (e.g., achievement gaps, lack of learning materials, and access to learning) and the pandemic's role in exacerbating them, it is important to seize the opportunity to correct the inequities that have long afflicted educational institutions. Analyzing my experience teaching throughout the pandemic and research on standards-based curriculum, I will argue that schools must adapt curriculum and allow space for culturally relevant pedagogy (Ladson-Billings, 1995) so that students and teachers can interact with materials reflective of their classroom and society.

Curriculum

American schools serve linguistically, culturally, and racially varied student bodies (Gay, 2018; Kohli, 2021; National Center for Education Statistics, 2021). In my classroom alone, I educate students from seven countries, speaking three different languages and bringing unique cultural norms to our space. However, my school's curricula in New Jersey does not reflect the level of diversity that we experience within our school community.

Textbooks and lessons are often focused on the dominant culture. There is a heavy emphasis on white, Eurocentric culture, which ignores other cultures and ideals (Leonardo & Grubb, 2019). Eurocentric culture refers to the focus on westernized belief systems and societal patterns with a disregard for outside cultural norms and principles. Leonardo and Grubb (2019) explained the issue with a single framed curriculum noting that "...students who do not see themselves in the curriculum will not have an organic connection with schooling" (p. 19). This means that the materials are more difficult to access and comprehend as they are written in a way that can only be easily understood

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by one group of students: white, middle/upper-class children. Furthermore, it can cause a disconnect between groups of students and education. Students who do not come from Eurocentric backgrounds may feel detached from the curriculum, peers, and school altogether.

Coupling the myriad of curricular restraints with the pandemic, education became more difficult to access, literally and figuratively. Students faced different hardships and had varying responsibilities during the pandemic, which impacted their access to learning materials (Darling-Hammond et al., 2020). Additionally, some schools began virtual instruction immediately, while others, like my own, used paper packets to enhance student learning (Darling-Hammond et al., 2020). As schools adapted their curricula to an online format, there was minimal thought about how maintaining an already white-focused curriculum online would add a layer of difficulty for linguistically and culturally diverse students.

Instead of taking advantage of unprecedented times and altering lessons to be responsive to students' cultures and needs, at my school, teachers had to continue with the same standards-based lessons. Doing this advanced the narrative of curriculum creation being dominated by white people (Brown & Au, 2014). Further, teachers were required to test students' knowledge and understanding from these lessons. Forcing assessments upon students and teachers who were struggling to adapt caused unnecessary stress. Students need a curriculum that they can access and understand to develop positive connections with school and learning.

We Know the Problem, What Comes Next?

The pandemic allowed for something that had rarely been done before. It gave families insight into the information and conversations children take part in daily. It allowed parents[1] to participate in their child's education actively. Before March 2020, few schools included parents in learning spaces (Alexander, 2016). Even schools with "open-door policies," like my own, seldom advertised this option. Instead, the school system has seemed very "us" versus "them"- school versus families.

Families have already been privy to what occurs during their child's school day because of virtual learning. This affords us a unique opportunity, albeit the circumstances are not ideal. Schools, which generally rely on teachers' knowledge base, who have been trained in the execution of dominant curricula (Elemore, 1996), can expand their educational understandings. Instead of continuing the current cycle of knowledge production, we can use the new formats for learning and adapt the curriculum. Rather than turning away parents' commentary and ideas, we now have a platform to listen and innovate.

The Need for Collaborative Changes

Families and schools must work together to critique and adjust current curriculum practices. However, school personnel must make the first approach for a community's cultures to be input into school curricula. Keeping in mind parents' busy schedules, we should attempt to meet them on their terms and in time frames that might be outside a school's hours of operation. Further, instead of meeting within the confines of a building, we can utilize online tools to video conference. Over the past two years, most people have become accustomed to personal interactions through video chatting and electronic formats, so we can continue online contact instead of rushing back into "normal" communication patterns.

There are numerous benefits to using online platforms. First, families who cannot attend traditional meetings because of work and life duties can now be part of the conversation. Likewise, teachers and administrators who would like to be involved in the process can attend from their own homes. This takes away the stress of staying late at work and allows educators to see to their personal needs before and after the meeting. Lastly, using video tools allows everyone to have a "home-field advantage." Often, when parents come to school, they may feel ostracized or defensive as they are in a space that is not comfortable to them. Allowing families, and school personnel, to speak freely from their homes provides a certain sense of relief that school buildings cannot. Through this, more families can express their genuine feelings and critiques of curricula to create a better one.

Once the initial meeting time is set, it is essential to have parameters and clear goals. Parents will be made aware of what subject or learning material is being critiqued and adjusted, while teachers must enter the meeting with an amenable and reflective mindset. This is not to silence anyone but to get the group focused on what is at hand-developing a meaningful, culturally responsive curriculum.

As educators, we generally take feedback critically rather than constructively. We give maximum effort in everything we do, so it can be challenging to listen to criticism; however, teachers must come with open minds to appropriately alter lessons to meet the cultures within their community. Lastly, meetings should allow administrators to present data about student learning[2] in an accessible way so that teachers and families can objectively assess the curriculum.

After hosting sessions with parents, the district heads of curriculum should enlist the help of teachers to improve the scope and sequences for each subject and grade level. By processing recommendations from parents, teams of teachers and the department leaders should adapt the materials and information presented where feasible and find spaces where culturally relevant pedagogy (CRP) fits in Ladson-Billings (1995). CRP is an approach to teaching that empowers students to critically analyze, and review materials presented to them; it allows students to understand the lens in which materials were developed and which voices were systematically excluded. Therefore, CRP can be used as a tool while adjusting the curricula, teams should be finding areas where students can question the assumptions of the curriculum and think critically about the beliefs presented so that additional perspectives can be introduced into the curricula. Moreover, the scopes should allow teachers time for powerful conversations about information taught to make further adjustments and develop critical thinking skills.

Conclusion

The pandemic has provided opportunities for change and growth. Using curriculums that focus on the dominant culture have a long history of under-serving culturally, linguistically, and racially diverse student bodies. Instead of holding on to the past, it is vital that communities and schools collaborate to adjust the curriculum promptly. COVID-19 has allowed educators to alter their approach to teaching, so we must cease the chance to make meaningful changes to the curriculum. Through open, honest, and productive dialogue, curricula can begin to reflect the student bodies we interact with daily and allow genuine learning and critical thinking to occur.

Notes

[1] Understanding children are raised in varying family structures (parents, grandparents, aunts/uncles, etc.) the term "parents" is used to denote anyone raising a child.
[2] Learning refers to knowledge gained throughout the year independent of standards.

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Culturally Relevant Pedagogy in the post-COVID-19 Era

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Introduction

In 1995, Gloria Ladson-Billings introduced a landmark essay entitled "But That's Just Good Teaching! The Case for Culturally Relevant Pedagogy" to the world of educational research and teaching. It explained culturally relevant pedagogy (CRP) and its three tenets—academic success, cultural competence, and critical consciousness. Ladson-Billings' main argument was that public schools in America were not serving their children and youth of Color[1] well.

Her argument is still discussed and well-documented in today's literature (see, for example, Emdin 2016, 2021; Gay, 2018; Ladson-Billings, 2021; Muhammad, 2020; Nieto, 2000, 2010). Ladson-Billings (1995a, 1995b, 2001) defines CRP as a form of teaching where teachers use a student's culture to guide student learning. In this view, a culturally relevant teacher: (1) acknowledges that one's culture and identities are dynamic and fluid in society rather than static. In doing so, the teacher becomes responsive to the ever-changing cultural, economic, and social contexts of the lives of their students (Nieto, 2000, 2010); and (2) is consciously aware that public schools in America are social institutions that thrive on systemic racism and pedagogical practices of a bygone era (Ladson-Billings, 2001; Lyiscott, 2019).

With this in mind, in this essay, I will revisit and critically analyze the three tenets of CRP. My unique positionality, specifically my identities as a novice Latino urban educator and doctoral student of Color informs the reflective questions I pose to educationalists throughout this essay. I define an educationalist as individuals who know various principles and pedagogical practices of teaching (e.g., classroom teachers, school leaders, literacy coaches, curriculum writers, and teacher educators). I will explore the three tenets of CRP by situating Ladson-Billings' theory in the post-COVID-19 era. I will do so by asking: What does CRP look like in a classroom post-COVID-19? I define the "post-COVID-19 era" as the period after the lockdown imposed on the United States by the pandemic (e.g., closure of businesses and public schools). By posing such a question, I invite educationalists to critically re-analyze CRP and its need in schools today more than ever before (Ladson-Billings, 2021).

Tenet #1: Academic Success

Schools must make it their priority to provide students with many opportunities to experience academic success. Ladson-Billings (1995a, 1995b, 2001) argued that for students to become successful citizens in a democracy, in the United States, they must develop their academic skills (e.g., reading, writing, mathematical, technological, and intrapersonal and interpersonal social and political skills). Students must develop such critical skills regardless of the social inequalities and inequities present in our society. While I agree with many aspects of Ladson-Billings' argument, I disagree with her overall conclusion that regardless of the social inequalities and inequities (e.g., systemic racism,

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poverty, persistent social and economic inequalities, and lack of appropriate school funding), students should be expected to develop their academic skills fully.

In other words, how can students grow as critical thinkers and learners if they are not taught how to acknowledge and regulate their emotions–which are consistently influenced by the negative impacts of social, economic, and political inequalities and inequities present in society? Not all children and youth learn to process these negative interactions and experiences; therefore, they cannot reach the level of critical thinking Ladson-Billings suggests because academic success is not independent of emotional security.

Furthermore, as we think about our American society and what it will look like post-COVID-19, specifically the future of schooling in America educationalists need to ask themselves the following question: How do we define academic success post-COVID-19 through the lens of social and emotional learning (SEL)? Cristóvão et al. (2017) define SEL as the "capacity to recognize and manage emotions, solve problems effectively, and establish positive relationships with others" (p. 1).

As we continue to battle COVID-19, I define academic success as a learner's ability to: (1) acquire and create new knowledge individually and collectively across the content and subject areas; (2) acknowledge that to grow as a learner, one must learn the importance of regulating one's emotions, which are constantly impacted by the social, economic, and political inequalities and inequities around them; and (3) recognize that learning is a lifelong journey where one's mind is constantly on a quest for new knowledge. Schools cannot meet Ladson-Billings' definition of academic success in the current climate, but if schools cultivate these three abilities in students, only then can society expect children and youth to develop their academic skills fully.

Tenet #2: Cultural Competence

Living in a pluralistic society requires its citizens to value different cultures and their role in society. Ladson-Billings (1995a, 1995b, 2001) argued that culturally relevant teachers provide their students with the opportunities to affirm and value their culture while acquiring knowledge and fluency in another culture. That is, a culturally competent teacher uses the culture of their students to guide their learning. Nieto (2000) defines culture as "the ever-changing values, traditions, social and political relationships, and worldview created, shared, and transformed by a group of people bound together by a combination of factors that can include a common history, geographic location, language, social class, and religion" (p. 139).

With this notion of culture in mind, I have realized that before teachers can successfully learn about the cultures of their students, they must first embrace their own cultural identities. Educators must also challenge their biases, assumptions, and stereotypes about specific cultural, racial, and ethnic groups—both consciously and subconsciously. We live in a nation where classroom teachers often allow their own biases, assumptions, and stereotypes to lead to deficit perspectives of diverse students; I am guilty of this myself. Thus, as we embark on a new era of education in the United States, the post-COVID-19 era, educationalists should ask themselves the following question: Through the lens of conscious and unconscious bias, how do I define cultural competence post-COVID-19? I define cultural competence as: (1) a teacher's ability to embrace their cultural identities and of their students and use them to drive classroom learning; and (2) an educator's

capacity to critically challenge their biases, assumptions, and stereotypes that they have for students, which negatively influences teaching and learning.

Tenet # 3: Critical Consciousness

In order for students to thrive in our American democratic society, schools must teach them how to develop their critical consciousness. Ladson-Billings (1995a, 1995b, 2001) defined critical consciousness as a student's ability to critically analyze the world around them, explicitly the societal inequalities and inequities that affect their lives. Ladson-Billings' conceptualization of critical consciousness is relevant in today's world. We are still amidst the COVID-19 pandemic and continue to witness the exacerbation of social, racial, political, and economic inequalities and inequities. While I agree with Ladson-Billings, schools must provide students with a chance to develop their critical consciousness; classroom teachers must also get the opportunity to engage in professional development to enhance their critical consciousness. They must explicitly learn more about how social, political, and economic inequalities and inequities negatively impact student learning. I currently teach in an urban school district that does not invest in meaningful professional development opportunities for its teachers and school leaders (e.g., antiracist teaching and leadership, how to teach a culturally responsive curriculum, how to address systemic racism in schools, and how to facilitate conversations about intersectionality and its role in teaching and learning).

Hence, as educationalists, we must ask ourselves the following questions: How do I define critical consciousness post-COVID-19? I define critical consciousness as: a teacher and student's ability to critically challenge (individually and collectively) the social, political, and economic inequities and inequalities, along with the racial and social injustices that affect our American society–our public schools.

What's Next? — The Future of CRP Research in the Post-COVID-19 Era

To conclude, in this essay, I situated Ladson-Billings' theory of CRP within the context of post-COVID-19 era. I did so by inviting educationalists along with educational researchers and scholars interested in CRP and its use in schools to explore my critical analysis of CRP and its three tenets in their research. In doing so, we can continue to build upon Ladson-Billings' seminal scholarship (Ladson-Billings, 1995a, 1995b, 2001).

I plan to continue the conversation using my identities, that of a Latino novice, culturally relevant teacher, doctoral student, and emerging teacher educator, researcher, and scholar. I will explore the reflective questions posed throughout this essay using my identities as my lenses and qualitative self-study teacher research which is situated in my personal and teaching experiences (Samaras, 2011). Through self-study teacher research, I will continue to reimagine public education in America. Using my identities and teaching experiences during the post-COVID-19 era, I will continue to establish my ideas and re-conceptualizations of CRP and its three tenets within the context of my teaching experiences (both past and present) along with the schooling experiences of my students–all which are dynamic. By doing this, I will continue to build upon the scholarship of my predecessor, Ladson-Billings (1995a, 1995b, 2001, 2021) and continue to work towards creating learning environments that are equitable and inclusive for students of Color.

Note
[1] "Color" is capitalized intentionally as a means for empowering those who identify as people of Color.

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Equity for Multilingual Learners: A Global Network Response to the Pandemic

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Introduction

The COVID-19 pandemic has been complex and challenging for educators, students and families worldwide. One could argue that education has changed as much in the past two years as it has in the past two centuries. By necessity, we have unbolted learning from the physical space of the classroom and accelerated the evolution of education: from Horace Mann's factory schools of the industrial era to personalized and digitized ecosystems of the twenty-first century. On one hand, this shift has highlighted inequities for multilingual learners and their families. On the other hand, the pandemic has redefined schools as a valuable point of connection for the entire community. At the intersection of innovation and exhaustion, educators worldwide have faced an entirely new reality: how to continue serving diverse school communities while responding to the pandemic. Teachers taught themselves not just new skills but entirely new digital learning platforms, literally overnight, to keep students engaged online. This article explains how, in an increasingly interdependent world, a global network of schools and scholars co-created a powerful community to both learn from and contribute to dialogue about equity for multilingual learners during the pandemic.

Probletunities in the Coronaverse

As an unexpected catalyst, COVID-19 forced innovation by requiring a shift to hybrid/virtual teaching followed by continual transitions between in-person and online learning. In a prescient pre-pandemic view of technology and education, Collins and Halverson (2018) observed that in order to adapt to a rapidly changing world, schools should leverage learning opportunities offered by new technology. To develop 21st century skills and ensure students are future-ready, Collins and Halverson asserted that learning should be uncoupled from school, allowing a greater variety of input and increased engagement. Over the past two years, the pandemic has both reflected and accelerated some of these trends as classroom experiences have been by necessity hybrid, with students learning in and out of school, community and home environments. School was no longer a place but a process, requiring teachers, students and families to collaborate in new ways.

Amid the collective necessity to pivot towards new technologies for teaching and learning during the pandemic, many educators expressed the need to ensure equity for multilingual learners. When online learning relies exclusively on English as the medium of instruction, students and families who navigate school in multiple languages can be excluded. We know that English proficiency "cannot be seen as a prerequisite to meaningful participation in school because this limits engagement" (Nordmeyer et al, 2021, p. 60). Instead, language must be viewed as something that is developed *in the process of learning* when students are supported and have access to the richest curriculum our

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schools have to offer (NASEM, 2018). During the pandemic, a focus on the intersection of multilingualism and equity catalyzed connections across the worldwide community of teachers. Over the past two years, global networks such as the WIDA International School Consortium, provided an opportunity for educators to connect with, share, and learn from each other as a community of practice.

The WIDA International School Consortium

Located at the University of Wisconsin-Madison, WIDA supports schools around the world in using WIDA standards and assessments by disseminating research, facilitating professional learning and developing instructional resources to serve multilingual learners. The WIDA International School Consortium was created in 2013 and currently serves more than 500 PreK-12 international schools across 100 countries committed to developing inclusive programs that build on the assets of multilingual learners. The WIDA asset-based approach entails a shift in teachers' dispositions to focus on what students *can do* rather than what they *cannot do*. Shifting from a deficit-based to an asset-based view of multilingualism is one of the core principles of the WIDA standards and assessments, and the term "multilingual learner" is used intentionally rather than "English Language Learner" to decenter English and focus on students' entire linguistic repertoires.

For many schools in the post-colonial era of globalization, English persists as the medium of instruction; however, the rapid growth of the WIDA International School Consortium indicates a desire by many international schools to no longer view multilingual students as deficient and instead focus on what multilingual students can do. Over time, the global WIDA network has evolved from a focus on English language standards and assessments to providing opportunities for reciprocal learning around language and equity, connecting educators and facilitating collaboration across schools worldwide (Bettney & Nordmeyer, 2021). This larger conversation has recognized that using English as the *medium of instruction* does not necessitate English as the *medium of learning*, fostering approaches such as translanguaging to build on student assets.

A Network Response to the Pandemic

In response to the pandemic, educators and scholars in the WIDA International School Consortium engaged in transnational collaboration by leveraging the existing learning network to connect, co-create and re-imagine school together. In the first half of 2020, the WIDA global network partnered with a variety of international educators to better understand how to support multilingual learners, their teachers and their schools in the midst of the COVID-19 pandemic. Educators committed to equity for multilingual learners were concerned that the rapidly changing educational landscape might not be serving some students and families.

Using Flipgrid, an online video creation and sharing platform, WIDA encouraged educators around the world to share some of their challenges and questions about supporting multilingual learners online teaching. Since then, the Flipgrid video-share has received over 10,000 views and 185 hours of engagement. These virtual interactions served as the foundation for a reciprocal learning community comprised of international educators centered on the intersection of three subdomains: PreK-12 teaching, education of multilingual learners and teaching online.

The WIDA Global Community of Practice

As WIDA engaged with its online community, educators expressed the desire for a more extended professional learning experience for international educators which prompted

the creation of a more formalized WIDA Global Community of Practice. To begin, Flipgrid video contributors, authors of WIDA newsletter articles, co-presenters from conferences, and other influencers and activists within the WIDA global network were invited to join this new community. In order to build on practical wisdom of experienced teachers and identify promising practices for online professional learning, international teacher leaders were involved in co-creating and co-facilitating this new space. This model was based on the concept of a community of practice, or a group of people "who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger et al., 2002, p. 4). Communities of practice also involve interplay between novices and experts and help to create a professional identity (Lave & Wenger, 1991).

Incorporating the experiences of WIDA facilitators, researchers and practitioners, the WIDA Global Community of Practice was designed to provide innovative reciprocal professional learning by amplifying the voices of global educators and engaging school-based teams in a collaborative online year-long guided research and design experience. The WIDA Global Community of Practice was launched in October 2021 to sustain collaboration during and beyond the pandemic in shared inquiry about how to create equitable systems to serve multilingual learners in today's schools.

As a shared community of practice where educators can co-construct or critique new ideas and approaches, the global WIDA network both catalyzes and disseminates innovation from individual educators and groups of practitioners at member schools. Ideas flow, mutate and evolve as they are shared among independent school, a process described by Sannino and Nocon (2008): "sustainability of innovations does not refer only to local continuity, but also to diffusion and adaptations in other settings" (p. 326). This networked transmission of innovation builds on the spread and sustainability of new ideas while allowing for local control. External influence is offered in the form of a guided inquiry into a problem of practice, engagement with relevant curated research and facilitated dialogue about educational innovation.

Over the past six months, school-based teams have actively engaged with problems of practice focused on how to reduce opportunity gaps for multilingual learners and how to dismantle systems that perpetuate privilege based on language or nationality. While these difficult questions may not be fully resolved during this year-long professional learning experience, teams have engaged in a guided design cycle to develop prototypes to begin to address these questions within their specific context. The WIDA Global Community of Practice culminated in a capstone celebration at the end of the 2021-2022 academic year, providing participating teams the opportunity to share what they have learned from their prototypes with the larger WIDA community. A new cohort of international educators will be inducted into this process later this year to sustain the work and identify and engage with new problems of practice.

While the WIDA Global Community of Practice provided a structured affinity space (Gee, 2005) for the exchange of ideas, the wider global WIDA network can also be viewed through the lens of innovation, providing an opportunity to disseminate new practices and tools among member schools. This innovation migration relies on peer dialogue and the opportunity to share, iterate and adapt: "since educational innovations are local and specific, they tend to spread differently from educational reforms. Rather than being adopted at once by a whole educational system, they spread and diffuse through interpersonal interactions" (Sannino & Nocon, 2008, p. 326). For educators in independent international schools who may feel isolated as they generally do not belong to a particular school district, this type of network is essential.

While the pandemic has indelibly altered the education landscape, it has also opened doors for important global dialogue about equity and inclusion. And over the past two years, educators have discovered they needed each other more than ever to reflect on and to make sense of the rapidly changing world. Across the WIDA global community, teachers have begun to co-construct a new reality: creating more equitable schools and ensuring that multilingual learners have meaningful opportunities for learning.

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Brazilian Digital Learning Strategies During the COVID-19 Pandemic and Their Impact on Socio-Educational Gaps: An Exploratory Study on Manaus, Rio de Janeiro, and São Paulo

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Brazil: Brief demographic and political considerations

The Federative Republic of Brazil is located in South America and shares its borders with all nations in the region, except Chile and Ecuador. The country displays at the same time a highly diverse population–composed mainly of Indigenous Americans, the descendants of African enslaved people and European settlers–and remarkably unequal wealth distribution. The study National Continuous Household Sample Survey (*Pesquisa Nacional por Amostra de Domicílios* - PNAD), launched in 2019 by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*-IBGE), highlighted that the average monthly income of the wealthiest 1% of the Brazilian population reached, in 2018, the correspondent of 33.8 times the income of the poorest 50% (Canzian, 2019). According to the projections made by IBGE, approximately 213,554,459 people live in Brazil, 84.72% of whom reside in urban areas (IBGE, 2021a). Nearly 52 million people, or 24.2% of the population, are between 0 and 17 years old (IBGE, 2021b). In the 2019 PNAD, 42.7% of Brazilians declared themselves White, 46.8% Brown, 9.4% Black, and 1.1% Asian or Indigenous (IBGE, 2021c).

The results of the 2018 presidential election showed that 55% of the electorate assumed that Jair Bolsonaro could lead the country towards new paths, especially regarding the lobbied reforms that would put Brazil's economy on the right track again. Usually in line with religious, conservative, and militaristic discourses, the politician had slight national presence and political representation (Almeida, 2013, p. 580) until running for the position of President of the Republic, under a small and equally unknown party, the right-wing Social Liberal Party (PSL). Immediately after being sworn in as president, he declared that his government would aim to "unite the people, rescue the family, respect religions and our Judeo-Christian tradition, combat gender ideology, conserving our values" (Phillips, 2019). The highlighted line of thought summarizes the essence of the conservative guidelines that have been adopted in different realms of the Bolsonaro administration. The government has also embraced a neoliberal approach inspired by the economic reforms implemented in Chile (Amorim, 2019) and suggested the retrenchment of the welfare dimension of the state (Mladenov, 2015). During the COVID-19 pandemic, this approach would inspire the management of an already decentralized national education system in which states and municipalities lead the implementation of schooling policies.

The Brazilian education system: A decentralized structure and its main challenges

Brazil's National Education Guidelines and Framework Law (*Lei de Diretrizes e Bases da Educação* [LDB]) defines two main levels of education: basic education (*educação básic*a), subdivided in early childhood education (*Educação Infantil*), elementary education (*Ensino Fundamental*) and secondary education (*Ensino Médio*); and higher education (*educação*

superior) (LDB, 1996). Children are officially required to attend an education cycle of 14 years (Monroy, McNally & Trines, 2019). Whereas basic education is compulsory and provided free of charge at public schools, private institutions can also offer schooling according to the guidelines established by the Constitution and participate at all educational levels with government approval (OECD, 2015, p. 14).

The Ministry of Education (MEC), as a federal ministry, defines the guiding principles and coordinates national education policy for all education levels. In collaboration with states, municipalities, and other key stakeholders, such as the Ministry of Social Development, non-governmental organizations, unions, and the private sector, the MEC designs and implements national education policies under the LDB (*Lei de Diretrizes e Bases da Educação* No. 9.394, 1996). Municipalities are the main ones responsible for the provision and the quality of early childhood education and share with states the responsibility to finance and manage primary and lower secondary education (Brazil, 1988). States are also responsible for upper secondary education, being accountable for creating their education policy within the national framework set by the MEC, providing schools' infrastructure, equipment, student meals and transportation, and teacher training, recruiting, and payment (OECD, 2015). Tertiary education institutions, such as universities and higher education institutes, have institutional autonomy, although the federal government also delineates tertiary education guidelines.

The Brazilian Constitution expresses that education, a right of all and the duty of the state and the family, must be promoted and encouraged with societal collaboration (Brazil, 1988). According to this notion, fostering education must be a responsibility shared by governments– considering federal, state, and local levels–and society. Within this logic, Brazil's education system is largely decentralized to states and municipalities. The National Common Core Curriculum (*Base Nacional Comum Curricular* - BNCC) sets the main content and education modalities that states and cities must respect. However, since the LDB allows some flexibility in curricula, educational guidelines may encompass content relevant to regional and local characteristics of student society, culture, and economics (LDB, 1996). Schools must be in session for at least 200 days a year. The school year, which typically runs from February to December, can be adapted due to each state or municipality's weather or economic conditions (LDB, 1996). Although the primary language of instruction in public schools is Brazilian Portuguese, Indigenous communities are guaranteed use of their mother tongues and their learning methodologies (LDB, 1996).

Brazil is a country that faces diverse forms of inequality in different areas – education is no exception. In a highly decentralized system where most education responsibilities fall under states' and municipalities' jurisdictions, disparities are blatant regarding access, quality, and funding. One of the most cited reasons for those issues is the country's size: having the fifth largest population in the world, 48.5 million children were enrolled in basic education in 2018, 81% of whom attend public schools (Costin & Pontual, 2020). Although student learning has shown improvement in the last decades, the country still lags far behind wealthier nations in large-scale assessments. Moreover, most students in secondary education drop out before graduation, and teachers– drawn from among the lowest achievers– have few performance incentives (Diop, 2012, p. x). Many layers of complexity are added to this picture when other gaps, such as urban vs. rural and public vs. private, and marginalized groups such as indigenous communities and lower-income populations, are considered. Differences in outcomes between girls and boys are also a challenge that spills over from education to the labor market, especially for students from disadvantaged backgrounds (OECD, 2015).

Digital Learning Strategies in the three largest municipal networks

The suspension of school activities amidst the Covid-19 pandemic interrupted in-person classes in the middle of March and impacted 47.9 million students (INEP, 2019). The Ministry of Education did not propose a unified strategy or digital platform to be adopted by schools and other institutions during the pandemic; this responsibility fell under the auspices of states and municipalities, reinforcing the decentralization of the Brazilian system of schooling. The MEC's general guidelines posited that schools should remain closed until the situation could be considered stable and reopening was safe– which could be defined by each municipality or state (Verdélio, 2020). Different education networks across Brazil had to hastily develop learning and teaching strategies to provide pedagogical content remotely. The study "Education Cannot Wait" (*A Educação Não Pode Esperar* - ENPE) surveyed 232 municipal and 17 state education networks and revealed that public schools tried to establish forms of coordination, to share good practices and support each other (Silveira, 2020, p. 5). Among the initiatives, the report highlighted the distribution of food for students and families, remote teaching strategies and tools adopted, and preparation for the return of in-person classes (Silveira, 2020, p. 5). The study also showed that the response time of education networks varied widely, according to their internal organization and ability to produce educational content.

Some of the networks claimed to have started providing online content right after the suspension of in-person classes; others began offering digital content throughout May 2020, and 18% of the surveyed networks had not yet adopted any distance learning strategies when the research was published, in August 2020 (Silveira, 2020, p. 5). Each network defined its guidelines regarding digital platforms according to the technological and material resources available in each state or municipality. This report considers the strategies adopted by the three largest municipal education networks in Brazil–Manaus, Rio de Janeiro, and São Paulo.

Manaus

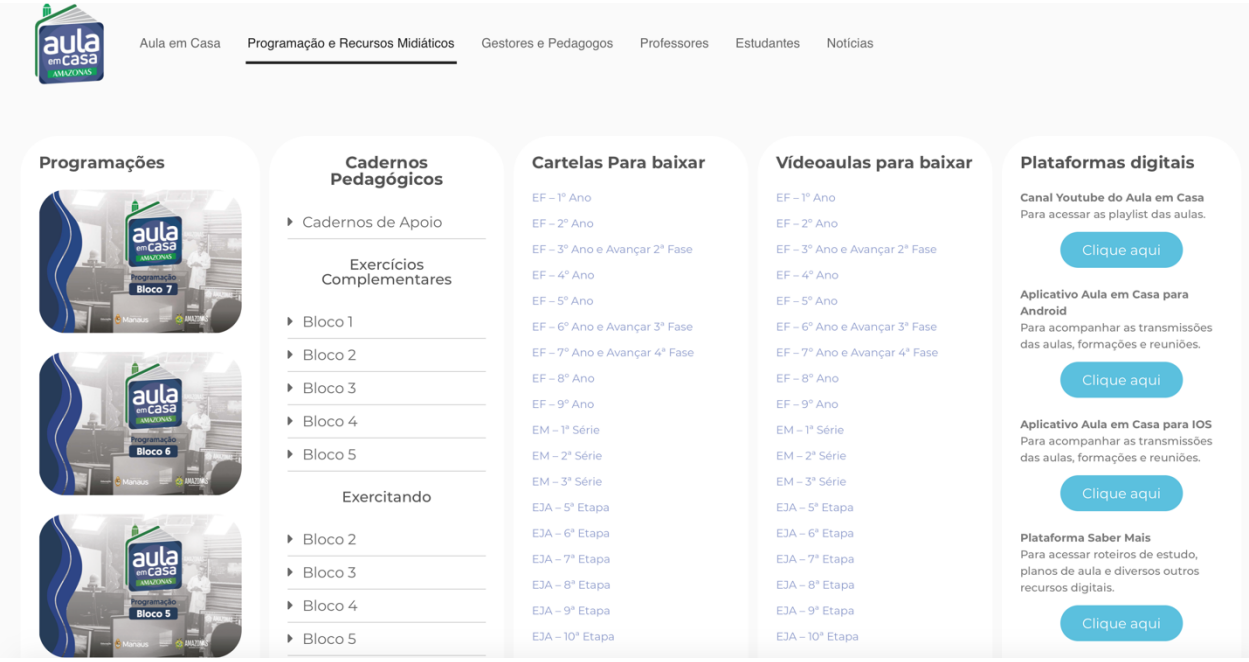
The Manaus Department of Education is responsible for more than 245,000 students, having 496 schools and more than 13,000 civil servants, including teachers, pedagogues, and administrative staff (Marinho, 2020). The municipality anticipated the mid-year school recess for March amid the pandemic and the need for social distancing; classes resumed remotely on April 1st, after just 15 days of school recess. In partnership with the Amazon State Department of Education (Seduc-AM), Manaus created the project "Class at Home" (*Aula em Casa*), which provided daily activities through booklets and online classes to more than 450 thousand students served by the two departments. Additionally, Manaus' DOE reorganized the curriculum to meet the needs of students at each level and started broadcasting classes on public television networks and the internet (Marinho, 2020). The municipality developed multiple approaches to ensure that schools continued teaching, providing quality education, and preserving the entire school community (Seduc-AM, 2021). Among the main strategies adopted by Manaus, we can identify (Aula em Casa, 2020):

- Organization of content by grade and according to current curriculum proposals.
- Selection of video classes and other digital resources aligned with the school curriculum.
- Availability of digital resources online through digital platforms and messaging applications.
- Provision of offline digital resources through DVDs, external hard drives, and flash drives.

- Digital booklets for students and teachers containing various activities related to the curriculum.
- Informative material for students, families, and teachers.
- Teacher training events with didactic-pedagogical guidelines for curriculum organization and learning strategies during remote and/or hybrid teaching.

The municipality of Manaus also made a website available, to offer all the content in a simpler way, as seen in Figure 1.

Figure 1
"Aula em casa" platform. Students can access booklets, apps, and the YouTube channel where all classes are made available



Rio de Janeiro

The city of Rio de Janeiro has an educational network comprised of 1,542 schools and 641,141 students (SME Rio, 2020). Classes were suspended on March 13; however, since many children had school meals as their primary source of nutrition, school cafeterias remained open during lunchtime (PCRJa, 2020). A week later, the city government declared that schooling would resume through "Google for Education." The system would offer accountability related to the time students and teachers spent online; pedagogical materials would also be available through the Secretary of Education's social media channels (PCRJa, 2020). From that moment on, schools would be closed until further notice and the local government would deliver children's meals for families in need (PCRJa, 2020). Information and communication technologies needed to be expanded, aiming to reach teachers' and students' households that did not have the necessary tools to access the internet; booklets and other printed materials would also be made available to pupils in vulnerable settings (PCRJa, 2020). Later, the city government changed the strategy and decided to replace "Google for Education" with "Microsoft Teams" and added that other platforms would be used for specific purposes at the discretion of schools of educators. The information about Rio's digital strategies is summarized in the table below:

Table 1
Rio de Janeiro's digital strategies during the COVID-19 pandemic (2020-2021)

Platform	Provider	Description	Focus
MultiRio	The City of Rio de Janeiro's Government	Official website and social media chanel (YouTube, Instagram, and Facebook), composed by school's complementary didactic material and audiovisual content with several resources of pedagogical support.	Elementary School Education; Parents' Orientation and Teachers' Training; Socioemotional Learning
SME App	The City of Rio de Janeiro's Government	This is an app that offers students media and audiovisual content which can be accessed through desktops and mobile devices.	Students, all levels of education.
Escola.Rio	The City of Rio de Janeiro's Government	The Platform provides school activities by expanding pedagogical alternatives and increasing educational experiences. Through the app, parents can access students' grades and attendance, the school calendar, and the lunch menu.	Teachers, parents, and students at all levels of education.
MATIFIC	External	Mathematics education platform.	Not specified.
Alfa e Beto	External	Digital games with a focus on literacy.	Pre to elementary school.
Microsoft Teams	External	The Secretary of Education offers this platform to teachers, students, and school staff, in order to enable interaction and communication through virtual classrooms.	Teachers and students, all levels of education.

Sources: MultiRio, 2020; RioEduca, 2020a; RioEduca, 2020b; PCRJ, 2020b; PCRJ, 2020c.

São Paulo
On March 23, the city of São Paulo decided to close its school network, comprised of 3,391 schools and more than one million students (PCSP, 2020a). The annual July school recess happened ahead of schedule, and all school services were suspended by April 9 (PCSP, 2020b). Starting on April 13, and while the suspension of in-person classes lasted, learning activities were carried out through printed materials delivered to students' homes (PCSP, 2020b). The booklets were designed so that children, adolescents, young people, and adults who studied in municipal schools in São Paulo could carry out activities with autonomy and help from family members (PCSP, 2020c). These materials also contained guidelines for parents and tips on organizing a study routine (PCSP, 2020c). Digital content based on the city curriculum was offered to complement the printed materials through a partnership with Google for Education; the virtual environment is managed by teachers (PCSP, 2020c). In addition, the city broadcasted classes through a television network, TV Cultura, to increase vulnerable students' opportunities to access school content (PCSP, 2020c). Teachers, managers, and technicians were trained in using Google Classroom tools through online courses and tutorials offered by the secretary of education (PCSP, 2020c). The return of students to in-person classes was dependent on the suspension of the emergency declared by the city of São Paulo. It was expected that students could go back to school in September 2021. However, a serological survey

conducted by the city government showed that 64% of students tested in the municipal network were asymptomatic for Covid-19 (PCSP, 2020d). Students only returned to in person classes in October 2021 (PCSP, 2021).

Remote learning strategies in the three largest educational networks: actors and challenges

To understand how the policies adopted in different parts of Brazil affected learners and learning outcomes and have contributed to widening the digital divide in the country, the researcher conducted an exploratory study with different actors based on semi-structured interviews. The interviewees for this inquiry were a teacher from a public school in Rio de Janeiro, a policymaker working in the secretary of education of Manaus, and a policy analyst working for a non-governmental organization focused on public education. The interviews were conducted in 2021 and centered on each interviewee's perspectives according to their professional standpoint. Based on the questions presented to the interviewees, some themes emerged in the analysis. Topics focused on how educational policies during the pandemic affected three specific groups: students, families, and teachers. The findings suggest that the lack of unifying guidelines from the Ministry of Education made states and municipalities develop strategies constricted by the scarcity of resources at their disposal. Another conclusion is that, despite regional variations, similar issues arose in different parts of Brazil. For instance, given the students' diverse socioeconomic backgrounds and schools' limited funding, digital platforms were hardly the best option for children and educators. Still, they organized to make the learning experience possible amidst a scenario of uncertainties and a lack of coordination from the central government. A last relevant finding was that the digital divide could not be understood independently of other gaps, such as those related to socioeconomic status. The research findings are discussed below, according to the data offered by the interviews.

Students

All the interviewees highlighted that one of the most affected groups was students. According to municipalities' and state governments' official discourse, keeping schools closed was essential to protect children. But these children did not stay at home; they were in the street working to help their families or simply loitering. One of the interviewees explained that all students had issues and losses. Parents took small children out of schools and children in elementary schools forgot what they learned in their first years of education. Older students in high school dropped out. Interviewees also emphasized how the suspension of classes impacts children differently, depending on their socioeconomic status, age, and geographical location.

Concerning the digital divide, the educators' perceptions confirmed that the situation is even more challenging when students' connectivity is considered. Their comments emphasize that not all students have access to devices, such as personal computers, tablets or smartphones, or internet connections in their homes. The situation worsens in the rural areas and the impoverished regions of different Brazilian states, especially those in the North and Northeast. In those regions, the percentage of public-school students who used the internet was 68.4% and 77.0%, respectively; in other parts of Brazil, the number ranged from 88.6% to 91.3% (IBGE, 2021d). One of the interviewees stressed that enhancing students' connectivity is a concern in national politics nowadays. However, the interviewee asks: "how will children access the internet in schools if they are closed? Will this connectivity get to students' homes? Even if the internet gets to them, families will have no means to offer the structure children need to learn." Considering all the difficulties the government and families faced to access digital learning, interviewees

emphasized that the digital divide added a layer of complexity to a series of already existing inequalities.

The socioeconomic divide was also evident in the gap between private and public schools. One of the interviewees mentioned that a common scenario in the three municipalities considered in the report was that children in private institutions mostly had socioemotional issues. However, because these schools reopened during the pandemic, these pupils commonly had the chance to take care of their mental health and recover lost pedagogical content. Students in public schools had the same issues but no support from the school or parents to treat their anxiety and other emotional disorders. These children, especially female students, had additional problems within their homes. Girls became responsible for housework and were unable to balance their studies and the obligations at home. They also had to face different forms of abuse, including physical and sexual violence. Regarding the students ready to access higher education, only 2,699,806 took the national examination tests to enter universities in 2020, a considerable difference from the two previous years, when almost four million students participated in the exams (Lesme, 2021).

For Brazilian children, schools are not only a place for learning but also to exert their citizenship. The interviewees stressed that schools' closure impacted different children's rights, centrally, food security and nutrition. When the pandemic started, the first concern of state and local government was related to children's meals since most of them depend on schools for their nourishment. Municipalities focused on offering meals to students and their families through vouchers, food parcels, and other meal distribution strategies. According to one of the interviewees, only after the municipalities' secretariats of education solved this issue, nearly a month after classes' suspension, did pedagogical concerns emerge as a priority. Students' food security remained an essential concern ever since.

The challenge of school attendance is also relevant when the analysis emphasizes children's age. One of the interviewees highlighted that having children from 6 to 10 years old in schools was no longer a significant issue among all the educational challenges faced by the country. In the last 15 years, Brazil adopted policies and programs that ensure these students' access to public institutions and have made slow progress in guaranteeing schools for all children. However, the pandemic reverted these advancements. A second interviewee works with young children in low-income families who have just learned how to read and write and argued that they could not keep constancy in their studies. Since most of them needed their parents' cellphones to access the internet, they could not have synchronous classes and interact with their teachers and classmates. The interviewee predicted that the time these children spent out of the classroom would impact their education significantly. They will have to relearn the fundamental pedagogical content, which will be challenging in a scenario with scarce support from the government and their families. UNICEF's report "Out-of-School Children in Brazil" (2021) confirms these opinions. According to the publication, while children aged 6 to 10 without access to education were an exception in the country, the change seen in 2020 could have a long-lasting impact on an entire generation. Students in the early years of elementary school face incomplete literacy cycles that can lead to school failure and dropout (UNICEF, 2021).

Teachers

Teachers and principals emerged as responsible for ensuring that education would not stop despite the suspension of in-person classes, and even without the support of federal or local governments. According to one of the interviewees, this interpretation was

common primarily because public officials believed that the situation would go back to normal in August 2020. The second semester would occur as usual, and the first term would be manageable with quick fixes. Another interviewee recalls that the secretariat of education in her city did not offer any specific guidelines in the first week after school closure. Teachers in her institution organized themselves and decided to use Google Drive to share materials with students. Facebook would be the platform to connect with parents; they also chose to use WhatsApp groups to be in touch with each other. Teachers working with specific grades started reuniting with their peers to reorganize classes and make sure that they followed the same pedagogical content. Their main concern was to guarantee that students were learning at a similar pace. Public officials only issued state and municipality digital learning guidelines weeks after teachers had already designed their own approaches to remote schooling.

When the secretaries of education started issuing digital strategies, teachers soon noticed that the suggested platforms would not suit students' needs. One of the interviewees argued that when the Rio municipality began training them to use Microsoft Teams, educators in her school identified that "it would be too much for their students" (personal communication, January 11, 2021) from the beginning. The platform would be challenging for pupils for different reasons. Younger students would not have the autonomy necessary to access the system; older students would not be disciplined enough to watch classes all day before a screen. And all the students would have something in common: the lack of equipment or good internet speed. Since the prefecture invested a lot in instructional videos on Microsoft Teams, they thought the platform would be mandatory for students and voiced their concerns. After some weeks of training, the municipality stated that it would be optional: schools could use any platform they wanted. The teachers in the interviewee's school unanimously decided that they would not use Teams for its unfeasibility. They opted for other strategies, such as using Google Drive and YouTube to share pedagogical content with pupils, and WhatsApp, to interact with children and clarify possible questions. However, the use of these alternative platforms would not happen without difficulties. One of them was the lack of contact with parents, who should supervise children's learning. The other was the idea that teachers were unwilling to use more complex platforms, not thinking of their students' well-being but refusing to engage with technology.

Two interviewees shared a common perspective: teachers in public schools are unprepared to work with technology and often refuse to learn new things. This situation is mainly due to two factors: the lack of training and the "intergenerational shock." The first relates to the fact that states and municipalities do not generally offer the structure or prepare teachers to engage in online teaching methods. One of the interviewees stated that teachers are commonly open to learning new strategies and engaging with technology. Still, there is a wide gap between the secretariats' expectations and what teachers can do with their limited time and resources. The intergenerational shock refers to the idea that some experienced teachers show resistance to working differently from what they are used to. Because they grew up in a different time, they do not see new technologies as a necessary tool to teach their students or perform their work. Other teachers do not oppose technology but have no interest in engaging with alternative ways of teaching in the online environment. To overcome these obstacles, municipalities adopted different strategies to involve teachers in the definition of policies and make them feel part of the strategies adopted locally. Some cities made computers and the internet available to teachers at public schools if they could not access the web at home. Others asked teachers to develop alternative approaches considering their preferences and

resources. The policymaker interviewed for this project explained (personal communication, February 2, 2021):

> *The pandemic is not an individual problem; it is everyone's problem. And it is not possible to solve it individually. I must use all tools available to create an atmosphere for exchange. That is what we did. When I organize my remote classes, there are difficulties; there are teachers without Internet connection. We go and try to help, see if we can support them in any way. Nobody was compelled to do so, and that was important. That is why I am talking about engagement and participation. It was all thanks to participation... We offered alternatives to everyone.*

On top of all challenges related to the digital divide, the interviewees emphasized that 2020 was a year of many frustrations for professional educators. Aside from being constantly concerned with students' learning, health, and safety, teachers were disturbed by going back to school without the necessary sanitary protocols. Educators developed different pedagogical strategies, trying to offer alternatives to children, but they had an inadequate response from children and their families. They understand that the situation is difficult since students have neither their parents' guidance nor the equipment needed to access the online content. As one teacher puts it: "some children don't have what to eat; how can they possibly have access to online classes?" She concludes that these issues reflect families' lack of responsibility and, above all, the absence of support the government gives to families.

Families

All the interviewees pointed out that families were another relevant actor in understanding how the COVID-19 pandemic affected learning outcomes and widened Brazil's digital divide. Even before the pandemic, there was a significant deficit in the relationship with families. Brazilian children in public schools are affected by different issues, such as violence, emotional neediness, and negligence. While teachers usually have had difficulties creating a relationship with families, their work became more challenging. Aiming to understand the dynamics of students' homes and what issues influence pupils' learning, teachers developed strategies to bring families to schools. The teacher in a public school in Rio argued, "What I see is that many of these families have no interest in following their children's life in school" (personal communication, January 11, 2021). According to her experience, parents usually do not get involved or explain why they do not attend school meetings or are involved in their children's learning process. She added that the children who need family support the most in school do not have this kind of attention from their parents or other family members. The interviewee felt that teachers were the only ones caring for their students' education since principals seemed to neglect parents' lack of participation. Teachers were responsible for creating a connection with students and working with them, despite what happens at home. The pandemic, however, made things worse between families and schools.

Connectivity is a real challenge in Brazil, but the main problem is that households are usually headed by a mom whose cell phone is the primary source of internet connection for the whole family. These mothers do not have the means to pay for a better phone plan and have other priorities, such as providing food and housing to their families. One of the interviewees highlighted that some schools opted to send materials and additional information through WhatsApp and similar apps. However, this kind of communication was not always welcome. She recalled hearing from a mom (personal communication, February 22, 2021):

I have three kids and a telephone with a bad storage and a slow internet connection; please stop sending me these things. I don't want to receive anything from you [the school] anymore!

The relationship with families was also complex due to the lack of confidence in the guidelines and information provided by public officials. Children in public schools' parents do not trust school managers and teachers. One of the interviewees declared that impoverished families see schools as a place to leave children so they can work and do not see education as central in their kids' lives. Amidst all the challenges posed by the pandemic, parents started realizing that they were not precisely concerned with their children's education but with maintaining their work and afford to eat and survive.

Conclusion

Promoting student learning during the COVID-19 pandemic reinforced Brazil's perennial educational challenges and evinced the existing deficiencies in the country's schooling system. While there was a pressing need to alleviate a crisis scenario and attenuate the lack of coordination between states and municipalities, the Ministry of Education failed to establish recommendations to guide basic education schools and higher education institutions during these unprecedented times. The lack of clear guidelines resulted from the federal government's slow response to the pandemic: the MEC never proposed a unified strategy or digital platform to be adopted by schools and other institutions during the pandemic. While other nations in Latin America have quickly adopted preventive actions to reduce the spread of COVID-19, the Brazilian state refrained from supporting similar measures and offering local governments the tools to tackle the obstacles faced by municipalities and states. The responsibility fell under the activity of states and municipalities, strengthening the decentralization of the Brazilian system of schooling and transferring the onus to policymakers and educators on the local level.

Due to the lack of unifying guidelines from MEC, different actors involved in education had to improvise to make students get involved with classes and maintain the discipline they needed to succeed academically. Evidence from the interviews shows that teachers and school administrators were commonly unprepared to offer alternatives based on distance learning; parents were equally ill-equipped to guide their children through homeschooling and the use of technology. Considering the lack of access to the internet, computers, and other devices, families and teachers did what they could with scarce resources. Still, children were the ones who suffered the most. Considering the negligence shown by the MEC and the difficulties faced by states and municipalities, we can understand that the pandemic exacerbated the structural problems faced by the Brazilian system of public education.

One of the main conclusions of this exploratory study was that the digital divide could not be understood without considering other forms of inequality existent in Brazil. The interviews evinced that the lack of technological resources must be considered with other educational issues encountered by public schools, teachers, students, and their families. Further research on the impact of digital learning strategies could investigate how different gaps, such as the urban vs. rural, those found in the same region, within the same state, and in other Brazilian capitals, played a role in the design and implementation of distance learning strategies during the first years of the pandemic.

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Chile's Digital Learning Strategy During the COVID-19 Pandemic: Connecting Policy with Social Realities?

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Figure 1
Students at Colegio Reina Norte in Santiago in 2021, after the school reopened

Source: Mineduc (CC BY NC ND 2.0 license, no changes made).

Chile on the wake of the pandemic

Chile is located in South America. It shares borders with Argentina, Peru, Bolivia, and the Pacific Ocean. Its territory has an extension of 469,820 square miles, in addition to 776,874 square miles in the Antarctic. It has 16 administrative regions in the mainland, and its capital is Santiago. In 2017, Chile's population was 17,574,003 people, out of whom 17.6% were between 5 and 17 years old, while 12.4% identified as Indigenous (Sistema de Información de Tendencias Educativas de América Latina [SITEAL], 2019).

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The 2018-2022 president of Chile is the center-right, Sebastian Pinera, who previously served as president from 2010 to 2014. Piñera's second term was being harshly criticized domestically before the pandemic, to the point that, on October 18, 2018, the Chilean people protested against Santiago's increased subway fares, which originated a series of other claims, including education (Plazas, 2019). In Santiago, teachers suspended classes the Monday following the beginning of the protests. Mario Aguilar, President of the Teachers Union, supported the initiative by inviting teachers to fight in a non-violent way (Meléndez Tormen, 2019). This wave of social unrest was called Chile's Awakening. Then, the summer vacation period started. It seemed like the 2020 school year would start normally but, only after about eight weeks into it, on March 15, 2020, schools had to close due to the COVID-19 pandemic (Economic Commission for Latin America and the Caribbean [ECLAC], 2020). Synchronously, in February 2020, former Minister of Education Marcella Cubillos resigned after being criticized for her performance, but claimed that she wanted to participate in the movement for a constitutional plebiscite (Castillo, 2020; El País, 2020). As a result, Raúl Figueroa took over the country's education policy during COVID-19 at the pinnacle of the corresponding social and educational crisis.

The Chilean education system in context

Chile's education system is composed of four main levels: pre-school for children from 0 to 6 years of age, basic education from 6 to 13 years of age, high school from 14 to 18 years of age, and higher education (SITEAL, 2019). Education is compulsory from the last year of pre-school to the last year of high school, a total of 13 grades. Special education is integrated either in school establishments or special school establishments. Adult education is provided for compulsory levels. At the beginning of 2020, there were about 3.6 million students enrolled in the National Education System (Crespo, 2020). The higher education system is divided into the technical-professional and the university branches. While all high school graduates can access the technical-professional branch (usually two years), those who aspire for public, and some private universities must take the Prueba de Selección Universitaria (University Selection Test). The university branch grants undergraduate (4 to 5 years) and graduate degrees.

During the Chilean dictatorship (1973-1990), neoliberalism heavily influenced the education system. As explained by Ávalos and Bellei (2019), parents were given the choice of schools for their children, and a system of competitive vouchers was set in place for schools that ensured quality and high achievement. The state supported public schools, which were administered by the state, and subsidized schools, privately managed but incorporated the voucher system; private schools also existed. As the dictatorship came to an end in 1990, Chile struggled with erasing inequity while keeping the core features of market-driven schools; the country continues to struggle today – by 2015, only 35% of the student population were enrolled in public schools.

Because Chile's educational system encouraged schools to select their students based on their families' socioeconomic status, and families to select their schools based on comparative standardized results, the neoliberal management has resulted in segregation and inequality (Ávalos & Bellei, 2019). Several high school students quickly realized that they were not given the same opportunities for success. In 2006, these high school students organized themselves as the Penguin Revolution, which sought free, quality education, and the elimination of discriminatory entrance practices (Bellei et al., 2018). In 2011, the Confederation of Chilean Students (Confech) issued another set of demands centered on the bank loans that they needed to pay for their tuition costs, and which led to unpayable debts after graduation (Ávalos & Bellei, 2019). Teacher protests for improved work

conditions added up to the claims, leading then President Bachelet (2014-2018) to issue a set of reforms to ensure social justice (Ávalos & Bellei, 2019).

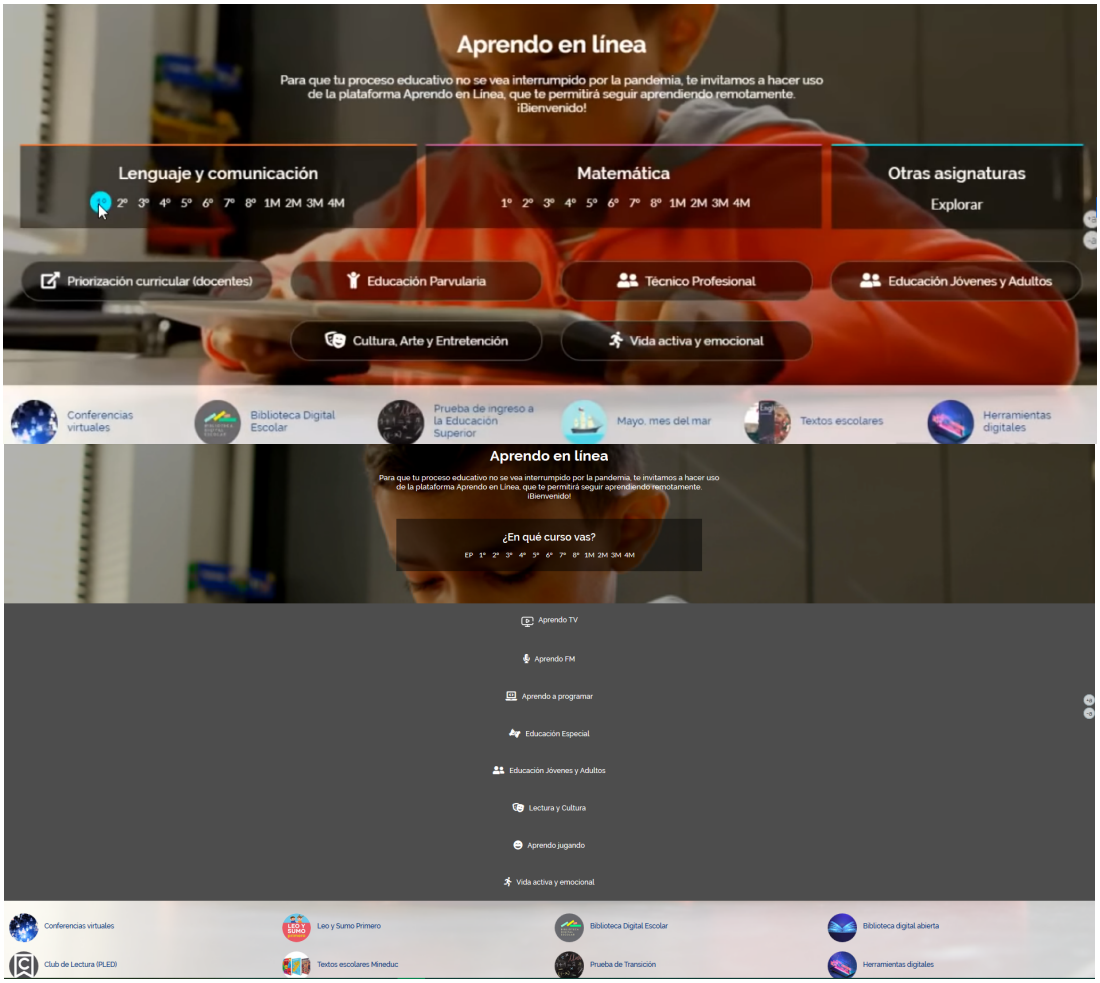
Chile's neoliberalist education system, seeking to meet the demands of the market by encouraging domestic private management and emphasizing international rankings, has remained in place, but its implementation has alternated along with the country's presidents (Ávalos & Bellei, 2019). President Bachelet's (2014-2018) educational reforms aimed at reducing socio-educational segregation by granting more authority to schools and teacher councils through a local network to manage public schools at a larger level than municipalities (Ávalos & Bellei, 2019; Muñoz Stuardo & Weinstein Cayuela, 2019). However, since swearing off, Chile's President Sebastián Piñera has issued law projects that return to prioritizing subsidized schools. Specifically, the Admisión Justa (Fair Admission) nationwide project aimed at creating a merit-based system of admissions where parents can choose schools for their children, which reversed Bachelet's main tenets. The unstable educational reforms in Chile fed the discontent of the population, eventually contributing to Chile's Awakening in late 2018.

Chile's digital agenda and online resources during the pandemic

In his 2018-2022 Presidential Program, President Piñera (2017) declared that the first priority in education was for children to achieve proficiency in English language and Information and Communication Technology (ICT), and the second was to get ready for the digital revolution. The 2013-2020 Imagina Chile Digital Agenda, by the Under-Secretariat of Communications (Subsecretaría de Comunicaciones, 2013), proposed five pillars towards the digital revolution: connectivity and digital inclusion, environment for digital development, education and training, innovation and entrepreneurship, and services and applications. In addition, three national projects have accompanied the digital agenda. In 2009, the program Yo elijo mi PC (I choose my PC) was created to reduce the digital gap between 4th through 6th grade students with the highest income and those with the lowest income by granting those with the lowest income a PC of their choice (Ministerio de Desarrollo Social, 2018). A similar program, Me conecto para aprender (I connect to learn), aims at granting all 7th graders enrolled in public institutions a computer and Internet access for one year (Ayuda Mineduc, n.d.). Finally, in 2018, Chile's Ministry of Education (Mineduc) began implementing the Plan nacional de lenguajes digitales (Digital Language National Plan), which focused on providing training to teachers and students from schools that meet the quality standards set by the Government, called Liceos Bicentenario, this with help from the Kodea Foundation and Fundación Telefónica Chile (SITEAL, 2019).

Immediately after the COVID-19 pandemic hit the country, Chile launched the online platform Aprendo en línea (I learn online). The first case of coronavirus in Chile was identified on March 3, 2020 (Reuters, 2020). On March 18, President Piñera called for the implementation of the dynamic quarantine, based on social distancing practices only in the most affected neighborhoods and regions (Diario las Américas, 2020). Due to social distancing, on March 20, 2020, Chile announced the planning of Aprendo en línea, which contains curricular content for students from all 13 compulsory levels to continue their studies (UNESCO, 2020). The platform, created by Mineduc's Unit of Curriculum and Evaluation (UCE), is of free access and available at https://curriculumnacional.mineduc.cl/. Figure 2 shows the initial interface of the platform, and its main page for students a year after the launch of Aprendo en línea.

Figure 2
Aprendo en línea´s student interface on May 28, 2020 (in Crespo, 2020), showing the initial curriculum priorization, and its equivalent on July, 28, 2021, showing the evolution in priorities

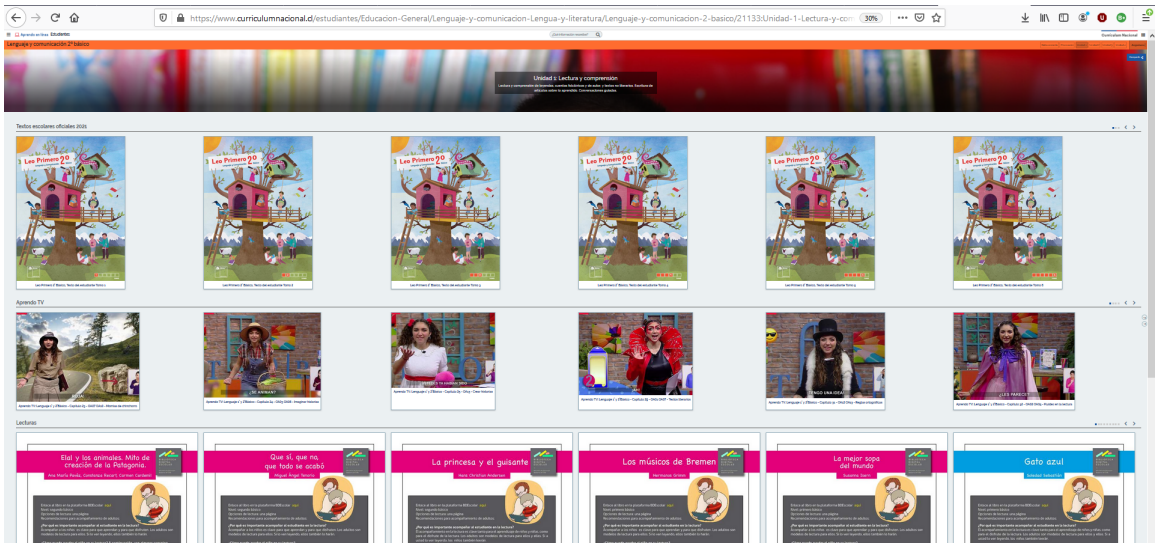


According to UCE (Crespo, 2020), *Aprendo en línea* was designed to create dialog between textbooks and technology. Manuals for parents and teachers to understand how the platform worked were also created, and digital versions of the textbooks could be accessed on their corresponding link. At first, the platform was in line with the curriculum, but priority was given to Spanish language and math, with other subjects covered to a lesser extent. In addition, each subject was divided by grade. Each grade displayed a weekly plan to be used four times a week and indications on when to use the textbooks. Each lesson had a corresponding video where a teacher briefly explained the learning content (all videos were linked to YouTube). Finally, there was an exit ticket, which provided evaluation on the learned concepts. As the platform evolved, the content of each subject increased and became closer to the national curriculum. In 2021, the platform focused on linking textbooks with videos, activities, and other online resources, in a more consistent way across grades and subjects. Emphasis on Spanish and math

remained through a special thumbnail at the bottom of the main page that directed to content only in those subjects.

Resources from other platforms or in other formats complemented Aprendo en línea. At first, for those places without Internet connection, Mineduc made available TV EducaChile, an open signal that reached up to 90% of the territory, including the Easter and Juan Fernández islands (CNTV, 2020; Mineduc, 2020 b; Prensa Presidencia, 2020). At the same time, some lessons in the platform had links to Aprendo en casa (I learn at home), a series of printable activities designed to reinforce learning and help parents guide the process at home (Crespo, 2020). For rural areas, physical Aprendo sin Parar (I learn nonstop) booklets were distributed among 380,000 students in 3,800 schools in rural areas (Mineduc, 2020 c). Third, Mineduc offered Google Classroom for educational establishments at all levels, from pre-school to higher education. School directors could request access at www.comunidadescolar.cl. By the end of May, 2020, more than 900 superintendents in 4,000 educational establishments had G Suite accounts (Crespo, 2020; Mineduc, 2020). In addition, the digital literacy platform gathered more than 400,000 teacher-members who created reading clubs with their students. Its goal is to become the largest reading platform in the country (Crespo, 2020), and it can be accessed at https://planlectordigital.mineduc.cl/#!/. In 2021, the platform had already incorporated the Aprendo TV block that TV EducaChile initially broadcasted (Mineduc, 2020 d), as well as Aprendo FM. Figure 3 illustrates how some Aprendo TV blocks and textbooks were displayed in 2021.

Figure 3
Aprendo en línea´s upper half of the portal for 2nd grade, reading and comprehension unit, showing digitalized textbooks, Aprendo TV blocks, and suggested reading titles



Aprendo en línea gathers previous efforts and the future vision of Chile's digital agenda. Prior to the pandemic, Mineduc had started Aprendo+, a portal which supports the Ministry's current priorities, such as fostering the knowledge on indigenous peoples; it can be reached at www.yoaprendomas.cl. Another initiative previous to the platform is EducarChile, available at www.curriculumnacional.cl. When comparing contents, Aprendo en línea built on those resources for its content, eventually concentrating most

of these websites and platforms. A list of the resources mentioned in this section can be found in Appendix A.

Digital learning measures: Narrowing gaps in access to quality education?
The change from in-person to at-home schooling and the rapid digitalization of the education system impacted the access to education and the quality of the outcomes during the pandemic; however, the extent to which digital measures helped school administrators to face that impact is difficult to understand without hearing from them directly. To give those who had to adapt to digital learning some voice, this report discusses the experiences of the following: 1) one national education policy expert, 2) one Learning Resources Coordinator in a public school in Northern Chile, and 3) one Technology Coordinator in an elite private school in Santiago during the process of adapting to digital learning. The goal of these semi-structured interviews was to explore the different digital learning strategies among systems and regions at the school-home level, and then compare them with the national vision and the information that official documents and Aprendo en línea provide. The interviews took place between November, 2020 and February, 2021, between two academic years.

The findings of the exploration indicate that school administrations, but also the type and position of schools within the education system, determined which digital strategy schools adopted and how successful it was. They further revealed the social disparities that prevailed by the lack of digital tools, as well as new socio-educational challenges. All in all, current Chilean officers stood out as the ones accountable for addressing the digital divide, which in this case can be understood as those who learned how to use digital tools (US National Telecommunications and Information Administration (NTIA), 1999), and those who are learning to create them. The main takeaways from the interviews are presented below.

Accessing digital learning: the role of school administration and the limits of state administration
The evidence hinted at school administrations being key to ensuring the continued provision of education in Chile during the pandemic. According to all three interviewees (personal communications, November 13, 2020; December 28, 2020; February 4, 2021), engaged instructors and intuitive directors made a difference to adapt to digital learning and meet demands. School principals in the interviewees' public and private schools organized training workshops for their teachers, although private schools responded faster than public schools. In the words of the private school interviewee (personal communication, February 4, 2021): "We urgently called that same company who had trained us [in education programming] to see if they could help us implement Google Classroom because nothing was digital…and they helped in record time. The platform was working a month later". In that way, timely reactions by the interviewees' school administration greatly contributed to the provision of schooling, even when money or technology were not an issue.

Fear to see dropouts increase was latent within the public school's administration, while the private school's concern was the provision of quality digital education. The interviewee from the public school described how the principal deployed a team of teachers to tutor students who were dropping out, which brought them back to class: "I was assigned three kids who had been missing and one, for example, had dropped out and gone to work, he did not want anything…later, teachers were able to communicate with students, via the telephone and all." (personal communication, December 28, 2021). Meanwhile, the Technology Coordinator in the private school was in charge of the

technical aspects of education – setting up Google Classroom, watching over Zoom, making sure that all students were accessing the material –, and a coordinator that ensured that the quality of education remained steady. Each situation was very different, but schools prioritized digital tools whenever needed according to the profile and context of each institution.

Directors played a key role in guiding their schools through the pandemic, but the profile of each school often facilitated or delayed the acquisition of technological tools for class. The private school where the Technology Coordinator works, for instance, could access and readjust funds faster, but faced parents' demands to keep the same quality education for their children. While these demands posed a challenge to teachers and administrators, school staff were able to find solutions within the school. Similarly, as the interviewee from the public school explained (personal communication, December 28, 2020), subsidized schools had to go through their sostenedores[1] to obtain funds but, since sostenedores are usually directors or owners in subsidized schools, these could respond more rapidly to financial needs. Public schools, however, go through government dependencies called municipalities to make requests. In that way, devices such as projectors and tablets reached schools in Northern Chile after a protracted period of time. It is thus a probability that the acquisition of technology followed a much faster pace in private schools, faster in subsidized schools, and much slower in public schools. In the public-school interviewee's own words, "private education, despite being subsidized, is speeding up, and public education is stuck behind due to very serious administrative, bureaucratic issues" (personal communication, December 28, 2020).

Addressing social vulnerability: prior issues and post-digital challenges

Socially vulnerable student populations like Indigenous youth, those living in remote areas, and students with disabilities were prone to be affected by a digital learning strategy that did not take connectivity issues or special needs into account, but most of them continued to receive an education, at least in urban areas. Regarding Indigenous students, the teaching of Aymara in Northern Chile, for instance, had been increasing one level per year before the pandemic, for all public schools. In urban areas with a majority of indigenous students, the impact of the pandemic on the Aymara population was not greater than that of other populations. Although the teaching of Aymara could not continue increasing by level as usual, grading Aymara became part of the language exams that the Ministry of Education required from students (personal communication, December 28, 2020). In isolated, remote urban areas like Easter Island, schools were able to re-open faster due to the low rates in COVID-19 cases, so Rapa nui students also continued with their learning (personal communication, November 13, 2020). Finally, students who receive special education kept up with their studies as well. During the quarantine, Chile mandated that all schools wishing to welcome students in their establishments needed to petition for reopening. While many of them submitted petitions, many others found a way around, with teachers going to their students' homes to teach (personal communication, November 13, 2020).

Digital learning was harder to implement in rural areas. When schools closed in March, 2020, many rural schools did not have the technological infrastructure to use digital tools (personal communication, November 13, 2020). Neither Aprendo en casa, Aprendo TV nor radio were mentioned by the interviewees. In the few, remote public boarding schools that welcome Chile's most vulnerable youth, education was secondary because students were sent back home during the pandemic and, as such, could not receive their daily school meal: "Those students…and are few in number, so nobody pays much attention…When they have managed to connect, one sees them under an umbrella next

to the river – the place that has Internet connection" (personal communication, November 13, 2020). Therefore, not all students or teachers could make use of the digital learning platform, which further increased the gap between urban and rural areas.

Adapting to the digital world made some students and teachers vulnerable in terms of health and wellbeing. Many students were required to sit in front of a computer device as many hours as if they were attending school in-person, which is about 40 hours a week. Meanwhile, all teachers had to learn how to use Aprendo en Línea, Zoom, Google Classroom, or any other requirement from their establishments; school administrators had to be available to parents at all times, and some schools had to dismiss some of their personnel due to school closures. In the case of the public school, the Learning Resources Coordinator noticed that many teachers and students gained weight and declared feeling more stressed (personal communication, December 28, 2020). In this sense, the prolonged use of digital learning was detrimental to school communities, making them vulnerable in their personal lives.

In terms of enrollment, the role of parents, and whether they could support their children with their digital academic tasks, are possibly related to lower enrollment rates. Those parents whose children attended private schools were oftentimes better equipped to help them study because of their cultural capital, but even they struggled with following up on the education of their offspring. For example, the private school from the interviews provided technology tutorials for parents (personal communication, February 4, 2021), while the public school remained available through WhatsApp to address technical or curricular questions (personal communication, December 28, 2020). Even so, parents with limited resources did not have Internet access at home and had no choice but to pick up printed material from schools and try to teach their children without the proper basic knowledge. As a result, some parents were unable to provide academic support to their children. Some parents even revealed to have reading comprehension difficulties. Those parents "were exhausted, and there was the difficulty of not understanding […] You begin to realize that illiterate parents begin to surface when they cannot return the questionnaire we sent" (personal communication, November 13, 2020). Those socio-economic differences that digital tools unveiled affected enrollment. Previous to 2021, about 186,000 individuals ages 5 to 21 were out of the system, but another 39,500 did not enroll in the 2021 academic year (Mineduc, 2021).

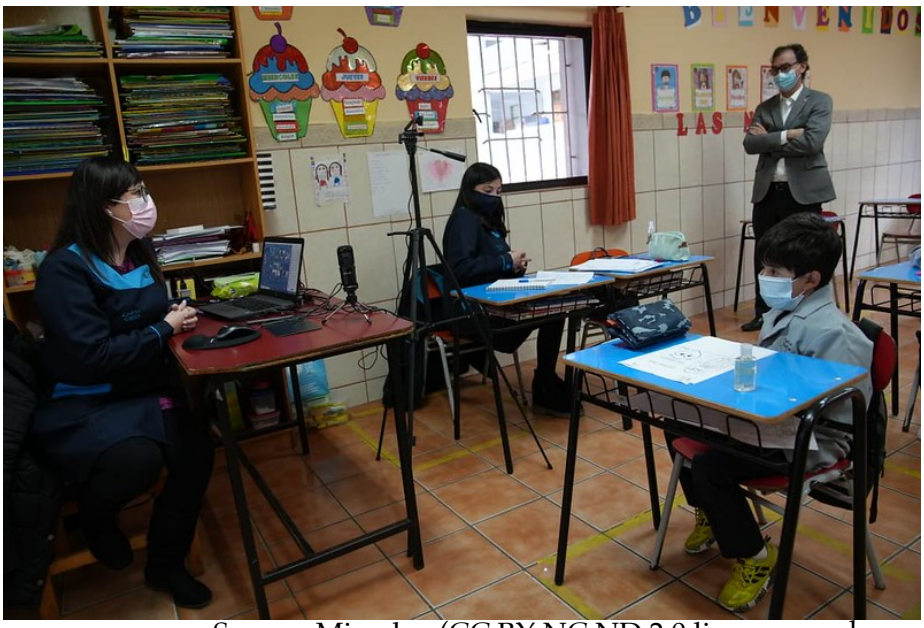
Implementing digital learning policies now and beyond the pandemic

Beyond urban-rural gaps in accessibility, the implementation of digital resources that the government made available to the Chilean population was not always the most suitable option to communicate with students. If there was a need to communicate, the public school interviewee noted that teachers in public schools opted for public access communication channels to stream their courses and speak to their students. WhatsApp and Facebook emerged as the most available and reliable communication channels (personal communication, December 28, 2020). In contrast, the private school used its own resources, such as a Google application to teach students in kindergarten and up until 4th grade, and where parents could communicate with teachers (personal communication, February 4, 2021). Aprendo en línea remained a complimentary communication tool.

In terms of content, Aprendo en línea was effective in prioritizing the teaching of certain topics that met minimum learning standards like Spanish and math mentioned above, but not the standards of private schools, increasing the impacts of the pandemic on education inequality. According to all three interviewees (personal communications, November 13, 2020; December 28, 2020; February 4, 2021), teachers rarely ever resorted to the platform

for additional material; instead, they continued to create their material, usually adapting their own lesson plans to a digital format. In the public school from the interviews, teachers referred parents to the platform in case they were looking for supplementary material for their children, but they did not use it in class. If parents or teachers made use of the platform, it was to ensure that their children were learning the core points of the normal curriculum (personal communication, December 28, 2020). Meanwhile, the interviewee's private school did not reduce its school hours in order to have students learn as much as they would do in person (personal communication, February 4, 2021), so Aprendo en línea, as a resource adapted for learning with reduced hours, could not become the main teaching platform. These results suggest that Aprendo en línea worked as a material repository to guide teachers and parents in assisting their children to learn, but it has not become an equalizing tool in narrowing quality gaps in education.

Figure 4
Minister of Education Raúl Figueroa in 2021 visiting a school in Valparaíso, where only some students were taking in-person classes



Source: Mineduc (CC BY NC ND 2.0 license, no changes made).

The reactions of the Chilean government in education during the pandemic showed uncertainty in the path schools should follow to include ICT learning and programming in their curricula. While the pandemic did push teachers to use emails, Zoom, and social media, it has been unable to reassert its plans to teach subjects such as programming and robotics. The private school interviewee mentioned that "there is a very good plan on digital languages. That's what it's called […] The issue is that that program's intended use is during free disposition hours[2] […] I think it should be integrated to the national curriculum" (personal communication, February 4, 2021). This quote reflects the position of the national education policy: a strong will to create policies that reduce the digital divide, but a long way to go before they can be effectively implemented.

Conclusion

Chile's dynamic quarantine aimed at keeping communes[3] with low COVID-19 rates open and active. However, a spurious uprising in cases took over the country in late April, 2020, going from 520 to 888 overnight (T13, 2021), indicating the failure of the virus contention strategy. Chile only went below 888 on July 27, 2021, after a few months of a vaccination campaign, with 753 new cases (T13, 2021). In the meantime, the protests from Chile's Awakening achieved the national plebiscite in October 2020, where 78% of the population voted for a new constitution and a constituent convention to draft the new document (Gobierno de Chile, n.d.). As foreseen by the plebiscite and Chile's political climate, on December 19, 2021, left-wing candidate Gabriel Boric – and a former leader of the student protests in the early 2000s – won the presidential elections (The Washington Post, 2021). Boric's administration's main task in education will certainly have to address the advantages and disadvantages of the digital learning strategy led by the Piñera administration.

Equality in education is at the center of Chile's demands for the years to come, but the way in which it has been approached during the COVID-19 pandemic created new challenges for policymakers. The digital divide may have decreased when understood as the ability to have and use a device, but the most marginalized sectors are not keeping up with the pace at which digital learning is occurring in the country and globally. The urban-rural gap requires immediate solutions. In terms of quality, Aprendo en línea offered a set of guidelines to achieve the core components of the national curriculum, but it did not lessen digital knowledge gaps between private schools, and subsidized and public schools. As establishments reopened, Mineduc has offered remedial resources, including material on Aprendo en línea. Still, many students lagged behind, and those who dropped out of the system because of socioeconomic hardships and lack of Internet services will still be unable to access those opportunities. More familiarization with vulnerable populations and all school types throughout the country might help policymakers find ways in which to reduce the divide left in use of ICT, and to face the ongoing divide in digital programming while the new Constitution comes into place.

Notes

[1] Sostenedores, which literally translates into sustainers, are physical or moral figures of the Chilean school system in charge of schools. They may be school principals or school owners. In the case of public schools, municipalities were in charge of financing funding up until 2020, when Mineduc became the direct manager of local public school funds (personal communication, November 13, 2020; December 28, 2020).

[2] Free disposition hours (horas de libre disposición) are hours within the school schedule were students can take activities or classes that are not part of the mandatory curriculum.

[3] Similar to neighborhoods.

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Figure 2: Quezada Morales, R. (2021). Screenshot 1 taken on August 10, 2021, from Crespo, D. (2020, May 28). In Seminario web no. 5 América Latina: recursos y plataformas para la respuesta educativa [video]. https://en.unesco.org/events/webinar-5-latin-america-resources-and-platforms-educational-response-covid-19; screenshot 2 taken on July 28, 2021. [The Aprendo en línea platform is under the Creative Commons 3.0 international license]. https://curriculumnacional.mineduc.cl/

Figure 3: Quezada Morales, R. (2021, July 28). [The Aprendo en línea platform is under the Creative Commons 3.0 international license]. https://curriculumnacional.mineduc.cl/

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Appendix A
Resources made available by Mineduc and used during the COVID-19 pandemic as of December, 2021

Name of resource	Type of resource	Availability
Aprendo en línea	Online platform, initially prioritizing language and mathematics, but eventually comprehensive	https://curriculumnacional.mineduc.cl/
Aprendo+	Website (existing prior to the pandemic)	https://www.yoaprendomas.cl/614/w3-channel.html
Educar Chile	Website (existing prior to the pandemic)	https://www.educarchile.cl/
Plan de Lectoescritura Digital (PLED)	Online platform offering reading syllabi from schools around Chile	https://planlectordigital.mineduc.cl/#!/
Aprendo en Casa	Printable activity booklets that reinforced educational practices at home	Available on Aprendo en línea at the beginning of the pandemic
Aprendo sin Parar	Booklets that covered prioritized areas during the COVID-19 pandemic, in printed form, specifically distributed to rural areas	In print for rural areas

Aprendo TV	Video blocks that reinforce educational practices	At first, available through different TV services and on Chile's National Television's website at https://www.tvn.cl/ (Mineduc 2020 e); available on Aprendo en línea at https://curriculumnacional.mineduc.cl/
Aprendo FM	Radio capsules that reinforce educational practices	Available since late 2020 on Spotify´s Aprendo FM channel, 122 radio stations throughout the country, and on Aprendo en línea at https://curriculumnacional.mineduc.cl/ (Mineduc, 2020 f)

Uncovering Educational Inequalities: COVID-19 Digital Learning Strategies in the Dominican Republic

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The Dominican Republic's shifting socio-political and economic environment

The Dominican Republic (República Dominicana) is a nation with a mountainous area of 48,000 square kilometers, or roughly 18,532 square miles, occupying "two-thirds of the island of Hispaniola," making it the "second largest territory of the Great Antilles archipelago" (Ministerio de Asuntos Exteriores, Unión Europea y Cooperación de España, 2020, p. 1). The government is organized into 31 provinces and 158 municipalities with one national district (International Institute for Educational Planning [IIEP] and United Nations Educational, Scientific, and Cultural Organization [UNESCO], 2019). Currently, 10,847,904 million people live in the country (World Bank, 2020 a), with 49.9 % identifying as men (5,259,642 residents) and 50.07% identifying as women (5,275,893 residents) (Oficina Nacional de Estadísticas, 2021). As for the country's make up, 70% are of mixed African and European descent, mainly Spanish, 16% of residents identify as black, and 14% identify as white (Minority Rights Group International, 2018).

At the beginning of the COVID-19 crisis, the country went through economic, political, and social changes. On July 5th, 2020, the center-left Dominican Liberation Party (DLP) lost the presidential election to the Modern Revolutionary Party (MRP), represented by Luis Rodolfo Abinader, an outcome which ended the DLP's 16-year political influence (*The New York Times*, 2020). With this political change came several economic impacts: the country's gross domestic product (GDP) increased by 5.04% annually from around US$33.416 billion in 2000 to US$68.989 billion in 2015 (International Monetary Fund [IMF] in Ministerio de Economía, Planificación, y Desarrollo et al., 2017), and tourism attracted foreign investments, opening up employment in its related subsectors such as recreation, housing, or food and drinks (World Tourism Organization [WTO] & Pro Dominicana, 2021). However, the country's GDP took a hit by about 6% when the private sector closed because of the pandemic (Sans & Madrid, 2021). Social issues grew, with misinformation becoming rampant among media outlets and digital platforms – people had a continued mistrust of the government, which impacted its attempt to provide accurate health information when the COVID-19 pandemic started (Tapia, 2020).

Education in the Dominican Republic before COVID-19

Education in the Dominican Republic is structured within four levels: pre-primary, primary, secondary, and tertiary (UNESCO & World Monitoring Report, 2020). From ages 3-17, attending school is compulsory in response to a recent extension by the government to require more schooling (UNESCO & World Monitoring Report, 2020; The International Institute of Educational Planning [IIEP] & UNESCO, 2019). The primary level provides education for children 6-14 years old (Organization for Economic Development [OECD], 2008). Secondary education provides schooling for children ages 14-18, with four years of additional schooling to strengthen alternative skillsets outside academics, including

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general education in the first cycle, and vocational, continuing general courses, and art options in the second cycle (IIEP & UNESCO, 2019).

The education system is hybrid, that is, decentralized-centralized, with the government overseeing both public and private schools (OECD, 2008), and three agencies overseeing the system. First, the Ministry of Education (Secretaría de Estado de Educación [SEE] or MINERD) focuses on primary and secondary schooling; second, the Ministry of Higher Education, Science and Technology (Secretaría de Estado de Educación Superior, Ciencia y Tecnología [MESCYT]), oversees colleges and universities; and third, the National Institute of Professional and Technical Training (Instituto Nacional de Formación Técnico Profesional) provides vocational courses on automobile mechanics and civil engineering; other studies are offered such as art design, culinary arts, and cosmetology (National Institute of Professional and Technical Training, 2017). Further, the Ministry of Education's Special Education Directorate (Dirección de Educación Especial) offers schooling to special needs children. Through the Dominican Association of Rehabilitation (Asociación Dominicana de Rehabilitación), children and adolescents with disabilities from ages 0-18 receive education and physical therapy services (Asociación Dominicana de Rehabilitación., n.d.). As of 2018, there were 2.7 million students enrolled in the whole education system (Oficina Nacional de Estadística de MINERD, 2019).

In terms of digital learning, in 2016 officials implemented the initiative Digital Republic (República Digital), which aimed to provide technology access for all citizens while ensuring gender equity and social inclusion, and "enabling economic and social development" (Muñoz et al., 2020, p. 81-83). Its goal was to bridge the digital divide among vulnerable populations who did not have access to technology – low-income families, those from rural areas, and families with limited education – which included reinforcing the technological infrastructure, providing access to the Internet, and bringing in devices into schools (Dominican Republic Government, 2017). As presented by MESCYT's (n.d.) Deputy Minister for Science and Technology Plácido F. Gómez Ramírez, Digital Republic is structured upon seven concepts: "human capital, education, productivity and employment, digital government, infrastructure, connectivity, and access" (p. 3), with five additional goals: "legal and regulatory framework, sustainable development goals, national development strategy, social inclusion, and cybersecurity" (p. 3). Based on the above goals, the initiative implemented projects such as amplifying WIFI access and revamping infrastructure for better access (Dominican Republic Government, n.d. a).

The Dominican Republic Government (n.d. b) implemented other initiatives to encourage the use of technology. Among them are the Digital Public Service (Servidor Público Digital), which is a capacity-building program to train civil servants in technology and Women in ICT (Mujeres en TIC), focused on offering technological training programs to women and girls. The government also implemented the Digital Native (Nativo Digital) learning programs for vulnerable communities to use technological tools and T-Include (T-Incluye), a project that encourages seniors, young adults, and individuals with disabilities to use technology. In schools, the government launched the initiative One Computer for Higher Education Students and Professors (Una computadora para estudiantes y maestros de educación superior), which provides university professors and students with a computer or tablet and access to technological workshops. Alongside these programs and initiatives, the government implemented a digital ID initiative for students and increased the number of computers at educational centers.

Although the programs above were initially welcomed, the media called into question whether these strategies were actually reaching students across the country. For example, the Dominican Republic Government reported in 2017 that "almost 90% of the population ha[d] access to mobile telecommunications, 54% ha[d] internet access, although only 27% ha[d] their own access through computers or tablets" (p. 10). However, local newspapers such as *Diario Libre* (2020) pointed to these projects only reaching 5% of the student population.

Digital learning strategies during the COVID-19 pandemic

Regardless of the scrutiny, the programs above were put to the test at the beginning of the pandemic. Officials closed all schools for the 2019-2020 academic year starting in March, 2020, (Instituto Dominicano de Evaluación e Investigación de la Calidad Educativa, [IDEICE], 2020; United Nations Children's Fund [UNICEF], 2022). When schooling transitioned online in early March 2020, MINERD unveiled the Educational Support Plan (Plan de Apoyo Educativo), which outlined three goals to continue providing education: "1) to contribute to access of non-in-person educational activities to the student population, 2) to reinforce learning and avoid the loss of study habits, and 3) to provide orientation to the educational community about COVID-19" (IDEICE, 2020, p. 10). The government further expanded WIFI access to facilitate distance learning. The Dominican government defines distance learning as "a form of teaching in which students do not need to attend physically at an educational center or place of study" (IDEICE 2020 p. 11). Distance learning is also implemented through information technology and communications (ICT) (IDEICE, 2020). In other words, the work previously done on digital learning was readapted to respond to the emergency situation.

With a plan and definitions in place, MINERD, MESCYT, the Community Technological Centers (Centros Tecnológicos Comunitarios [CTC]), and the National Institute of Public Administration (Instituto Nacional de Administración Pública [INAP]) established separate online resource hubs in addition to the policies already implemented, comprising of resource websites and platforms for children (World Bank, 2020 b). These resources provided online skill courses and communication apps for students and teachers (Cobo et al., 2020; Ramírez, 2020). For those who did not have access to the Internet or online resources, the government invested around RD $1,575,043,073 (US $28,558,681)[1] to implement television educational broadcasting programs (*Acento*, 2021). In terms of online platforms, several initiatives were implemented, including Eduplan, a teaching resource website to help teachers plan lessons and maintain a schedule, and Educando (Educating), which is an online resource hub that provides learning and curriculum resources. Additionally, the government implemented Intelligencia Quisqueya (Quisqueya Intelligence), a virtual program to ensure that students are prepared for national tests, and Informática Prepara (Informatics Prepares), a portal to access videos about computer basics (Presidencia de la República Dominicana, n.d.).

The programs to continue learning online were promising in early 2020. According to UNICEF (2020), at least 75% of the Dominican Republic's residents managed to use the Internet for distance learning, while 59% used social media, and 80% used mobile devices. By May 2020, "over one million booklets were distributed to centers across 18 educational regions" as part of the Educational Support Plan (Peña in IDEICE & Observatory of Educational Policies in the Dominican Republic [OPERD] 2020, p. 2). In June 2020, the government moved on to provide "33,000 electronic tools to teachers and students" (IDEICE & OPERD 2020, p. 2) as a plan measure, especially to those with little access to

technology. In total, the government reported that thousands of households benefited from television programs because:

> Among the 175,908 households with third-grade students, 51.1% had radios and 91.1 % had televisions; out of the 159,824 households with sixth-grade students, 40% had radios and 80% had televisions, and among the 134,689 households with third-year students in secondary school, 45.4% had radios and 81.4% had televisions. (IDEICE, 2021, p. 3)

Revealing educational inequalities in digital learning

The following exploratory study addresses the country's digital learning efforts by reviewing the effectiveness of remote learning during the COVID-19 pandemic. This includes challenges and implications that arose during the implementation process. Semi-structured interviews were conducted with the following individuals: a public-school English teacher in Santo Domingo, an administrative coordinator at a private school in Santiago, and a policy coordinator (técnico) overseeing teachers in eastern provinces of the country. The interviewees were selected based on their different levels in the education system. In this way, perspectives were acquired from the classroom level to the policy making level. The interviews were conducted in 2021 on January 29, February 5, and February 6, respectively. The interviews focused on participants' perspectives about the country's education system and their experiences implementing digital learning strategies. The analysis of the interviews identified issues such as lack of priority in teaching and infrastructural problems. As a result, low-income and rural students had little access to digital tools. The findings below suggest that remote learning placed a strain on the government's abilities to provide quality education for all students.

Digital learning reinforced pre-existing issues in education

At the time of the interviews, school officials and teachers were facing difficulties in acquiring the necessary skills to teach virtually, which affected education quality in the country. One of the issues was the negligence to train teachers that could provide quality education. In 2017, the government's Evaluation of Educator's Performance test (Evaluación de Desempeño Docente) revealed that only 3% of teachers were able to perform above the acceptable levels set by the government (Vice Presidency of the Dominican Republic et al., 2019). Confirming this issue, the policy coordinator interviewed said that "I know we have bad schools and badly trained teachers – educators who are neglectful, teachers who work based on what they work for, which we call vocational educators" (personal communication, February 6, 2021). Those capacity issues led to learning problems. The interview with the private school coordinator highlighted how the content for current school curricula is basic and with little depth: "I don't see the new planning for educational curriculum as well structured nor does it meet the benchmark for which individuals will be prepared for university" (personal communication, February 5, 2021).

Many more teachers probably struggled to use digital learning tools due to poor investments in infrastructure. At the Conference on Access to Information, Latin America and the Caribbean (CAI: LAC), non-profit Political Observatory coordinator Vladimir Rozón (in Lebrón, 2021) remarked how the Dominican Republic has not been able to invest adequately into the country's educational infrastructure. As a result, there have been infrastructural issues, in which "a range of 700 or 600 institutions [did] not have electricity" (Malagon in Garrido, 2021, para. 22). Therefore, many institutions could not grant access to the Internet. Looking back at his students' struggles, the public-school

teacher saw "how gaining access was not easy for everyone" (personal communication, January 29, 2021). As for his own difficulties, he said:

> *At that time, teachers – including myself – did not have resources available and the institution did not provide these tools. Especially, since the institution is run by the government which manages a small budget.* (personal communication, January 29, 2021)

The private school coordinator also recognized that "while the government tries to provide laptops to cover this gap, if individuals don't have WIFI, they can't do anything" (personal communication, February 5, 2021). Looking into this issue and other technical difficulties, MINERD incorporated the social networking platform WhatsApp to "support teachers and parents" and relay "helpful content" (Cobo et al., 2020, para. 9) and MESCYT, along with other partners provided low-cost internet access for "600,000 students and 30,000 professors/teachers" (MESCYT, 2020). However, among the approximately 91% of students who took some form of online class through the messaging app WhatsApp, 41% were only able to take classes online for two hours or less (*Diario Libre*, 2020, as cited in Garrido, 2021).

Given the difficulties above, several students fell behind and lost over one year of instruction (Vegas, 2021), with around 4% (roughly 140,000 students) "not learning at all," and 20,000 students dropping out altogether (Castellanos, 2021, para. 11).

Digital learning confirmed that wealth determines access to education

The class divide between wealthier families and those with resource constraints continues to impact the country's education system, now more than ever with remote learning. On average, the monthly household income for those who are considered poor is RD $17,636 (US $321.363), while the income of middle class individuals ranges between RD $44,089 and RD $220,444 (US $803.39 and US $4,016.93); individuals below the poverty line earn between RD $4,809 and RD $11,022 monthly (US $87.62 and $200.843) (Ministry of Economy, Planning, and Development, 2018).[2] In line with these figures, the public school teacher commented that gaining access to technological resources is a "class privilege" (personal communication, January 29, 2021). The private school coordinator reaffirmed the impression by saying that "there were people who could participate and others whose parents could not continue working and therefore were unable to pay" (personal communication, February 5, 2021).

As large amounts of money fund private institutions, their students learned more in-depth and structured content throughout the school day and for more hours (personal communication, February 5, 2021). The private school coordinator explained that, prior to the COVID-19 pandemic, public schools usually ended the school day at around noon, while private schools continued providing lessons until 2:00 p.m. Teachers went further into developing their students' understanding of materials, especially in mathematics, reading comprehension, writing, spelling, and oratory lessons. Classes were supplemented with tutoring and office hours to help reinforce understanding of materials. During the pandemic, the private school coordinator highlighted, private school students continued their schooling with as little interruption as possible: "in the first two weeks of the pandemic, we decided to work through the mail with guides for each material" (personal communication, February 5, 2021) Classes at the time were not virtual but, after April, institutions decided to continue teaching online. "The schools provided e-mails to each student with the institution's domain on Google Suite and then we opened our classrooms to work on this platform via Google Meet," she said, "…as the

days and months went by, students were becoming skillful and able to connect virtually" (personal communication, February 5, 2021)

As time went on, private schools started the 2020-2021 new academic year with virtual learning in September, 2020, but public schools began the year officially two months later, in November of the same year (personal communication, February 5, 2021) and, even then, access to education could not be guaranteed. The policy coordinator noted that "not every child has access to the Internet nor the electronic tools to connect or use them" (personal communication, February 6, 2021). This account was confirmed by Morales (2020), who explained that "around 400,000" technological tools "reached less than 12% of the student and teacher population" (p. 81). Additionally, 76,236 teachers need technology and "2.8 million tools and resources [are] needed to integrate students into the classroom" (*El Dinero*, 2020, para. 6). Even with television programs aimed at bridging this gap, the public school teacher emphasized that there were families who did not have a television in their homes: "in the community where my cousins live, my family was the only household in a long distance with a television," he said, "…the children in the community met at their house to watch the television program together" (personal communication, January 29, 2021). He also noted discrepancies in the content: "sometimes the curriculum presented in the television was not being taught at schools." Ultimately, only 26.5% of students "used the booklets" for the television programs (*Diario Libre*, 2020, in in Garrido, 2021, para. 3). In the Dominican Republic, socioeconomic gaps greatly affected access to digital learning and impacted the quality of the education offered.

Digital learning revealed great regional disparities in access to quality education

Just like wealth determined access to schooling during the COVID-19 crisis, living in specific regions of the Dominican Republic impacted access to education. With more individuals living in urban areas compared to rural ones, urban cities tend to have more resources; compared to their wealthier city counterparts, rural communities are plagued by poverty because more investments and policies are being funneled to urban cities (MINERD National Office of Statistics, 2019, p. 89; Vicepresidencia de la República Dominicana, 2018). As a result, there are "insufficient economic resources to cover basic necessities like education" (Vicepresidencia de la República Dominicana et al., 2019, p. 8). Several rural towns have only public schools with poor facilities, are either under-enrolled or overcrowded, have multigrade classes, and teachers are unwilling to instruct in those areas (Peréz, 2020). Given the distance it takes to arrive there, the policy coordinator said, digital access is also scarce (personal communication, February 6, 2022).

According to the International Organization for Migration [IOM] et al. (2020), border territories had difficulties acquiring the technology during the pandemic. The report highlighted that 16% of "school-age individuals who attended an educational center in February 2020 and were in quarantine, were not able to continue their education through the internet, phone, television, and/or radio" (p. 1). Among this percentage, 40% lived in border territories (IOM et al., 2020). These statistics were not surprising. According to the private school coordinator, southeastern areas near the border tend to lack resources (personal communication, February 5, 2021). Even traditional media is scarce in the southwestern province of Barahona where 62% of residents "do not have a radio" and "35% do not have a television" (IDEICE, 2021, p. 12). Households in the Bahoruco province also struggle, where 60% of residents are without radio and 38% without television (IDEICE, 2021). Therefore, the border territories seem to have been amongst the most affected by the COVID-19 pandemic in educational terms.

Students from remote areas of the Dominican Republic seemed to have suffered from a lack of access to quality education because they depend on the public education system, and this one did not respond effectively enough to their needs. The policy coordinator (explained how remote communities in the regions she oversees suffered from limited access to technological resources: "during this time, quality education depends greatly on digital strategies," but "the education quality through these tools did not have a great impact because access is limited for children in our remote communities," She recognized that most children with resources go to private schools in urban areas, where they have "their own systems" in place with digital platforms (personal communication, February 6, 2021 This situation is different from that of students who live in the "zona" (countryside), where "digital access does not reach [students] (personal communication, February 6, 2021)." The public-school teacher corroborated those remarks. His family, who lives in the countryside detailed how, at the beginning of the pandemic, students had "no classes at all" (personal communication, January 29, 2021). These testimonials hint at the link between regions and access to tools that impact learning – even more so despite the government's efforts to address these gaps. In doing so, the government once again placed rural students at a disadvantage throughout their remote learning.

Conclusions

In recent years, the Dominican Republic has seen a new wave in education reforms – where technology and online learning aim at improving education quality for students – but it was put to the test during the COVID-19 pandemic and achieved little success. The Dominican Republic deployed a national digital learning strategy to help students continue their education, including online resource hubs, educational platforms, laptops/computers, and television programming. However, initiatives were not practical or accessible to all students because of years of infrastructural issues caused by poor investment in education, lack of priority in teacher training, and the unequal distribution of educational spending within regions. Efforts were made to rectify them with TV and radio programs that accommodated students' needs. However, these measures became unrealistic for rural public schools and low-income students, while only urban private schools and wealthier students benefited from them. As a result, less wealthy, vulnerable, and rural students were very much left behind by their peers in private schools.

Aware of the lessons above, the Dominican Republic is aiming to integrate online tools within classrooms by replacing the Digital Republic initiative with a comprehensive plan to address those gaps (personal communication, February 6, 2021). Nevertheless, the report is limited in addressing the issues because of small-scale interviews with few perspectives, policy analyses focusing on one initiative over another, and more media reports than academic literature reviews. To build on this research with new perspectives, interviews must be conducted across all levels in the education system (i.e., national, provincial, and city officials) and types of institutions (i.e. at least two perspectives per public, private, rural, and urban schools). Having interviews from other academic institutions could offer different experiences and issues not yet explored in this study. Interviews with families, students, and journalists could also provide on-the-ground direct testimonials. By doing so, the Dominican Republic may be able to break the barriers in place mentioned in this report while ensuring access to a quality education for every student in the country.

Notes
[1] Calculated on ExchangeRates.org on March 27, 2022.
[2] Calculated on ExchangeRates.org on March 27, 2022.

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Impacts of Remote Learning Measures on Educational Access and Quality in Ecuador

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Background information on Ecuador

The Republic of Ecuador is situated on the northwest coast of South America, bordered by Colombia and Peru. Its population was projected at about 17.9 million in early 2022 (Instituto Nacional de Estadística y Censos [INEC], 2022). The majority of the population, approximately 11,200,000, lived in urban areas in 2020, while 6,300,000 lived in rural areas (INEC, 2018). About 28% of Ecuadorians are under the age of 15, and 65% fall within the age range of 15-65 (Barros, 2019). Women outnumbered men by about 200,000 in 2020 (INEC, 2018).

As socio-culturally diverse as it is biodiverse, Ecuador has historically faced complex inequalities along regional, rural-urban, ethnic, and class lines (Radcliffe, 2018). While national policies that aim at promoting and supporting indigenous ways of living, such as *Buen Vivir,* have undertaken to address these issues through their commitment to the Sustainable Development goals (Radcliffe, 2018), the year leading up to the 2020 pandemic was politically turbulent. When President Lenín Moreno took measures to limit fuel subsidies in October, 2019, indigenous communities faced disproportionately negative effects on a major source of their income. Soon, transport strikes, street-obstructing *paros*, and protests by students, teachers, and indigenous leaders put the nation on hold (España, 2019). After two weeks, the government reached an agreement with the Confederación de Nacionalidades Indígenas de Ecuador (CONAIE) to return fuel subsidies, and protests died down (Cabrera, 2019). These political tensions heightened national awareness about the economic plight of indigenous communities and increasing poverty and inequality in the nation, especially in the large informal sector. COVID-19 would further expose these inequalities.

Ecuador's education system

The mission of Ecuador's national Ministry of Education (Ministerio de Educación [MINEDUC]) is to guarantee education between the ages of 3 and 17 to those living in the country (Ministerio de Telecomunicaciones [MINTEL], 2022). Educational levels consist of initial or *inicial* (3-5), basic or *educación general básica* (6-11), and high school or *bachillerato* (12-17), all of which are compulsory. The school system and higher education system function separately (personal communication, August 25, 2021).

Ecuador's student population during the 2019-2020 school year was 4,407,030 (*Estadísticas educativas-Datos Abiertos*, n.d). The pre-primary enrollment rate prior to COVID-19 was 62.45%, the primary was 90.94%, the secondary was 84.67%, and the enrollment of people ages 18-22 in tertiary education was 44.89% (UNESCO, 2017). Furthermore, there is a slightly higher enrollment ratio for girls than boys at all levels. In 2017, the public sector educated 67.6% of Ecuador's students in 1st grade through high school, while the remaining 34.2% attended private, nonprofit, or parochial schools. By 2021, 78% of Ecuador's students were enrolled in public schools (personal communication, August 25, 2021). At the university level, 56.7% attend public institutions, and the rest attend private

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universities. In Ecuador, 28.4% of students following the Intercultural Bilingual Education model (IBE) live in urban areas, while the remaining 71.6% are rural, making up over 143,000 bilingual students. Of the 4,260,688 non-IBE students, 77.8% are urban and 22.2% are rural (Educar Ecuador, 2020). The socioeconomic level of families has a positive correlation with performance across language, math, and science subjects, in third and sixth grades according to The Latin American Educational Quality Evaluation (ECEAL) (Sistema de Información de Tendencias Educativas en América Latina [SITEAL], 2019). In 2014, 29.8% of the population was living under the poverty line, and 10.3%, under the line of indigence (SITEAL, 2019). This correlation indicates a socioeconomic inequity in educational quality and access.

In recent years, policymakers have increasingly moved toward reducing inequality, implementing learning standards, expanding digital, environmental, arts, and intercultural education. In 2000, during the World Education Forum, Ecuador committed to The Six Objectives of Education for All, and saw improvements across multiple areas (SITEAL, 2019). First, between 2006 and 2014, the proportion of adolescents who completed high school increased by 16.9% (SITEAL, 2019). Then, bilingual education, which was officially recognized in 1981 and had expanded in 1993 through a full policy and curriculum model (Hornberger, 2000), saw the creation of the Secretary of *Educación Intercultural Bilingüe* (EIB)[1] in 2018 (Ministerio de Educación [MINEDUC], 2018). Now, the national curriculum is available in 14 indigenous languages.

Recent education policy in technology and ICT

Ecuador's education policy has proactively addressed, though not completely achieved, digital literacy among the student population over the past two decades. MINEDUC's ten-year plan in 2006 included improvement of technological resources and infrastructure (MINEDUC, 2007). In 2010, MINEDUC collaborated with MINTEL to implement a more comprehensive project for the development of digital skills and infrastructure through schools. The project, called the Integrated System of Technologies for School and Community (*Sistema Integrado de Tecnologías para Escuelas y Comunidades*, SITEC), included the provision and integration of internet and devices, into schools (Barros, 2019). SITEC also included digital content development and docent training in the use of new tools and platforms. In 2015, MINEDUC created *Educar Ecuador*, an online School Control Management System to facilitate digital learning and communication (*Instituciones educativas,* 2016). Through the platform, students, teachers, administrators, and families have a shared space for classwork, grades, schedules, calendars, communication, and more. The platform *Educar Ecuador* had already been used nationwide for four years before the onset of the pandemic and its role in the COVID-19 educational plan, although lack of access to information technology created a barrier for some schools, students, and teachers.

Access to information technology is on the rise in Ecuador. According to INEC (2019) in 2018, 24.5% of homes had desktop computers, 24.2% had portable computers, and 11.2% had both. Nationally, 37.2% of homes had internet access (46.6% of the urban population, and 16.1% of the rural population had internet at home). About 50.1% of Ecuadorians use computers, and 55.9% use the internet, though not necessarily in the home. In urban areas, 71% used the internet in the home, while the rest of urban users utilized it at work, in school, in centers of public access, at another person's house, or another place By contrast, only 49.1% of rural internet users connected in the home. Fifty percent of urban Ecuadorians had a smartphone, compared to 23% in rural. Women connected to the internet, and used computers, cell phones, and smartphones at slightly lower rates than men, nationwide (INEC, 2019). These statistics have implications for educational access,

especially during the switch to remote learning brought on by the pandemic. Those without internet access (especially when using the internet outside the home is not an option) have less access to the digital platforms distributed by the MINEDUC.

Remote learning measures taken during social distancing

Ecuador's MINEDUC responded swiftly to the COVID-19 pandemic. Suspension of classes in the Sierra and Amazon was effective March 12, 2020 and was repeatedly extended during the following months. Coastal schools, which were on break during the onset of the pandemic, eventually delayed classes until June 1 ("Clases en el regimen Costa-Galápagos," 2020). School closures included initial education through high school, across public and private sectors. The national committee of emergency operations stated on March 15 that teachers would hold online classes, and some materials would be distributed via television channels (ECLAC, 2020). Universities closed their doors, relocated students, and shifted to online instruction during the month of March as well. Many private schools, which were facing overdue payments at the rate of 40-60% even before the pandemic, struggled to remain open as families navigated job losses (Torres, 2020). The MINEDUC promised to absorb students at private schools that closed despite strained budgets and increasing class sizes.

The Educational Plan for COVID-19 from the MINEDUC is titled *Aprendemos Juntos en Casa* (Let's Learn Together at Home). The plan includes continued teacher professional support, a free online education portal for students, families, teachers, and administrators, radio and television channels to broadcast educational programming, and some printed and printable materials for those without internet access (*Recursos educativos digitales,* 2022). Over 840 resources for teaching and learning were made available on March 16, 2020, on the portal at Recursos2.educacion.gob/ec. The website for *Aprendemos Juntos en Casa* includes a resource guide for families, stressing the importance of pedagogical and emotional accompaniment for learning. Alongside the *fichas pedagógicas* (pedagogical files containing lessons and curriculum for teacher and family use), the MINEDUC encouraged teachers to review and adapt materials to their context and needs. The *fichas pedagógicas* themselves were designed to encompass a wide range of educational levels. Resources for the 2019-2020 school year were divided into initial/prep (grade 1), elementary (grades 2-4), middle (grades 5-7), upper, (grades 8-10,) high school (courses 1-3), and special education. Accompanying weekly lessons for each age group were 10–15-minute audio clips posted online, whose views on Youtube range from 60 to 11,000. A digital platform specific to high school students called *AVA* was offered resourced virtual classrooms for Math, Biology, Physics, Chemistry, Social Studies, Language, and Literature (MINEDUC, 2020 a). Teachers and students can connect through these classrooms for lessons, assignments, and grading. All resources from *Aprendemos Juntos en Casa* and *AVA* are free available to public as well as private schools via *Educar Ecuador*, the online educational community of the MINEDUC.

Education professionals were able to access the *Sistema de Seguimiento de Actividades de Teletrabajo* (Teleworking Activities Monitoring System) through the MINEDUC website. Here, teachers and personnel of educational institutions could register for remote teaching and learning activities (MINEDUC, 2020 b). Teachers who facilitated digital instruction were encouraged to organize their digital classroom using the platform *Mi Aula en Línea* (My Classroom Online), provided by the MINEDUC through Microsoft Teams. In order to help decrease site traffic and avoid crashes, students and families were asked to download PDFs of resources and digital textbooks from *Aprendemos Juntos en Casa,* and use WhatsApp to communicate with their teachers.

Ecuador offered additional resources to keep providing the whole student population with education. The IBE system in Ecuador developed and distributed educational workbooks in 14 indigenous languages, which could be accessed online or in print. In May, the Secretary of EIB announced 1,500 vacancies for potential Intercultural Bilingual teachers and funding for professional development of 200 current teachers (MINEDUC, 2020 c). Furthermore, included in the *Plan Educativo: Aprendemos Juntos en Casa,* Ecuador has added educational TV programming on 160 channels, as well as 24-hour online access to the videos at https://www.educa.ec/, available on 1,000 radio channels across the country divided by age group. For students in areas with limited internet access, the Ministry made deliveries of printed guidebooks and workbooks in Spanish, as well as other languages (MINEDUC, 2020 d).

Introduction to the analysis

The following analysis explores the ways in which the digital measures taken by Ecuador's MINEDUC affected the access and quality of education in Ecuador, as well as impacts of these changes on existing socioeconomic gaps in the country. The exploratory study was based on two separate semi-structured interviews which followed a set of interview questions based on the research questions and the literature review. One interview was with an educational practitioner and one with a policymaker. The first interviewee was the director and sole multi-grade teacher at a public IBE elementary school in a rural zone of Ecuador. This interview took place in December 2020 over a Zoom call and lasted about 40 minutes. It was recorded and later transcribed by the researcher with the help of the software, Sonix. The second interviewee had served in a high rank position in the MINEDUC during the pandemic, and this interview was carried out in August 2021, using the same methods and duration as the first interview. The analysis of the data indicated that participants conceptualized academic quality as care for the holistic wellbeing of students as well as taking opportunities provided by remote learning for innovation in education. Educational policy, curriculum, and practitioners emphasized these forms of quality education during the pandemic. Another finding was the roles of technology and teachers as educational gatekeepers. Educational access was mediated by access to technology, and/or teacher responsibility to deliver other forms of remote learning. Teacher responsibility was especially high in rural areas where access to technology is scarcer. Finally, *digital divide* is a term used in recent decades to describe the gap between those who are able to access and effectively use new technologies, and those who cannot (Van Dijk, 2012). Social distancing highlighted the digital divide in Ecuador, but the diversity of measures offered helped to mitigate adverse effects of the digital divide. Even where technological access was limited, the wealth of digital resources developed in response to the pandemic provided professional support to teachers. Findings are discussed below.

Quality as holistic wellbeing and innovation

Findings indicated that quality education during the pandemic meant more than effective remote lessons and high levels of academic performance. Remote learning measures in Ecuador impacted the quality of education by expanding its focus on holistic wellbeing and innovation.

The educational strategy of the *Plan Educativo* emphasized holistic wellbeing by including policies and curriculum to preempt adverse effects of social distancing. The MINEDUC's top priority was to guarantee educational retention especially for the vulnerable populations by protecting both physical and psycho-emotional health (personal communication, August 25, 2021). The government facilitated emergency food baskets,

domestic violence prevention measures, and sanitary health education during the pandemic (Coronavirus Ecuador, 2020). The *Plan Educativo* also invited students and families to work remotely with student counseling departments and developed curriculum that addressed mental health issues associated with isolation (personal communication, August 25, 2021). The MINEDUC viewed teachers as key players in the quality of policies geared toward holistic wellbeing and invested in trainings for socioemotional support in the remote teaching context. One recipient of these trainings was the school director, who commented positively about the quality of the online trainings as well as the digital curriculum, particularly that which focused on emotional health. The curriculum served as a professional resource to him and his colleagues in similar schools and districts (personal communication, December 22, 2020). For the school director, holistic wellbeing also included learning and loving values rooted in the student's cultural identity: "the idea is that the children learn… good values; all the values that they should understand and love, always coming from their cultural identity… with a principle of development and a social principle of helping others," (personal communication, December 22, 2020). Even when rural or low-income students lacked digital access, the platforms helped equip teachers like this interviewee to continue providing quality education that holistically addressed their needs.

With the nearly overnight transformation of Ecuador's education, the MINEDUC recognized an opportunity for innovation. During the months of remote learning, it invested in a variety of pedagogies such as STEM, project-based learning, and experience-based learning, which had not been widely used in Ecuador before. The interviewee from the MINEDUC hopes to see these pedagogies continue to gain prominence in Ecuador. Since the start of the pandemic, the MINEDUC developed at least three quality-related areas for future development: digital learning, teacher professional development, and innovation, which could have lasting impact on the quality of Ecuadorian education. The MINEDUC interviewee said, "I believe that this educational paradigm change has really advanced. [The young people] feel the innovation, the changes, the need for change" (personal communication, August 25, 2021). On the other hand, the school director expressed concern about helping his students keep up with the level of urban schools, which he perceived to have greater access to the digital platforms. He did not anticipate new horizons of pedagogical innovation after the pandemic so much as "teaching that prioritizes the basic subjects. The material [needs to be] basic so that the children can understand and reinforce the subjects that they haven't totally arrived in, so that the kids can be at grade level and can understand better." For him, quality education in the future would involve filling in the learning gaps left by the long days without in-person instruction.

Teachers and technology as educational gatekeepers

During the COVID-19 pandemic, nationwide social distancing policies massively threatened access to education. In response, the MINEDUC designed remote learning measures to meet a wide array of access-related student needs. Especially in rural areas, access to any digital measure was largely mediated by teachers. The following reports on the kinds of interruptions to access, and the role played by teachers and technology.

Due to Ecuador's diversity and existing socio-economic gaps, the COVID-19 pandemic created a hydra of interruptions to educational access. As mentioned above, Ecuador had achieved high levels of nationwide access, so these issues were relatively novel (personal communication, August 25, 2021). While for some families social distancing meant a pivot to remote learning, for others, especially low-income and rural families, it posed incredible barriers. In September 2021, 78% of public school students nationwide had

access to internet connectivity, but only 1 out of 8 had access to a device for personal use (personal communication, August 25, 2021). The MINEDUC interviewee stated that "at the beginning of the pandemic there was an access rate of 20% in rural areas and 70% in urban areas." Reasons for inability to connect remotely included lack of infrastructure such as cables, as well as broadband and device access. Nineteen percent of families, most of whom were in rural areas, had no access to any device from which to access online platforms. Of the 81% with devices, many families did not have enough devices for all school-aged children in the family to access the platforms simultaneously.

The digital and remote learning measures were designed to meet a wide array of access-related student needs, but not all those needs could be addressed. With the help of international cooperation, technology companies, and universities, the MINEDUC was able to produce over 30 platforms, with educational resources in 14 languages (personal communication, August 25, 2021). Curriculum resources were available in the form of online platforms, print, radio, and television. Students without adequate home access to devices and broadband were not able to access the digital curriculum, though 93% of the country's students had access to at least radio or television lessons (personal communication, August 25, 2021). In part because certain mobile service providers refused to collaborate to provide free minutes to families, the MINEDUC was not able to meet its goal of total retention.

The responsibility to ensure access to education fell largely on teachers like the one interviewed in this study. During the pandemic, he felt responsible for keeping his rural students' learning going at a rate comparable to that of urban students. He said, "so that the students don't fall behind, they follow the same rhythm of study as… all urban [students]. We also have made it possible to bring [those materials] to our children that are studying in rural school so they can be at the same level" (personal communication, December 22, 2020). He personally took on a formidable list of responsibilities during the pandemic. These included printing pedagogical files, often paying for printing, preparing homework assignments to keep students occupied throughout the week, preparing activities that would keep students engaged and reduce depression, preparing physical activities to reduce stress keep students active at home, distributing personal protective equipment and educating families on COVID-19 safety measures, and encouraging demotivated students to complete assignments. The interviewee from the MINEDUC recognized and commended such efforts, saying, "the teachers carried themselves very well and they had to, by any means, contact weekly the students in remote areas. The others had to do it online daily, and ask not only for learning problems, but also about health or other problems" (personal communication, August 25, 2021). Because of the existing digital gap in Ecuador, some rural students often received brief weekly visits from their dedicated teacher, while students with connectivity access were able to interact with their teacher online daily. Even so, teachers were a highly valuable resource for educational access during the pandemic, and their dedication coupled with the diverse modalities of the digital measure ameliorated the drastic interruptions.

The pandemic as a catalyst for narrowing the digital divide

The pandemic highlighted a significant *digital divide* in the country, particularly between rural and urban areas, and families with high and low incomes. The Ministry had already recognized a need to close the digital gap before the pandemic and had begun an initiative to digitize texts and upload them to computer labs in schools (personal communication, August 25, 2021). However, there was very little preparation in terms of at-home device and internet access for rural and low-income families. The MINEDUC and

educational practitioners immediately prioritized vulnerable populations and increasingly focused on addressing the digital divide.

The education sector's emphases on wellbeing and innovation impacted socioeconomic gaps in Ecuador both during the pandemic and in planning for the future. The interviewee from the MINEDUC stated, "we have great challenges at the level of learning and digital gaps. Nevertheless, our greatest preoccupation has been to confront this crisis in a humanitarian and inclusive way in order to guarantee education and protection, and from there, closing gaps" (personal communication, August 25, 2021). Some of the vulnerable groups she listed were: rural, female, and afro-indigenous (these were most affected in terms of access to digital platforms), special needs and early childhood students, as well as the Venezuelan migrant population. The MINEDUC interviewee conceded that it may not have appeared that learning gaps between socioeconomic groups have closed at all during this pandemic. But this does not indicate failure, since the Ministry intentionally prioritized the holistic wellbeing of the most vulnerable, and is now capitalizing on the opportunity for innovation, teacher training, and paradigm change. The digital education agenda now being implemented includes five main work axes: 1) Technological Infrastructure, 2) Digital learning 3) Teacher development, 4) Innovation, and 5) Communication. Considering these goals, the greatest socio-economic impacts of the MINEDUC's response to the pandemic are yet to be seen.

The pandemic highlighted the digital access gap in Ecuador, which informed government policies, and important government initiatives to expand digital access originated in 2021. The school director explained that learning through Zoom was not an option for his rural school, saying, "students here don't have internet, they don't have technological means, nothing" (personal communication, December 22, 2020). In December 2020, he had not heard of any plans from the government to expand internet access but, by September 2021, the Government had announced the plan to install 5,000 subterranean cables in different parts of the country (personal communication, August 25, 2021). Ecuadorians differ in opinion about the return to in-person learning. In the school director's community, the resounding cry in 2020 was for a full return to in-person school. They say that nothing compares to live instruction. He also acknowledged other voices that say that virtual education has a place in Ecuador's future. Either way, he hopes that education continues advancing and stabilizing for the wellbeing of students and their families. For the school director, the digital divide is not synonymous with educational barriers for his students. He said, "we are bringing [education] to them. And with this, we don't put barriers on ourselves. For us, there are no limits when it comes to bringing education to the children" (personal communication, December 22, 2020).

Conclusions

Although Ecuador's government had begun to address the issue of digital access before the COVID-19 pandemic, the low rate of home internet connectivity in 2018 (37.2%) foreshadowed the challenges of doing education from home (INEC, 2018). The MINEDUC's pandemic response strategy, *Aprendemos Juntos en Casa,* accordingly, made vast efforts to provide educational resources that matched the diversity of the country.

Both policymakers and practitioners emphasized holistic wellbeing as part of quality instruction during the pandemic. Facing a widening socioeconomic gap caused by Ecuador's digital divide, they also considered the pandemic an opportunity to meet diverse student needs through innovation. Based on the findings, it did seem that the MINEDUC's leadership was in tune with the diverse experiences of its population and,

as a result, its pandemic response was swift, dynamic, and ongoing. Ecuador's teachers, however carried the weight of responsibility of making sure students were connected to the resources they needed. Although the burden of responsibility falling largely on teachers proved the need for greater valorization of teachers and led to quality education that cared for the holistic wellbeing of students, teachers still needed greater support to fill the multitude of roles they took on. In case of a similar situation, Ecuador would do well to alleviate the additional logistical burdens placed on rural teachers so they can focus on providing quality education. This study was not comprehensive, and more voices would be welcome to the conversation.

Note

[1] In English, EIB translates to Intercultural Bilingual Education (IBE).

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Digital Learning Measures in Honduras During the COVID-19 Pandemic

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Demographics and actions at the start of the COVID-19 pandemic

Honduras is located in Central America bordering Guatemala, Nicaragua, El Salvador, the Pacific Ocean, and the Caribbean Sea. It has over 9 million inhabitants (Instituto Nacional de Estadística de Honduras, 2019). The country has two major cities, Tegucigalpa and San Pedro Sula. The population living in urban areas is approximately 54%, while those living in rural areas is 46% (Red Latinoamericana por la Educación [Reduca], 2018).

The amalgamation of poverty, violence, and education opportunities has often resulted in families and children being displaced or forced to flee the country (Fore, 2019). Honduras has the second highest poverty rate in Latin America and the Caribbean: in 2019, prior to the COVID-19 pandemic, 14.8% of the population lived on less than US$1.90 per day, and approximately 50% of the population lived on less than US$5.50 per day (World Bank, 2021). Persistent poverty affects 67% of the population, and about 60% of the rural population lives in extreme poverty (UN Human Rights Council, 2019). Before the pandemic, there was limited and unequal access to public utilities, healthcare, and education (World Bank, 2015). Finally, violence and homicide rates are considered extremely high (UN Human Rights Council, 2019). The abovementioned factors play a role in the digital learning opportunities during school closures due to COVID-19.

The first COVID-19 case was registered on March 10, 2020 (Secretaría de Salud, 2020). Lockdown was enforced as early as mid-March allowing individuals to leave their homes only on predetermined dates according to the last digit in their ID cards (La Prensa, 2020a). Overall, the number of cases continued to rise along with the death toll of health care practitioners (New York Times, 2020; Colegio Médico, 2020). The Honduran government declared a State of Sanitary Emergency in February 2020 to prevent and surveille COVID-19 cases (Economic Commission for Latin America and the Caribbean, 2020).

The education system in Honduras

The Secretariat of Education is responsible for authorizing and supervising informal and formal education (Ley Fundamental de Educación, 2011). Formal education is organized in (a) pre-basic education prior to grade 1 for 3–5-year-old students, (b) basic education from grades 1-9 for 6–14-year-old students, (c) middle education from grades 10-12 for 15-17 year-old students, and (d) higher education at the university level (República de Honduras, 2019). There is one National Basic Curriculum for formal education in the country which is flexible in its implementation (Reduca, 2018), and several education documents that complement it. See Appendix A for a table listing recent and active education documents crafted by the State prior to the COVID-19 pandemic.

The Fundamental Law of Education (2011) makes a distinction between public and private schools, recognizing the validity of private schools, subject to the supervision and norms

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established by the government but not funded by the State (UNESCO-IBE, 2006). The Secretariat of Education, through the Unidad de Infotecnología (Infotechnology Unit, 2020) listed 34,951 schools in the country excluding universities, amongst which 2,486 private centers. Within the private schools, 785 are bilingual (English/Spanish). Most private schools are in urban areas. As explored below, access to schooling during the COVID-19 pandemic differed significantly between private and public schools.

The Fundamental Law of Education (2011) further states that mandatory education in Honduras should last 13 years, but the existing average years of schooling is about half of that. This average was 6.2 years in 2014, and 7.7 years in 2017 (PISA, 2016; República de Honduras, 2019). The recorded illiteracy rate was 14.5% in 2013, and 11.8% in 2017, indicating that over 600,000 adults are unable to read and write (PISA, 2016; República de Honduras, 2019). In general, enrollment rates decrease as years of schooling increase (República de Honduras, 2019). For example, the enrollment rate in basic education was 89.5% in 2017, while the enrollment rates for middle and higher education were 28% and 16.5%, respectively (República de Honduras, 2019). These figures indicate that students are less likely to remain in school as they grow up. As considered below, dropout rates might increase as the socio-educational gap increases and access to digital schooling proves more difficult during the pandemic.

Digital learning strategies at the beginning of the COVID-19 pandemic

In Honduras, access to mobile phones reached almost 90% of the population prior to the COVID-19 pandemic (Poder Ejecutivo & Secretaría Técnica y Cooperación Externa, 2013). Data from 2017 indicated that 31.7% of the overall population had Internet access, with a significant gap between the percentage of people in rural areas (6%) and urban areas (31%) (Poder Ejecutivo & Secretaría Técnica y Cooperación Externa, 2013; International Telecommunication Union [ITU], 2019). In 2017, the overall percentage of households with computers was 17.1% (ITU, 2019). According to data from the National Statistics Institute, there was a 23.7 percentage point gap between urban households in the country who owned a computer (28.6%) and rural households (4.9%) (Poder Ejecutivo & Secretaría Técnica y Cooperación Externa, 2013). This played a role in access to digital learning during school closures due to the COVID-19 pandemic.

In the 2014-2018 Digital Agenda for the country (Poder Ejecutivo & Secretaría Técnica y Cooperación Externa, 2013), the Honduran government recognized the need to develop human capital related to ICT by mentioning the need to incorporate ICT within formal and informal education. The document lists 7 preliminary lines of action related to ICT, including enriching formal education through ICT, implementing non-formal training centers, and collaborating with universities, among others.

On March 13, 2020, the government of Honduras announced the closure of education centers as part of prevention mechanisms in response to the spread of COVID-19 (Despacho de Comunicaciones y Estrategia Presidencial, 2020). On March 24, 2020, the Secretariat of Education announced plans for lessons to become available on television (Secretaría de Educación, 2020a; 2020b). Meanwhile, private schools started offering synchronous and asynchronous classes through a variety of means according to each school (La Tribuna, 2020a). At the higher level, although experts recognized limitations in Internet access, universities shifted to online classes (Dirección Ejecutiva de Gestión de Tecnología, 2020).

Unaware of the length of schools' closure and with little preparation for nationwide distance learning, the State tried various strategies for learning from home (Alas-Solis, et al., 2020). On May 8, 2020, the government announced the strategy Te Queremos Estudiando en Casa (*We Want You Studying at home*), aimed at guaranteeing learning from home for public schools in the core subjects by working in collaboration with the National Commission of Telecommunications [CONATEL] (Presidencia de la República, 2020c). The strategy included broadcasting lessons via television, radio, and the Internet, and it also included printing educational material for students without access to telecommunications (Presidencia de la República, 2020c).

At first, the State prohibited teachers to demand work from students since there was a perception that classes might resume shortly. With the shift to virtual platforms and distance learning, the Secretariat of Education made available online teacher-training workshops for usage of virtual platforms, for norms of biosecurity in the workplace, and cybercrime (Secretaría de Educación, 2020k; 2020*l*; 2020m). In early July 2020, the Secretariat of Education announced that plans were underway to strengthen connectivity, implement sanitary conditions for safe return to classes, and improve infrastructure for schools (Secretaría de Educación. 2020c). At this time, the State started urging students and teachers to maintain learning active, stating that students would not be automatically promoted to their next grades (Secretaría de Educación. 2020c). Over 120 TV and radio channels began broadcasting lessons free of charge (La Tribuna, 2020b). Additionally, in July 2020, the application Open Data Kit (ODK) was launched to track teachers from both private and public schools in their daily work (Secretaría de Educación, 2020d). On July 10, 2020, the government announced the evaluation guidelines for the school year for promotion to next grade level and the varying requirements for public and private education centers (Secretaría de Educación, 2020f).

The president of CONATEL pointed out that the best solution to ensure that children received education required a comprehensive approach which include a variety of mediums for accessibility (La Tribuna, 2020a). Thus, the Secretariat of Education employed the digital learning platforms and social media channels listed in Table 1 free of charge. Many of the platforms point to the same resources. For example, the lessons in SEDUC-Emergencia are linked to the videos in the YouTube channel. See Appendix B for user facts and figures on these learning platforms at the beginning of the pandemic.

Table 1
Digital learning platforms and social media employed at the beginning of the COVID-19 pandemic in Honduras

Name	Description
SEDUC-Emergencia.	This is an app. Resources such as lessons and workbooks are provided in an organized way. It provides announcements and updates.
YouTube: Repositorio Vídeos SEDUC.	Recorded lessons are uploaded here. These are arranged in playlists according to grade level.
Portal Educativo de Honduras: EduCatracho.	The portal contains interactive lessons. Videos, and workbooks are available here.

Facebook page of Portal Educativo.	It contains student and teacher resources, announcements, pictures, and posts.
Centro Educativo Virtual.	Courses are available for every grade, from preschool to grade 12.
Open Data Kit (ODK).	This app is used for reporting and tracking attendance. Each school has a unique code for login and teachers as well as administrators use it.

Internet connection is required to access all the platforms listed in Table 1. In Honduras Internet connection carries a cost. Households of higher income are more likely to be able to afford Internet connection. In addition, since many households do not have the type of Internet access required to utilize the learning platforms, other resources that complement or substitute digital strategies were employed, such as TV, radio, and printed materials. Experts in telecommunications in the country explained that more homes have access to Cable TV than to the Internet (La Tribuna, 2020a). Therefore, efforts were made to include lessons in regular TV and radio throughout the country. On July 22, 2020, the Secretariat of Education stated that there were over 230 communication media outlets including Cable TV, direct TV, and radio programs (Secretaría de Educación, 2020j). Additionally, the Secretariat of Education announced distribution of printed materials in rural areas with limited radio, TV, and Internet connection (Secretaría de Educación, 2020g). Finally, the Secretariat of Education specified that teachers were required to stay in touch with homes and follow up on learning (Secretaría de Educación, 2020h). Thus, private and public schools were reporting to the Secretariat of Education using the application ODK and providing evidence of students' work on a weekly basis (Secretaría de Educación, 2020d).

In sum, during the first phase of the COVID-19 pandemic, the education system was forced to move from face-to-face schooling to distance education nationwide. In response, the Secretariat of Education of Honduras promoted various strategies for learning from home, tracking results, and encouraging communication between teachers and students. The effectiveness of those valuable efforts made by the State is examined in the following sections of this report through the lived experiences of education experts during the time of confinement while considering the pre-existing education and socioeconomic conditions of the country.

How effective was the implementation of digital learning strategies during the COVID-19 pandemic in Honduras?

This exploratory study aims to understand how learning policies and digital learning measures implemented in Honduras during the COVID-19 pandemic impacted access to education, quality of education, and socio-economic gaps. The study involved semi-structured interviews with a teacher working in a public school, a teacher working in a private school, and a policy analyst and education expert working for a university's observatory which processes and disseminates information about the education system nationwide. Although the small sample does not speak for larger trends within Honduras, it provides a valuable window into the perspectives of individuals across the different educational strata in the country. Interviews were conducted from November, 2020 to

January, 2021, and considered the professional viewpoints and lived experiences of the interviewees. Findings indicate that the socio-economic gap is fueling inequalities in access and quality to education opportunities more than in the past with potential negative effects in society at large. This discussion explores accessibility to education opportunities during the pandemic, quality of education opportunities for students of various socio-economic status, and possible concerns for society emerging from a limited access to quality education.

Access: What factors influence access to education in Honduras during the COVID-19 pandemic?

The gap in access to quality education was exacerbated during the COVID-19 pandemic. The education expert interviewed explained that inequalities in learning opportunities have been aggravated during COVID-19 due to social inequalities existing at home as learning moved from the school space –with common learning tools such as a teacher and a blackboard –to home. Now home resources have a bigger impact on education.

Prior to the pandemic, studies showed that accessibility to education in Honduras was impacted by socioeconomic and geographic status, where rural areas had less access than cities, and where private schools had more access than public schools (Bos, et al., 2018; Duarte, Jaureguiberry & Racimo, 2017). Distribution of resources for education was unequal as the poorest quartile of the population had very poor school infrastructure. Internet access is a prerequisite for all the digital platforms implemented by the government and for consistent communication between teachers and students, but economic restrictions imposed considerable limitations in Internet access. For example, the public-school teacher explains:

> *In our students' homes, often, there is only one phone per family. The family has 3, 4 or 5 children and they can only purchase a WhatsApp package on their cell phone... [but they] must have a standard or high data package... There may be the coolest videos and we can have the most beautiful platforms but, if our receiver lacks the resources to choose to engage as a result of inequalities and the extreme poverty in which we live, what are we going to do?*
>
> *On the contrary, private schools often used other platforms such as Google Classroom, Zoom, and materials made available by the Spanish publishing house Santillana for virtual synchronous and asynchronous lessons (personal communication, December 21, 2020).*

All interviewees mentioned the government's failed promise to provide free Internet access for educational purposes. The legislative decree 60-2020, published in mid-2020, ordered free Internet access for educational purposes (Estrada, 2020). However, all interviewees expressed frustration at its non-existent implementation, especially since the validity period of the decree ended after the 2020 school year was finalized. The seriousness of the matter was explained by an interviewee citing a survey in which about 40% of parents stated that they are uncertain whether their children will finish the school year because they are unable to pay the Internet costs necessary to connect with school and send homework (Alas-Solis, et al., 2020).

The discrepancy between access to education opportunities for students from differing socio-economic backgrounds was heightened during the COVID-19 pandemic as was also articulated by the policy analyst interviewed:

> *The difference is clear within elite private schools, where they have all the conditions for a virtual connection, and the educational activity has been developing quite complete. At the other extreme, in the public centers, students cannot connect, or there is no Internet, or no cable TV signal, etcetera. All this is aggravated if we consider that there is no textbook and didactic guides or workbooks. If the student had these materials at home, then it would be easier for the teacher to be guiding the activity, but, if the child has absolutely nothing but an old notebook that he used last year and does not have books at home..., and [has] parents with low education... [then], the poorest children have lost almost a year of schooling even if they are passed to the next grade.*

The Third Regional Comparative and Exploratory Study (TERCE, 2013) revealed that only 14% of the sampled students attended schools with sufficient overall infrastructure (Duarte, Jaureguiberry & Racimo, 2017). Other limitations in accessibility emerge from the country's overall infrastructure and ICT impacting public and private schools. An example of limited infrastructure connected to ICT is the frequent rationing of electricity. For instance, the private school teacher stated, "There are a lot of power outages here [in the country]. It not only affects them, [students] but also us, teachers. There were days when I started 'Good morning, how are you?', and puff! Electricity was disconnected. I didn't hear from them again until the power came on."

Finally, geographically, there was a shortage of schools in rural areas and students in the lowest income sectors had lower education coverage rates (República de Honduras, 2019). Findings showed that location plays a role in accessibility to learning avenues during the pandemic. Many students who live in rural areas have extremely limited connectivity to the internet and TV as well as less access to learning tools or an adequate learning environment at home. Although the government took steps to reach students in rural areas, the actions were insufficient. The policy analyst stated, "One must recognize the Secretariat [of Education] had initiatives [as] they distributed books in rural areas...but, if they distributed 40-50 thousand books and enrollment is a million and a half, the effort is good, but more is needed". Nonetheless, due to the active role of teachers in these rural areas, many students continued to have some access to school related work. The policy analyst further commented, "There are a large number of teachers in rural areas who...made the effort, and have done it all year, to walk from house to house, [or] put the homework in the village grocery store for the parent to come and copy it".

Quality: How well are students in Honduras learning during the COVID-19 pandemic?
Prior to the pandemic, educational achievement indicators placed Honduras below average in international and regional evaluations. In 2013, Honduras participated in TERCE carried out by the Regional Office for Latin America of UNESCO evaluating 3rd and 6th grade in language, math, and science (Flotts et al., 2015). Moreover, in 2017, over 4,773 Honduran students participated in PISA-D, which evaluates reading, math, and science (Bos, et al., 2018). Honduras's results in TERCE and PISA-D were below the regional median in all areas at all evaluated grade levels, with differences of more than a school year in some tested areas (Flotts et al., 2015; Bos, et al., 2018).

In this study, interviewees reported increased unease around students' learning during the COVID-19 pandemic due to the implementation of digital learning strategies from home. Although the Secretariat of Education declared that schools kept 85% enrollment rates during the pandemic (Secretaría de Educación, 2020i), interviewees expressed concern around the learning achievement of these students. As mentioned above, the government used the ODK application to track enrollment and attendance from both private and public schools weekly (Secretaría de Educación, 2020d). However, interviewees explained that the

application only tracked if the students were responding to the teacher's assignments, with little regard to the accuracy of the responses or students' understanding. The interviewed public-school teacher stated that, "[completing tasks] gives the indicator that the student is working, but it does not give us the indicator that the student is learning". Interviewees reported the perception that the government "wants to fill in a figure, not to improve educational quality". As a result, teachers expressed fear towards students passing to the next grade level without attaining the expected learning competencies and skills, impacting the overall quality of education in the country over the long-term.

Historically, the lack of quality public education has influenced privatization, impacting unequal access to education opportunities and widening the socio-educational gap (Verger, Moschetti & Fontdevila, 2017; Edwards et al., 2019). The 2017 PISA-D evaluation reveals that Honduras displays the widest performance gap in the region between private and public schools. Low performance is heightened on students from underprivileged backgrounds, with 96% obtaining low results in PISA-D compared to 78% from students with a privileged economic status (Bos, et al., 2018).

When comparing public and private schools during the pandemic, there were varying approaches around structuring school from home which had a direct impact on the perceived quality of education received. Interviewees in this study explained that, during the pandemic, while public schools halted or slowed activities waiting for the government's stipulations for education measures, parents within private schools were able to impose higher demands on the type and quality of education provided through their private institutions. For example, while waiting for official government guidelines, classes as well as communication with students' homes continued in private schools shortly after in-person schooling closed. The private school teacher explained that, after a few weeks, the school had developed schedules to accommodate synchronous virtual classes through platforms like Zoom, provided digital training to their staff, created individual email accounts for students using virtual learning spaces like Google Classroom, and started employing other paid learning platforms connected to textbooks like Santillana. The private school teacher expressed that "in private institutions, a parent demands a lot because he is paying… [they] demanded class time and the complete use of the books. We had to adapt".

In contrast, public schools, while dealing with the connectivity issues previously mentioned, received conflicting instructions from the Secretariat of Education. The Secretariat of Education seemed to lack a consistent methodology when addressing the situation emerging in school due to COVID-19 pandemic. The public-school teacher explained that "the Secretariat [of Education] woke up a long time later, when they were almost in the fourth quarter". First, under the perception that classes could resume soon, the Secretariat of Education prohibited teachers from demanding students to deliver homework. Next, they promised and failed to deliver free Internet access. Finally, the Secretariat of Education shared another official communication stating that students who did not provide proof of work would not be promoted to the next school year. The policy analyst and education expert concluded that "the public system has functioned in a very limited way...therefore, the levels of learning, as expressed by teachers, parents and students...are very little or nothing."

The relevance of meaningful student-teacher interactions was highlighted by all interviewees when addressing learning achievement and perceived quality education. The private school teacher alluded to the importance of interacting with students to promote learning while stating that, "when we were just assigning homework for students, it was much more difficult [for students] to do it completely alone. Once they connected with us

[through virtual classes and video conference platforms] and we [teachers] explained, then, they could have guidelines on how to do things...or understand them". Unfortunately, for the public and rural school sectors with more connectivity issues, student-teacher interaction and feedback was not commonplace. The public-school teacher stated that, when she tried to interact with her students, few were able to connect, and many had low band levels, being unable to hear or communicate virtually. Throughout the school year, this public-school teacher made attempts to connect with students while considering their economic limitations, changing meeting times when digital devices were available at homes, yet less than half of the students were able to connect.

Additionally, parents' schooling played a role in meaningful interactions conducive to learning. The public-school teacher explained that:

> *The parents of children in private schools generally have opted for higher levels of academic training and can become tutors of their children...On the other hand, the parents of the children in our schools ... are of low educational levels so [it affects] ... the levels of reading comprehension and reasoning ... They may have the material, but if there is no guidance directly from the teacher [learning] is also very lacking.*

Similarly, the policy analyst explained, "we know that...learning normally takes place in that [student-teacher] interaction but, for the vast majority of students in the public sector, connecting with teachers on a normal schedule did not happen because...[it] implies having an Internet service that has an economic cost".

Finally, all interviewees stated that learning achievement for students with special needs was considerably impacted. In addition to limitations imposed by economic conditions, possible adaptations to support students with special needs were affected. In a private school where students with special needs are more readily identified with plans to support their learning, the teacher, when referring to students with special learning needs conceded that:

> *It has been difficult to adapt the little virtual time that we have… I believe we need to… see the possible ways of working with them… there are strategies [designed] for in-person…[but] this group has escaped us; we really have not been able to meet their needs.*

Society: What are the potential consequences of learning inequality in Honduras during the COVID-19 pandemic?

Socioeconomic status and access to quality learning opportunities work in a feedback loop that continues to widen the socio-educational gap. Historically in Honduras, violence and organized crime have been a barrier to access education, especially in areas of low socioeconomic income (Alas-Solis & Hernandez, 2020). In 2019, more than half a million of school-aged children and youth were out of school, and in gang-controlled areas (Fore, 2019).

Dropping out of school, followed by internal displacement and immigration, has been a way to escape violence threats and/or forced gang recruitment (Alas-Solis & Hernandez, 2020; Fore, 2019; Park, 2014). All interviewees observed that potential adverse effects in society are now heightened as unequal education opportunities during the pandemic became more prominent, leading to lower levels of education, higher school dropout rates, and further widening of the preexisting socioeconomic gap. These factors could contribute to higher emigration and violence rates in the country.

A common fear expressed by interviewees are the diminishing levels of education as students were promoted to the next grade level without the necessary skills and knowledge. As indicated by international evaluation studies, TERCE in 2013 and PISA-D in 2017, Honduran students were not achieving the basic levels of competencies, yet grade repetition rates were among the lowest in the region, with 28% of boys and 20% of girls reporting repeating a grade at least once in their education (Bos, et al., 2018; Flotts et al., 2015). All interviewees reported perceiving an accelerated rate in lower educational achievement due to changes in education during the pandemic. To counteract this phenomenon, public and private universities in the country collaborated to create and present to the Secretariat of Education the Proposal for the Prioritization of the Educational Sector Strategic Plan (Lagos, 2021; Universidad Nacional Autónoma et al., 2021). However, the policy analyst interviewed explained that no measures have been officially announced by the government for the 2021 school year to counteract learning inequalities emerging from the socioeconomic gap. Lack of action may contribute to two consecutive years of precarious learning conditions with serious learning gaps.

Consequently, there is less confidence in the relevance of education. This lack of confidence from students and parents may contribute to higher school dropout rates and its associated negative aftereffects such as migration and violence. For example, the policy analyst stated that "youth think that in their country there are no opportunities, that they have to emigrate, that the educational system does not support them. They do not see the functionality". Similarly, a study on eighth and ninth grade students confirmed that most participants were already thinking about emigrating as they believed it was useless to continue studying if they were not going to find work (Alas-Solis & Hernandez, 2020). Furthermore, the policy analyst explains that they have calculated that, without appropriate measures, enrollment rates can drop to fifty percent. He stated:

> *Having half of the underage population out of the system is putting those hundreds of thousands of young people at risk in a society where there is no work, where they cannot study...It is a place of high-risk because they look for opportunities to have some income through criminal means ... It is a time bomb to have these minors out of the educational system.*

In sum, the country faces potential alarming consequences from a widening socio-educational gap due to unequal access to schooling during digital learning in times of the COVID-19 pandemic.

Conclusion

Prior to the COVID-19 pandemic, there was a significant gap in access to quality learning opportunities due to socioeconomic gaps. In line with safety measures during the first phase of the COVID-19 pandemic, in-person classes moved to distance education from home. The government aimed to implement various interventions to enable students' continued engagement with education opportunities, including digital platforms, social media usage, distribution of printed resources, and usage of TV and radio to broadcast lessons. However, many of those efforts proved insufficient as students from lower socioeconomic backgrounds and rural areas were unable to access many of these resources due to connectivity issues while private schools, with students with higher socioeconomic status, opted to use other paid platforms. There is a concern around lower learning achievement, especially for students from lower income households as there is limited room for student-teacher interactions, feedback and proper formal learning assessments. Thus, the interruption on learning seems to have a higher impact on underprivileged students, contributing to furthering the socio-educational gap with potential negative

outcomes in society, including higher school dropout, violence, and emigration rates. Further research on the impact of digital learning strategies in Honduras during the COVID-19 could investigate themes related to changes implemented during the second year of schooling from home, dropout rates after one year of schooling, internal displacement and immigration rates of families with economic restrictions, the impact of digital learning on indigenous communities, and the impact on education strategies for students with special learning needs.

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Appendix A

Recent and active planning instruments by the State of Honduras prior to the COVID-19 pandemic relevant to quality education

Title	Link	Description
Strategic Plan for The Education Sector 2018-2030.	https://planipolis.iiep.unesco.org/en/2019/plan-estrat%C3%A9gico-del-sector-educaci%C3%B3n-2018-2030-6810	Outlines the education framework in Honduras, examines challenges, vision, and strategic areas, describes priorities and actions for 2019-2022, explains budgeting, and communicates management, monitoring and evaluation (República de Honduras, 2019).
Institutional Strategic Plan (2017-2020)	https://siteal.iiep.unesco.org/sites/default/files/sit_accion_files/hn_0310.pdf	Guides the management of the Secretariat of Education. It describes the mission, vision, and objectives of education, and outlines six strategic areas including access, quality, efficiency, competitiveness, management, and participation (Secretaría de Estado de Coordinación General del Gobierno, 2016).
Country Vision 2010-2038 and National Plan 2010-2022	https://www.se.gob.hn/media/files/articles/VISION_DE_PAIS_ExUjsjP.pdf	Two parts: The first part describes the four objectives for the country's vision which are: (1) a country without poverty and with health, *education*, and social security, (2) a democracy with security and without violence, (3) a productive country with sustainable employment and resources, and (4) a transparent, modern and competitive State. Each objective contains their corresponding goals. The second part of the document describes strategies and progress indicators (Poder Legislativo, 2010).
Public Policy for the Integral Development of Early Childhood: 2014-2025 Strategic Plan	https://siteal.iiep.unesco.org/sites/default/files/sit_accion_files/siteal_honduras_6016.pdf	Targets the protection and survival of children from gestation to age 6. The instrument aims to improve early education, health, protection, and child rights (Secretaría de Desarollo Social et al., 2013).
National Policy for Women: II Plan for Gender Equality and Equity of Honduras.	https://siteal.iiep.unesco.org/sites/default/files/sit_accion_files/hn_0315.pdf	Analyses the contextual situation related to gender while pointing to education as one of the axes of gender equality and equity. It outlines the institutional framework, budget, and monitoring systems. The Gender unit of the State is responsible for overseeing gender equity in education and other areas (Instituto Nacional de la Mujer, 2010).
Social Protection Policy	https://siteal.iiep.unesco.org/sites/default/files/sit_accion_files/siteal_honduras_0314.pdf	Delineates social protection priorities, including education, according to various stages in life, describing the legal framework and objectives (Secretaría de Desarrollo e Inclusión Social, n.d.).
Indigenous Peoples Afro-Honduran Plan	https://www.se.gob.hn/media/files/articles/afrohondurenos_YSbE5aC.pdf	Outlines the social context and history of indigenous peoples and Afro-Hondurans. It provides objectives, interventions, and strategies aimed at improving life quality and education opportunities for Intercultural Bilingual Education (Secretaría de Educación, n.d.).
Honduras Digital Agenda 2014-2018: Connectivity, Transparency, Efficiency.	https://siteal.iiep.unesco.org/sites/default/files/sit_accion_files/siteal_honduras_5049.pdf	Provides a background of the Honduran digital agenda, explains the ICT situation in the country, focuses on the foundations and strategies, and describes the implementation of the agenda, as well as monitoring and evaluation (Poder Ejecutivo & Secretaría Técnica y Cooperación Externa, 2013).

Appendix B
User facts on national learning platforms employed for digital learning in Honduras at the beginning of the COVID-19 pandemic

Platform	**SEDUC-Emergencia**	**Youtube Channel: Repositorio Vídeos SEDUC**	**Portal Educativo de Honduras: EduCatracho**	**Facebook page of Portal Educativo Educatracho**	**Centro Educativo Virtual (Virtual Educational Center)**	**Open Data Kit (ODK)**
Mobile data use	Needed	Needed	Needed	Needed	Needed	Needed
Type of platform	Open to all types of learning	Lessons through Videos	Open to all types of learning	Open to all types of learning	Open to all types of learning	Open to teachers & administrators
Focus	Core subjects in Basic National Curriculum Plan (CNB) from preschool- Gr.12	. Core subjects in CNB from preschool- Gr12. . Video lessons	. Core subjects in CNB from preschool- Gr12 . Relevant resources for teachers, students, and parents . Links to online workshops for teachers, statistics, and other relevant information	. Workbooks available in PDF for download . Announcements and posts applicable to all grade levels	Resources for all grade levels in the education system and all subjects	Tracking attendance and capturing evidence of student learning
Type of software	App available at the Google Play Store for phones and tablets. Made with glide	YouTube Videos	Website/portal created by the Secretariat of Education	Facebook	A portal available through the Secretariat of Education's website	Information not available

Advancing Digital Learning in a Traditional System: Uruguay During the COVID-19 Pandemic

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Figure 1
APREnDER school children using Ceibal laptops in 2020

Source: Personal communication, November 15, 2020.

Uruguay: a new government and a novel virus

The Oriental Republic of Uruguay is located in South America, next to the River of Silver, and is the second smallest country of the region, with 176,215 sq. km. (Sistema de Información de Tendencias Educativas de América Latina [SITEAL], 2020). It shares borders with Brazil and Argentina, and faces the Atlantic Ocean (SITEAL, 2020). According to the 2011 census, there were 3,286,314 people living in Uruguay, but the country registered a negative population growth rate in 13 out of its 19 departments. Back then, 21.8% of the population were between 0 and 14 years of age. Regarding ethnicity,

90.7% of the population identified as white, 4.9% as indigenous, and 7.8% as Afro-descendants (Instituto Nacional de Estadística [INE], 2011).[1]

After 15 years of left-wing government (Risso, 2020), Luis Lacalle Pou took office as president for 2020 to 2025 in March, 2020 when the COVID-19 disease was spreading throughout the world (Horwitz, 2020). Lacalle Pou declared a national health emergency on March 13, 2020 when the first 4 cases of COVID-19 were registered in the country (Horwitz, 2020). Although quarantine was only required for those over 65 years of age (Fernández Simón, 2020), the administration of COVID-19 tests was swift and effective – 1,000 daily tests were being administered by May 5, 2020 (*El Observador*, 2020b). Because of those quick actions, school activity cautiously resumed in June, 2020 (Fernández Simón, 2020). As early as April 22, 2020, certain rural schools re-opened, registering 50% of physical attendance; by May, 2020, all schools began to reopen progressively: on June 1, all rural and special schools except for the capital Montevideo and the metropolitan area; on June 15, all primary education schools, high schools, early childhood centers, pre-school education centers, and technical education, except for Montevideo and the metropolitan area; on June 30, 2020, all educational establishments (Uruguay Presidencia, 2020). However, cases began rising rapidly in early 2021, which led Uruguay to close schools again on March 24, 2021; from May until June 21, 2021, students gradually went back again to their classrooms (Xinhua, 2021).

A universal education system, but with limited completion

Uruguay's educational system is centralized, with five agencies involved in education: the National Public Education Administration (Administración Nacional de Educación Pública [ANEP]), the Ministry of Education and Culture (Ministerio de Educación y Cultura [MEC]), the Child and Adolescent Institute of Uruguay (Instituto del Niño y Adolescente del Uruguay [INAU]), the University of the Republic (Universidad de la República [UDELAR]), and the Technological University (Universidad Tecnológica [UTEC]) (Instituto Nacional de Estadísticas de la Educación [INEEd], 2015). While MEC represents education at the legislative level, links education with technology and culture, and revalidates certificates, it does not issue policies (Poder Legislativo, 2020). Under the coordination of the Central Governing Council (Consejo Directivo Central [CODICEN]), ANEP is the body that oversees some pre-primary education establishments[2] and all school, teacher, and technical and professional education, as well as the National Institute of Education Statistics (INEEd) and national policy (INEEd, 2015). Each year, ANEP sends inspections to upper secondary schools to monitor that these are meeting the needs of the schooling population (INEEd, 2019).

Uruguay's education system is divided into early childhood (primera infancia, ages 0 to 3), pre-primary education (educación inicial, ages 3 to 5), primary education (educación primaria, years 1 to 6), lower secondary education (media básica, years 7 to 9), and upper secondary education (media superior, years 10 to 12). Education is compulsory from age 4 until the completion of upper secondary education. Urban pre-primary and primary schools may be common, full-time, extended-time, practice or APREnDER[3], which welcome children from the most vulnerable backgrounds (INEEd, 2015). Secondary education schools (liceos) are standard, nocturnal, full-time, extended-time, rural, or integrative educational centers (INEEd, 2019). Tertiary education is divided into non-university education and degree-granting universities (Poder Legislativo, 2020). The school year in Uruguay runs from early March to mid-December, with vacation breaks at the end of June and mid-September (Uruguay Educa, 2020).

The majority of students attend public education in Uruguay, but many repeat grades and eventually drop out. For instance, in 2020, about 83% of Uruguayans attended a public primary or lower secondary education establishment (INE, 2020). However, from 2006 to 2018, secondary education students who were repeating a grade were more numerous than those who studied the grade that corresponded to their age, and in 2018 51% of all 23 year-old students had not finished compulsory education (INEEd, 2019). In addition, about 40% of the students who finish upper secondary education do so below the expected academic goals, which places Uruguay far below Latin America's average of around 61% (see CEPAL Stat in INEEd, 2019). To aggravate the problem, while attendance is crucial for students to succeed, about 20% of the teaching staff in public elementary schools were absent more than 20 times in 2017 (11% of the school year), and 48% of teachers in pre-primary and primary education suffer from chronic absenteeism (INEEd, 2019). In sum, according to the 2018 Continuous Household Survey (Encuesta Continua de Datos [ECH]), 98% of Uruguay's youth completed primary education, but 73% completed lower secondary education, and only 40% completed upper secondary education (INE, 2018).

Uruguay lived under civic and military dictatorship between 1972 and 1985, but education reforms became a priority immediately afterwards. In March, 1985, the Education Law was adopted, initially for two years, but stayed in place until 2008. The 2008 General Law on Education (Ley General de Educación, No. 18.437) dictates Uruguayan education nowadays (INEEd, 2014). Ever since, Uruguayan education programs have focused on the expansion of schooling – primary education is basically universal, but secondary education is not –, new topics such as social and educational inclusion, and equal access to Information and Communications Technology (ICT) (Informe sobre el estado de la educación en Uruguay, 2014). Some programs that stand out are the Community Classroom Program (Programa de Aulas Comunitarias, PAC), which aims to reinforce knowledge and offer class flexibility among students in first grade of secondary education to prevent them from dropping out (Mancebo & Monteiro, 2009), Community Teachers (Maestros Comunitarios), where regular teachers work beyond their work hours to locate and attract students in basic education at risk of dropping out of school (Así nos va, 2020), and Plan CEIBAL, which focuses on ICTs and is further explored in the following lines.

Digital learning in Uruguay: A priority before COVID-19

As of 2019, Uruguay had four plans related to ICT teaching. The most widely spread one is Plan Ceibal. In Spanish, CEIBAL stands for Educational Connectivity in Basic Computing for Online Learning (Plan de Conectividad Educativa de Informática Básica para el Aprendizaje en Línea) (Plan Ceibal Online, n.d.). Plan Ceibal originated from the initiative by the non-profit One Laptop per Child (OLPC), which has operated in different countries in Latin America since 2005 (One Laptop per Child) (n.d.). In Uruguay, Ceibal began functioning in 2007 as a multi-stakeholder initiative that involved, among others, the Presidency, the Technological Laboratory of Uruguay (Laboratorio Tecnológico de Uruguay [LATU]), ANEP, MEC, and the National Telecommunications Administration (Admininstración Nacional de Telecomunicaciones [ANTEL]) (United Nations Educational, Scientific, and Cultural Organization [UNESCO] et al, 2011). Plan Ceibal's aims at distributing free, wireless connection laptops to students and teachers (United Nations Educational, Scientific, and Cultural Organization *et al.*, 2011). It has an educational component, flexible in nature, which encourages the development of activities in class; a social component that ensures equity and inclusion; and a technological component that provides Internet and computer access. By 2009, Plan Ceibal

had achieved all the goals above in primary education (UNESCO et al., 2011). Table 1 displays the evolution of Plan Ceibal.

Table 1
Evolution of Plan Ceibal

Year	Steps taken
2007	Plan Ceibal began operations by delivering laptops to students
2009	All primary education students had a Ceibal laptop
2011	Implementation of a digital learning platform with a digital library
2013	Development of platforms specific to mathematics and English learning, as well as a laboratory specialized in 3D modelling, programming and robotics
2015	Some schools in Montevideo began working with optic fiber
2016	All 6th graders had access to English language lessons through Ceibal
2017	All public education centers in the country had free wifi access and about 564,000 students and teachers had Ceibal laptops.

Note: Information adapted from Consejo de Dirección (2017).

ANEP decided to close schools on March 18, 2020, except for those that provided meals. One day earlier, on March 17, ANEP made available the CREA platform, an existing part of Plan Ceibal, so that teachers and students and their families could communicate virtually (*El Observador,* 2020a). Within CREA, Ceibal implemented Ceibal en Casa (Ceibal at Home), Uruguay's online platform, with the aim of adapting the existing content of Plan Ceibal´s resources – which complement face-to-face education – to a platform that could function as a full package for teaching and learning at the pre-primary and primary levels (personal communication, May 10, 2021).

Ceibal en Casa offered two options to continue learning. The first one was through interactive video-conferencing and social networking, and the second one was through assisted activities and lessons organized by grade (Ripani, 2020). Ceibal en Casa's activities aimed at providing information and skill building on how to support students during the COVID-19 pandemic (Plan Ceibal, 2020). Plan Ceibal and Ceibal en Casa have been featured by UNESCO (UNESCO et al., 2011) and the OECD (Ripani, 2020) as successful digital learning models. Ceibal en Casa is not open for public display, but all Uruguayans have access to it at ceibal.schoology.com. Figure 2 shows Ceibal en Casa's main interface, while Appendix A provides some facts and figures that describe the platform and its usage.

Figure 2
Ceibal en Casa's main interface, once users log in

Source: Personal communication, May 10, 2021.

In addition to Ceibal, Uruguay's MEC implements the Digital Literacy National Plan (Plan Nacional de Alfabetización Digital) to provide all adults with tools that allow them to use technologies (MEC, 2010), the Ibirapitá Plan, which provides retired adults with tablets and organizes workshops to teach them how to use them (Plan Ibirapitá, n.d.), and the Youth Programmers Plan, part of Plan Ceibal, and which focuses on teaching the new generation how to do programming (Jóvenes a Programar [JAP], n.d.). The most recent document regarding ICTs and inclusion is the *Agenda Uruguay Digital 2025*, which focuses on the adoption of technologies for sustainable use in all social areas (Uruguay Presidencia & Agencia de Gobierno Electrónico y Sociedad de la Información [AGESIC], n.d.).

Digital learning during the COVID-19 emergency context: The old and the new

To have a better understanding of the strategy implemented by Uruguay's Plan Ceibal during the COVID-19 pandemic, this report presents an exploratory study with three interviewees: a private school director in Montevideo, an APREnDER school director in Montevideo, and a Plan Ceibal member who occupies a leadership position. The semi-structured interviews were conducted between November, 2020 and May, 2021, and centered on the leaders' experiences to implement suitable teaching and outreach strategies to continue providing education. The findings suggest that Uruguay's digital

learning strategy has grappled with conciliating traditional views on education and digital learning. They further point to not all schools using digital learning resources during the pandemic even when these were available to them and their students, which suggests in some cases a digital divide originated by choice (Gunkel, 2003). The socio-economic gap seems then to depend not so much on the lack of means to acquire technological devices, but on the balance between the traditionally valued education system and the incorporation of new technologies. The research findings are discussed below.

Technology and education: Conciliating the modern within tradition

The interviews suggested that international educational assessments influence Uruguay's education policy and that Plan Ceibal, as an institution, partly aims at filling any gaps identified through them. More precisely, the Program of International Student Assessment (PISA) has a considerable impact on what subjects and skills should be prioritized.[4] In 2018, Uruguay ranked 2nd in the region with 424 points, only behind Chile with 438, and before Mexico with 416 (OECD, n.d. b). The importance paid to PISA by the interviewees coincide with official releases from ANEP (2018a, 2018b, 2018c, 2019; Uruguay Presidencia, 2019). However, despite obtaining good results in the region, the interviewee from Plan Ceibal expressed that "…PISA results are out. We all become very concerned with the terrible results and everyone has a different explanation for that" (personal communication, May 10, 2021). Concerned with public criticism, the same interviewee highlighted the work that Ceibal does to improve PISA results: "I believe that, as an external factor outside of the administration, Ceibal was somehow achieving results in some projects" (personal communication, May 10, 2021). In other words, Ceibal has been working towards achieving the international standards that PISA demands. As a result, when the COVID-19 pandemic arrived, the structure of Ceibal en Casa continued to reflect those priorities.

Uruguay's interest in standing out internationally is reflected in digital learning, but national realities are experienced otherwise. In 2018, Fundación Ceibal created an international network to foster good digital education practices throughout Latin America called ADELA (n.d.), and Plan Ceibal offers teacher training teachers opportunities abroad, as was the case of the training in Mexico in 2017/18 (Plan Ceibal, n.d.). However, schools in the country see education differently. For instance, the director from the private school conceded that, "although Uruguay's standards are well recognized at the global level…there was a plateau where teachers had stagnated in their training, updates, challenges, and we had to constantly upload strategies to see if we could get them going" (personal communication, November 30, 2020). For the private establishment, the rapid pace of the COVID-19 pandemic was an opportunity for teachers to catch up with the use of digital technologies, or the "21st century skills" (personal communication, November 30, 2020), but progress did not take place through Plan Ceibal. Therefore, it may have been that Plan Ceibal offered the resources for many other private schools to catch up with ICTs, but that they opted for different strategies.

Uruguay's leading international efforts in digital learning may find it hard to fit within a traditional education system. The previous example on the struggles of the private school to provide training so that teachers reach PISA's standards shows that Ceibal provides the tools, but that its schools may choose not to use them. As the interviewee from Plan Ceibal recalled, Ceibal is an external institution within a centralized system, which "has been an important factor to inject the education system with new aspects and projects which have at least made us be aware of our capacity to do and achieve great things" (personal communication, May 10, 2021). At the same time, technologies may be

perceived as a reason for Uruguay's decline in quality education. The director of the APREnDER school, for instance, believes that technology has negatively impacted education by leading youth to be more socially isolated and interact only with their devices (personal communication, November 15, 2020). Both of the above perspectives together reflect the intricacies of digital learning in Uruguay, namely the availability of modern resources coupled with teacher awareness of their negative consequences on society.

Technology for learning: eruption, irruption, or disruption?

As a country with quite successful digital learning policies in place, Uruguay had the resources in place to face the COVID-19 pandemic, so it did not see an eruption – multiplication from all sides – of digital tools to teach. Ceibal en Casa was created thinking of parents' demands to have their children make good use of their time spent at home (personal communication, May 10, 2021), while Plan Ceibal continued to be available. As time went by, Ceibal en Casa evolved into a more complete platform where teachers could find additional resources for class and send their students to use them, but there was no need to produce material against the clock because Plan Ceibal already existed (personal communication, May 10, 2021). In addition, through Plan Ceibal's (2017) YouTube channel, students with disabilities could access some videos that complemented activities. Ceibal en Casa attracted about 12,000 users, as Appendix A shows.

While Uruguay's interest to close the digital divide in access to technologies before the pandemic helped the country to make Ceibal en Casa available, the way in which digital learning was implemented in schools varied according to their administration. As the director of the private school explained, many other private schools in the country opted for hiring a provider to build their digital platform according to their needs. That process was possible because "the platform evolved and improved as it received input from educational centers" (personal communication, November 30, 2021). The platform, called Educational Administration System (Sistema de Gestión Educativa [SIGED]),[5] existed as a paid service in the private school prior to the pandemic, so the flexibility and rapidity to adapt to customers turned it into an effective option. Therefore, although the platform "was working at 20% capacity or less, because there was no need for it" before COVID-19, this private school still preferred the private provider and not Plan Ceibal during the pandemic because it met its needs faster and in a customized way.

Digital learning was perceived as disruptive for many teachers, which cannot be fully explained by their lack of access to technologies (NTIA, 1999), but by their choice and reluctance to use them (Gunkel, 2003). The teachers in the APREnDER school used mostly WhatsApp to communicate with parents, and eventually opted for printed material because there were households without mobile connectivity even though schools and students were equipped with laptops: "all work related to networks, at home, relied on WhatsApp and the printed packets that teachers made paying from their own pockets because teachers were providing for their kids" (personal communication, November 15, 2020). Meanwhile, the private school underwent a slow process in adapting to SIGED and even using computers: "[teachers] didn't want to [teach online] because that somehow meant invading their privacy. We had to overcome all those things. Then, they didn't even have a laptop" (personal communication, November 30, 2021). Therefore, the digital divide for some teachers was disruptive because their students' access to technologies at home was not appropriate despite connectivity provision strategies or because of their own resistance to have technology take over their lives.

Does technology contribute to the social function of schools?

The use of digital technologies for learning in Uruguay during the pandemic was mostly motivated by the need to stay connected with one another, for students and their families, and for schools. The director of the APREnDER school explained that schooling is not questioned within Uruguayan society, so children attend school; APREnDER schools are also the alternative for children who would be out in the street wasting their time if they were not at school learning in the afternoon shift, and are important meal providers (personal communication, November 15, 2020). Therefore, staying in touch with students during the COVID-19 pandemic was vital to avoid dropouts. This APREnDER school made use of its Maestros Comunitarios program to reach out their students by going to their homes and helping them fill out their homework. In some cases, communication through Whatsapp was possible, but seeking contact through other digital means was not an option. The private school also mentioned the importance of staying in touch: "we had never had that many meetings with parents as we did this year, on Zoom… because communication strategies are a priority for us during the crisis. So, every time we were about to adopt any policy, we would anticipate a parent Zoom. We have organized as many as 15 in one week" (personal communication, November 30, 2020). The differences in outreach strategies are visible, but they also show that digital technologies met a social function by connecting with students and parents.

Whenever communication was not possible, students lagged behind. In the APREnDER school, evaluations took place according to teacher appreciations, as stated in the national policy, while the private school was able to grade their students as usual; appreciations determined whether students could pass to the next grade (personal communications, November 15 & 30, 2020). That strategy was positive for children who had not attained the expected year outcomes (i.e., students did not automatically pass into the next grade), but also showed that some students suffered more than others from social distancing and the lack of connectivity, possibly increasing Uruguay's problem of those who lag behind. Plan Ceibal is aware of its limits, but it also strives to address them: "it is a fact that there are people who are not being able to participate [in Ceibal en Casa] due to private infrastructure issues, to their equipment not being suitable or are broken or because they do not have connectivity or their connectivity is poor, and the gap between those who have less and those who have more resources is increasing. We know that and we feel it. But, well, I believe that an effort is being made to let the gap increase as little as possible" (personal communication, May 10, 2021).

Curiously enough, neither the lack of connectivity nor the use – or not – of Ceibal prevented these schools from creating caring communities during social distancing. The private school, for instance, is of Catholic orientation, so it would organize meetings to follow up with students' well-being; follow-ups were individualized and could be carried out via Zoom. Possibly because the care expressed through the meetings and the individual attention paid by schools, when students returned to in-person classes, the director mentioned not seeing any socioemotional issues as consequences of social distancing (personal communication, November 30, 2020). The APREnDER school sent encouragement videos to their students via WhatsApp with the goal of helping children cope with isolation, and some students replied by sending videos as well (personal communication, November 15, 2020). These examples show that digital learning is indeed more isolating than in-person schooling, but that smart ideas and technology can help increase students' socioemotional well-being in emergency situations like the COVID-19 pandemic.

Figure 3
Sequence of students working on their socioemotional well-being and how teachers compiled their work in a Whatsapp video in the APREnDER school (2020)

Source: personal communication, November 15, 2020.

Conclusions
Uruguay's digital learning strategy during the pandemic made use of its existing digital platform Plan Ceibal to implement Ceibal en Casa, a space for basic education children to stay in touch with learning, but which did not aim at replacing classes based on the national curriculum. While Ceibal en Casa registered a constant number of student users in 2020, it was less used in 2021 when students went back to social distancing because both teachers and students had already gone through a period of adaptation to distance learning (personal communication, May 10, 2021). As for Plan Ceibal, the schools in this work opted for different strategies despite all schools and all primary students having access to a laptop through Ceibal. While some of those choices can be explained by students' lack of connectivity at home – which is indicative of their economic situations – they depended on how open teachers and school administrators were to digital technologies, as well as on the importance that they gave to international standards. Therefore, Ceibal's digital learning strategy did not impact the socio-economic gap in

terms of access to technology, but in terms of which teachers took a leap forward in digital learning.

Looking ahead, Uruguay's successful Plan Ceibal is keeping the country in a very good PISA ranking in Latin America, but domestic policies in digital learning must understand the digital divide both as a lack of connectivity in all homes, and as a choice by many teachers and administrators to willingly find a way around digital learning. Uruguay's education policy is centralized, which opens spaces for closing the divide understood as access to technologies, as Plan Ceibal has successfully proved. Still, even with those tools available in schools, social and economic realities may not allow to make the best use of the platform. Attention should be paid to why both the directors of the private school and the APREnDER school did not choose Plan Ceibal or Ceibal en Casa during the pandemic. What could Plan Ceibal improve to become private schools' first choice? How can it be effective for vulnerable school children at risk of dropping out in emergency situations? Can Uruguay's plans to implement a hybrid system in 2022 (Infobae, 2022) help close the socio-educational gaps above, or will they increase them even further? These are among the questions that need consideration to achieve not only high results in international standardized tests, but also effective, quality education in the country.

Notes

[1] Each person may indicate more than one identification.

[2] In Uruguay, depending on the type of institutions and programs, pre-primary education may be overseen by ANEP, MEC, or INAU.

[3] *Aprender* is a word that reads learning in Spanish, but, in this case, it also stands for Priority Attention in Environments with Relative Structural Difficulties (Atención Prioritaria en Entornos con Dificultades Estructurales Relativas). These schools aim at providing individualized support and accompaniment to marginalized students so that they stay in the system and do not need to miss class due to difficult personal situations (see https://www.dgeip.edu.uy/programas/aprender/).

[4] PISA is part of the Organization for Economic Cooperation and Development (OECD) and takes place every three years in any country that may wish to participate to measure whether 15-year-old students are learning and how, traditionally focusing on reading literacy, mathematics, and the natural sciences, and expanding on other skills such as financial literacy (OECD, n.d. a). PISA exists since 2000, and Uruguay has constantly participated since 2003 (ANEP, 2018).

[5] See Edutec at siged.com.uy/web/ (retrieved October 14, 2021).

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Image Credits

Figure 1. APREnDER school in Montevideo, Uruguay. (2020). Taken from personal communication, November 15, 2020.

Figure 2. Plan Ceibal. (2021). Taken from personal communication, May 10, 2021.

Figure 3. APREnDER school in Montevideo, Uruguay. (2020). Taken from personal communication, November 15, 2020.

Appendix A
Facts and figures of Uruguay's digital strategy during the COVID-19 pandemic

Number of Plan Ceibal uses during the pandemic after Ceibal en Casa was implemented	**730,000, as opposed to 90,000 before the pandemic (France 24, 2020).**
Number of student users in Ceibal en Casa	12,000 (personal communication, May 10, 2021), out of a national enrollment of 87,929 children in pre-primary education and 244, 303 students in primary education in 2020 (ANEP, 2021)
Mobile data use	Not needed. A pact was made with ANTEL to provide national free internet during the health emergency (Ripani, 2020).
Focus of Ceibal en Casa	Two foci of implementation: technical and pedagogical, and socioemotional to deal with isolation (Ripani, 2020). Featured sections include reading at home, computational thinking, programming, mathematics, and recreational activities (personal communication, May 10, 2021).
Number of resources available through Ceibal en Casa	More than 173,000 resources, 7,000 books, 1,500 open access resources (Ripani, 2020).

The Provision of Learning in Mexico During the COVID-19 Pandemic: Defining the Digital Divide

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The pandemic in Mexico: Another burden to chronic socioeconomic inequalities

Geographically, the United Mexican States are part of North America, along with the United States of America and Canada; south, they border Guatemala and Belize; they border the Gulf of Mexico to the East, and the Pacific Ocean to the West (Sistema de Información de Tendencias Educativas en América Latina [SITEAL], 2020). Mexico has 32 federate entities, which are home to approximately 129 million inhabitants, out of whom 78% live in urban areas, and 15% are indigenous (SITEAL, 2020).

In 2018, Andrés Manuel López Obrador was elected President of Mexico for a period of six years, adopting an anti-neoliberal policy. The change of regime aimed at eradicating chronic socioeconomic gaps that had been affecting the largest sector of the Mexican population –humanism for development, reduced violence, and no more forced migration are among the priorities of López Obrador's 2018-2024 National Plan for Development (Plan Nacional de Desarrollo, Gobierno de la República, 2019). The country's gaps were indeed preoccupying: in 2018, 36.6% of the population in urban areas and 56.3% in rural areas lived in poverty, 25% of women lived without an individual outcome and, in 2015, 70% of the population did not trust the previous administration (Economic Commission for Latin America and the Caribbean [ECLAC], n.d.-a; n.d-b). Violence-wise, homicides increased 84% between 2015 and 2020, and organized crime went up 40.5% since 2015 (Institute for Economics and Peace, 2021). Mexico faced the pandemic under this atmosphere.

Mexico's education system, policies and rulers

The national education system in Mexico comprises basic education, upper-secondary education, and higher education, which can be taught in schools, remotely, and in a mixed modality (Secretaría de Educación Pública [SEP], 2015-a). Basic education comprises pre-school (3 years), primary school (6 years), and lower-secondary school (3 years); upper-secondary education typically takes 3 years; higher education offers short-term technical degrees, as well as undergraduate (4 to 5 years) and graduate degrees (SITEAL, 2019). As of 2019, all Mexican states are obliged to provide free, public education at these levels (Presidencia de la República, 2019-a; SITEAL, 2019).

Since 1921, the Secretary of Public Education (SEP, 2015-b) oversees most of Mexico's education system. SEP regulates initial school (from 0 to 2 years of age), basic education, and certain modalities of upper-secondary education. Universities are typically autonomous or private, although SEP also manages teacher colleges and eventually certifies all higher education diplomas (SEP, n.d.; 2015-c). The largest university is the National Autonomous University of Mexico (Universidad Nacional Autónoma de México [UNAM]), which provided free education to 258, 128 students at all higher education

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levels during the 2020-2021 academic year (Portal de Estadística Universitaria UNAM, 2020). In 2020, according to *América Economía*, Mexico's Technological Institute of Higher Education (Instituto Tecnológico de Estudios Superiores de México [ITESM]) and the National Polytechnic Institute (Instituto Politécnico Nacional [IPN]) appeared before and after UNAM in national quality rankings, respectively (Allan, 2020).

Over the years, and in parallel with the 80-year rule of the Revolutionary Institutional Party (Partido Revolucionario Institucional [PRI]) until 2000, the structure of the Mexican education system remained somewhat constant and centralized, with the government empowering teacher unions to avoid labor demands, rather than improving education policy (Ornelas, 2019). That relation, known as corporatism, conferred too much power to teacher unions over the years. Some irregularities by teachers such as the bequeathing of teaching positions to family members surfaced in the 2000s, when the PRI finally stepped down and the National Action Party (Partido Acción Nacional [PAN]) led the country, but they were paradoxically addressed when the PRI went back to power in 2012. In 2013, the education program (Programa Sectorial de Educación) aimed at increasing the quality of basic education, and enrollment rates and quality at other levels, as well as regaining control over the national education system. Doing so, however, implied the close evaluation of teachers and their practices. Therefore, the subsequent Education Reform, which should have been one of the drivers of the 2012-2018 PRI administration, received great backlash from teacher unions and was eventually taken down by the current Morena party administration, giving power back to teacher unions (López Obrador, 2019).

The López Obrador administration replaced the Education Reform with the General Law on Education (Ley General de Educación) (Presidencia de la República, 2019-b). The current law is based on a holistic view of education at all levels and for all individuals, emphasizing democracy, humanism, equity, interculturality, and excellence with a national orientation. Those values were introduced to the classroom for the 2021-2022 school year under the proposal "New Mexican School" (Nueva escuela mexicana, Art. 11-14); other areas of importance are indigenous and inclusive education and the obligation of states to provide higher education. Chapter XI of the Law specifically tackles Information Communication Technologies (ICTs) and digital learning, announcing the progressive issuing of an Educational Digital Agenda (*Agenda Digital Educativa*), which fosters the access and use of digital learning in students' and teachers' daily lives.

According to the 2019-2023 Educational Digital Agenda (SEP, 2020), Mexico's efforts to include ICTs in education began in the 1980s with the production and delivery of computers to primary and lower-secondary school establishments, and have evolved through time. Relevant to this document is the launching of Red Edusat (Satellite Education Network) in the late 1990s, which allowed for the provision of education to remote areas and led to the Telesecundaria system – lower-secondary learning through television –, which was being used by about one fifth of the country's lower-secondary students in 2018. Another outstanding moment was the launch of MexicoX, the country's platform for Massive Open Online Courses (MOOC). Nowadays, the production of digital learning material has been taking place within SEP through the initiative @prende.mx. Part of the 2016-2019 Digital Inclusion Plan (Plan de Inclusión Digital [PID]), @prende.mx works toward the improvement of digital skills and computational thinking, which comprises educational television projects (Coordinación General @prende.mx, n.d.). The 2019-2023 Educational Digital Agenda (SEP, 2020) took note of previous programs and needs to come up with five working lines: teacher training and updating; digital literacy, inclusion, and citizenship; production, promotion, access and social use of digital learning resources; better connectivity and infrastructure of ICTs together with LTKs (Learning

and Knowledge Technologies) and communication; and research, innovation and creativity in digital education. These axes are embedded in the National Agreement on Education (Acuerdo Educativo Nacional) and its New Mexican School; they respond to the General Law on Education (Arts, 84, 85 and 86) and, as of 2019, to the country's Constitution (Arts. 3, 6).

Mexico's rapid response in education to the COVID-19 pandemic

SEP decided to close schools on March 16, 2020, and its reaction to the pandemic in educational terms was swift (personal communication, February 13, 2021). A week later, on March 23, SEP made national curricular contents available on television and radio through special programming up until upper-secondary education (Badillo, 2020). At the same time, and as early as the very same March 16, SEP announced the launch of Aprende en Casa (Learn at Home), an online platform designed to reinforce the national curriculum (Notiemex, 2020). Aprende en Casa was implemented from April 20, 2020, until the end of the school year on July 6, 2020, with the goal of completing the school year and achieving the expected learning outcomes of students according to the national curriculum (Notiemex, 2020). Then Secretary of Education Esteban Moctezuma underlined, however, that Mexico's textbooks should still be used as basis for study (Notiemex, 2020), but all three means of communication – television, radio, and internet – became part of Aprende en Casa. In that way, the Mexican education system did not stop providing education at the beginning of the pandemic.

Since the 2020-2021 school year took place online, Aprende en Casa evolved into Aprende en Casa II and Aprende en Casa III. The particularity of Aprende en Casa II – from August through December, 2020 – was that school teachers and directors became involved in the creation of content for TV and radio shows, while Aprende en Casa III was designed to help students and teachers transition to in-person classes by using the platform as a point for discussion prior to class (personal communication, February 13, 2021). In other words, along with national textbooks,[1] and in addition to other strategies implemented by each states,[2] Aprende en Casa was the official support portal provided by SEP to continue teaching.

As of the end of 2021, Aprende en Casa continued to be available through SEP's portal at aprendeencasa.sep.gob.mx. The webpage clearly displays all Aprende en Casa activities by level, then by grade. As users scroll down, links to the national and state textbooks are provided. When clicking on a given grade, visitors are prompted to the weekly schedule of activities and subjects, with the possibility of visiting previous weeks and even school years, back to the beginning of Aprende en Casa. After choosing a date, visitors can choose a subject to access complete lesson plans; a link to YouTube is also provided that connects the lesson on the platform to the corresponding show (see Figure 1). The videos are also shown on television and their audio is broadcasted on the radio (personal communication, February 13, 2021). Grades from preschool to lower-secondary education follow that structure. When clicking on upper-secondary education, visitors are prompted to Jóvenes en Casa (Youth at Home), a portal that provides educational links to television programming, as well as social and socioemotional support. Appendix A provides a list of the links to these resources.

Figure 1
Official Aprende en Casa YouTube channel (November 8, 2021)

Digital learning during the COVID-19 emergency context: Did Aprende en Casa work?
To understand how Aprende en Casa contributed to the spread of digital learning and the implementation of the Educational Digital Agenda, this report presents the analysis of an exploratory study that consisted of three semi-structured interviews. The interviewees for this inquiry were a leader of the Aprende en Casa strategy at SEP, the director of a basic education public school in Tijuana, northern Mexico, and the director of a private pre-school establishment in Mexico City. The interviews were conducted from February to August 2021 and centered on each interviewee's perspectives according to their professional standpoint. This report presents the results according to three topics that complemented each other among the interviews: the duty of the State as the main provide of education, the progress and setbacks in the use of technologies for educational purposes, and the factors that define the digital divide in Mexico. Findings suggest that the digital divide in Mexico cannot be merely understood as the access to devices and the Internet that the US National Telecommunications and Information Administration (NTIA) defined in 1999, but as a holistic set of factors that intervene in the use of technologies: Internet and mobile, social class, economic capital, emotions and perceptions, and public policy, results which are very much in line with Robinson et al. (2015). These factors interact within an already unequal society whose educational backbone is its Secretary of Education, but whose implementation burden ultimately lies on the teaching staff. The research findings are discussed below.

The State as education provider
The fact that SEP was conceived of and still acts as a paternalist institution that regulates national education allowed Mexico to respond quickly to the emergency situation. In

March, 2020, SEP was able to set up Aprende en Casa in a timely manner based on two main axes: national curricula and textbooks. Because SEP delivers textbooks to all schools in Mexico in elementary school, and because all teachers are familiarized with them and the national curricula for each subject, Aprende en Casa could function according to expected learning outcomes (personal communication, February 13, 2021). In its early stage, the strategy was organized by cycles – 1st and 2nd grades, 3rd and 4th grades, and 5th and 6th grades –, and national textbooks were also available online, so the whole curriculum was available from the beginning. As the 2019-2020 school year came to an end, Aprende en Casa 2 was divided into grades (personal communication, February 13, 2021).

SEP also made use of @prende.mx, which was already working on the digitalization of education, and which was synchronized with television and radio to reach out to marginalized or rural areas. According to the interviewee at SEP (personal communication, February 13, 2021), the strategy was created based on a 95% of the country's population having access to television. It follows that television played a key role at the Aprende en Casa 2 and 3 stages: lesson plans were being provided for all subjects in all grades, per week, following a normal school schedule, and with accompanying video shows made by curriculum developers and professional script writers to ensure content delivery, but also in an effective and fun way. In other words, the complete national curricula for pre-school, primary, and secondary school were filmed as shows that were transmitted by television, radio, and online via YouTube. In those remote areas where children had no access to any of those means, SEP made use of the existing booklets specially designed for tutoring in community areas produced by the National Council for the Promotion of Education (Consejo Nacional de Fomento Educativo [CONAFE]). Every week, 155 scripts for primary education and 70 scripts for secondary education were produced until July, 2021, when the filming of the learning objectives that comprise the national curriculum was completed (Aprende.mx, 2021; personal communication, February 13, 2021). As mentioned earlier, the portal @aprende.mx includes links to live TV shows for lower- and upper-secondary education, many of which contain sign language translation, some of which are specific to Digital Culture, and all of which are available through open TV (see Appendix B for a list of Aprende.mx's visual channels of promotion). As the interview from SEP said, "this is a national strategy. It is not only the TV show, but all those elements so that the provision of education does not stop" (personal communication, February 13, 2021).

SEP, being a national institution, facilitated coordination at different levels of policymaking and implementation. First, SEP presented the new contents of Aprende en Casa to state secretaries of education so that each state could know and be aware of what SEP was offering, regardless of their own strategy. Conaliteg.gob.mx is the government's portal for the National Free Textbooks Commission (Comisión Nacional de Libros de Texto Gratuitos [CONALITEG]) where both national and state textbooks are available in their digital versions. In addition, SEP could invite teachers from all throughout the country to become curriculum developers and TV show hosts of the Aprende en Casa 2 and 3's strategies (personal communications, February 13, 2021; February 16, 2021). Further, the content of the video shows was revised by experts from other ministries, universities, and specialized institutions according to the subject tackled (e.g., the Mexican Academy of Language reviewed content from the Mother Tongue subject shows, and input from the Secretary of Public Health helped a create a new subject called Healthy Life). At the beginning, SEP could even make deals with the private sector to use their own videos to complement Aprende en Casa, such as Khan Academy or Slim Foundation.

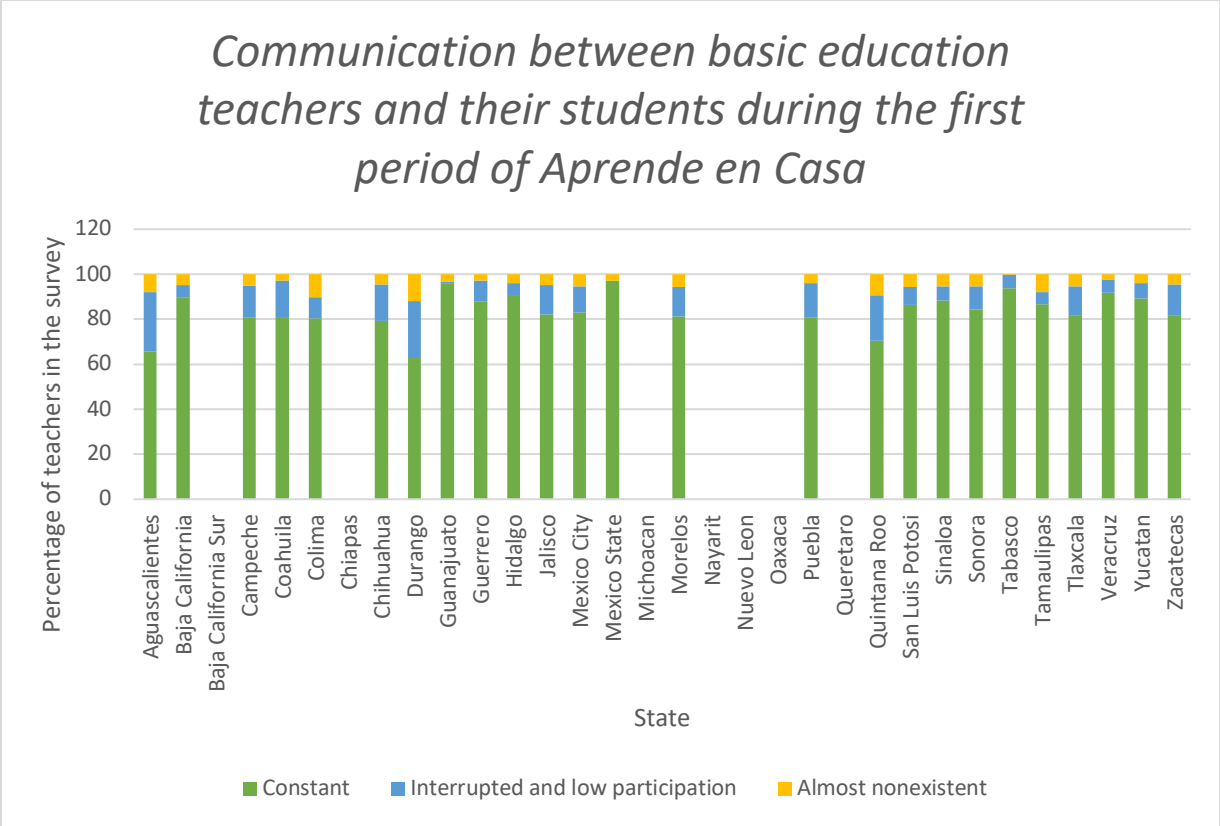
All these joint efforts were possible because SEP could coordinate the strategy at the national level.

Technology use for educational purposes: Progress and setbacks

During the COVID-19 pandemic, technology users realized that they were already communicating through ICTs, but that the emergency situation helped them start using them for education. As the director from the public school commented based on his interaction with teachers throughout the country and Latin America (personal communication, February 16, 2021), the vast majority of the Mexican population used Facebook or Whatsapp to talk to each other, but they never thought of using those tools to teach. When the pandemic came and teachers saw the need to stay in touch with their students, those communication channels became educational content transmitters. Mobile internet providers played a big role in that shift since Telcel and Movistar, the country's largest mobile telephone companies, made available 1USD dollar packages with unlimited access to Facebook and Whatsapp, facilitating in this way the use of Aprende en casa and homework deliveries, while teachers posted Aprende en Casa's YouTube videos on Facebook so students could access them from their phones (personal communication, February 16, 2021). Further, teachers themselves began using resources beyond Aprende en Casa for class, to share among each other, and to create tutorials for other teachers to learn how to teach and communicate online. As the director of the public school said, "study plans and curricula, even before 2009, included the use of technologies…However, we hadn't really gotten it, we'd never reflected on the importance of those technologies. From my point of view, teachers of basic education saw them from afar, as an ideal, as a requirement, but far"; later on, he added, "after the pandemic, we don't see ourselves anymore without the digital skills that we've been using now" (personal communication, February 16, 2021).

While teachers and educators were very resourceful during the pandemic and improved the digital skills of their students and their own, technology could not make up for thorough learning and communication. The directors of the public and private schools admitted to the lack of interaction within Aprende en Casa being an area for future work (personal communications, February 16, 2021; August 27, 2021). This drawback was more noticeable among younger students. In the private pre-school, for instance, the director strived to provide interaction to children to improve their motor, language, and socioemotional skills by teaching dance and sports on Zoom when parents were at home, and by implementing a home school system inside children's homes; conversely, the school noticed that newly admitted students to the 2021-2022 school year lagged behind in those skills because they had stayed at home and had not seen the need to speak, move, or interact (personal communication, August 27, 2021). Even SEP noticed that communication between teachers and their students had been uneven during the implementation of Aprende en Casa (See figure 2). The SEP interviewee admitted, "how the child will learn is a different topic. There are many factors surrounding learning, but the Secretary [SEP] never has not stopped providing education" (personal communication, February 13, 2021). Far from being interpreted as a sign of negligence, Aprende en Casa recognized its own pedagogical limits. Therefore, although many connectivity and technology issues were addressed and improved in Mexico, the national strategy could not – and was not designed to – replace in-person learning.

Figure 2
Communication between basic education teachers and their students during the first period of Aprende en Casa[3]



Defining the digital divide in Mexican education

Because Aprende en Casa is a broad strategy that provides resources to all teachers and educators, many of them ventured inside the resources and are now using technologies, but it is not the case everywhere. This research hints at there being considerable gaps between the private and the public systems. In the two examples of schools for this report, teachers used Whatsapp to communicate with parents and students; however, many private schools seem to have opted for Zoom to keep some form of interaction (personal communications, February 16, 2021; August 27, 2021). Further, the director from the private school mentioned using an online drive to share tutorials and resources with parents (personal communication, August 27, 2021) but, in other regions of Mexico, teachers were not so inclined to use technologies, perhaps due to apathy (personal communication, February 16, 2021), or perhaps due to enduring issues with the national government. This was the case of teacher unions in the southwest of Mexico, who demanded going back to in-person schooling (De todos modos…John te llamas, 2021). Whatever the reasons for using technology to teach may be, the digital divide in Mexican education was first defined by the will of teachers and educators to incorporate digital resources into their teaching.

Another element that defines the digital divide in Mexico is, indeed, the economic factor. First, during the pandemic, some parents who were paying for private basic education for their children moved them to public schools because classes were not in person, and they

considered that their investment was not paying off (personal communication, February 16, 2021). In the case of the private school, the director admitted to having a hard time to keep the school in service because parents thought that it was not worth investing on pre-school (personal communication, August 27, 2021). In other words, regardless of social status, many parents preferred not to spend money on education during the pandemic. Second, the director of the public school mentioned that state and regional policies played a part in the use of technologies because not all states invested on their provision. In his state, which is located in northern Mexico, policymakers decided to provide Google Classroom to teachers so these could Google Suite, but not all states invested in providing those resources (personal communication, February 16, 2021). States also had the choice to implement different platforms, such as Mexico City and its platform aprendeencasa.mx, so not all states approached technology in the same way. Third, as of February 13, 2021, at the time of the interview with SEP, there was no consensus between different state actors on a national strategy to even improve connectivity. As a result, the degree to which technologies were applied to education varied across national contexts and were widely driven by economic factors.

If the digital divide in Mexican education was reduced, teachers and school directors played a big part in the process. It was thanks to teachers that video shows could be created (personal communication, February 13, 2021); some school directors who accompanied teachers throughout the digital adaptation and capacity building process saw their schools evolve into the digital era (personal communication February 16, 2021); some school directors who were preoccupied with providing high-quality education looked into practices abroad to make sure that their digital strategies were meeting international standards (personal communication, August 27, 2021). Regardless of the type of institution, directors who saw the importance and usefulness of using digital resources to solve problems in class pushed their staff to a digital era in education; likewise, some teachers were able to implement ICTs and LKT not only to communicate, but to have their students become familiar with other uses of technology. In that sense, the digital divide in Mexico is defined by the drive of its educational leaders.

Conclusions

Internationally and nationally, Aprende en Casa was a very successful strategy. Mexico was one of the very few cases that did not stop providing education during the pandemic and who offered a comprehensive platform divided by level, grade, subject and weekly schedules for teaching, with lesson plans, additional resources, and files of experiences that gathered all the knowledge accumulated during the pandemic so teachers could track their students' progress. It was a national effort that brought together several sectors and levels of experts, and which was praised and supported by UNICEF to meet international standards; countries throughout Latin America, the Caribbean, and even Japan approached Mexico to find out more about their system (personal communication, February 13, 2021). By early 2021, out of 250,000 teachers who randomly took a survey available on Aprende en Casa, 64% affirmed using the strategy (personal communication, February 13, 2021). Even during the 2021-2022 school year, SEP and @aprende.mx continued improving digital content in education (Once Noticias, 2021). In that sense, Aprende en Casa contributed to meeting most technological goals of the Educational Digital Agenda and the New Mexican School.

Despite Aprende en Casa's coverage success, better connectivity and ICT infrastructure, as well as the implementation of LTKs do not define alone the digital divide. Indeed, digital learning resources were produced, but access and social use developed unevenly throughout the country. The survey by SEP mentioned above indicated that television is

still more widely used that the Internet (personal communication, February 13, 2021), and that traditional gaps such as urban and rural connectivity, or private and public access to resources, still played a part in the use of technologies and the learning process. With regard to the latter, policymakers and implementers realistically knew that students would lag behind because neither teachers nor in-person schooling can be replaced (personal communications February 13, 2021; February 16, 2021). However, it is not the gap between learning outcomes and the core curriculum that stands out, but the gap between those policymakers who invest on digital education and those who do not, and the gap between those teachers and directors who will push the country towards a digital era in education, and those who cannot because they lack the means or knowledge, or whose social context demands prioritizing other more immediate needs such as infrastructure, salary raises, or the reduction of violence. In Mexico, the digital divide depends on will and drive. As some schools reopened on August 30, 2021, and returning to school was voluntary (Ledezma, 2021), state and national governments, students, parents, teachers, and the country overall, will have the opportunity to continue reflecting upon how to make the best use of digital learning.

Notes

[1] National and state textbooks are available in digital format at conaliteg.gob.edu.mx

[2] For instance, Mexico City implemented its own platform, laescuelaencasa.mx (retrieved November 3, 2021).

[3] This graph was presented by SEP at a general meeting with Mexico's secretaries of each state. The approximate number of teachers who took the survey is 18,387,00. Data for Baja California Sur, Chiapas, Michoacán, Nayarit, Nuevo León, Oaxaca, and Querétaro were missing at the time of the data collection.

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Image Credits

Figure 1. SEP. (2021, November 8). Taken from Aprende en Casa's YouTube channel on November 8, 2021. https://www.youtube.com/c/aprendeencasa

Figure 2. SEP. (2021). Taken from personal communication, February 13, 2021.

Appendix A
National plans and digital resources made available by SEP and used during the COVID-19 pandemic (as of November, 2021)

- Aprende en casa. (November, 2021). https://www.aprendeencasa.sep.gob.mx
- Aprende en casa SEP. (November, 2021). https://www.youtube.com/aprendeencasa
- Aprende mx. (November, 2021). https://www.gob.mx/aprendemx
- National and state textbooks (Comisión Nacional de Libros de Texto Gratuitos [CONALITEG]). (November, 2021). http://www.conaliteg.sep.gob.mx

Appendix B
Aprende.mx channels of visual education promotion (as of November, 2021)

Level	Type of channel	Name of channel	Link or frequency
Various	Internet	YouTube: Televisión educativa	https://www.youtube.com/c/tveducativamx
Various	Internet	Facebook: Televisión educativa	@TvEducativaMx
Various	Internet	Twitter:	@tveducativamx
Various	Internet	Instragram: Televisión educativa	@tveducativamx
Various	Television	Ingenio TV	14.2 open television; Red Edusat
Primary	Television	Aprende en casa, primary education	11.2 open television (Canal Once); Red Edusat
Teacher training	Television	Capacita TV*	Red Edusat
Lower-secondary	Television	Aprende en casa, secondary education	24 (Red Edusat)
Lower-secondary	Television	Telesecundaria	11 (Red Edusat)
Lower-secondary	Television	Telesecundaria +	Red Edusat
Upper-secondary	Television	Telebachillerato	17 (Red Edusat)

*In November 2021, the government online portal for Capacita TV was unavailable at https://aprende.gob.mx/canales/capacitatv
Sources: @prende.mx (2021); Edusat (2021); Expansión política (2021).