

Selected online learning experiences in the Caribbean during COVID-19

Amelia Bleeker
Ryan Crowder

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Selected online learning experiences in the Caribbean during COVID-19

Amelia Bleeker
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This document has been prepared by Amelia Bleeker, Associate Programme Management Officer of the Caribbean Knowledge Management Center of the ECLAC subregional headquarters for the Caribbean, and Ryan Crowder, consultant.

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Abstract

This study examines how ICTs have supported equitable development of online distance learning for students in primary, secondary, and tertiary education systems across the Caribbean. By presenting data obtained through interviews with government officials and other key stakeholders in five countries and territories - Barbados, the British Virgin Islands, Guyana, Jamaica, and Trinidad and Tobago - the study highlights learning continuity challenges and successful adaptations specific to the subregion during the COVID-19 pandemic. The study identifies best practices and recommendations to integrate ICTs in education systems during the pandemic and to 'build back better' national education systems towards greater efficacy and inclusivity across student populations.

Introduction

The COVID-19 pandemic will have severe negative consequences for the United Nations Sustainable Development Goals (SDGs) (Sachs et al. 2020). Of these goals, SDG 4, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, has faced significant challenge.

Partial or complete school closures, enacted by governments across the world to prevent the spread of COVID-19, have been necessary to contain the outbreak among the wider population. These emergency measures, while necessary, have caused widescale disruption of education systems worldwide, requiring unprecedented adaptation to ensure learning continuity for primary, secondary, and tertiary students. The Caribbean has not been spared the effects of the pandemic on the education sector and has seen similar disruptions. Yet given their geographic and demographic characteristics, Caribbean countries and territories continue to face unique challenges to adapt education in the face of COVID-19.

Given the constraints imposed by the pandemic and where enough infrastructure, hardware, software and training are available, online learning¹ has played a vital role in advancing curriculum goals for students and educators alike. However, while COVID-19 has displayed the strengths of online learning, it has also highlighted its disadvantages, particularly concerning issues of access and implementation. Ministries, administrators, and educators, alongside parents, guardians and students have worked to advance learning using flexible systems composed of hi-tech, low-tech, and no-tech learning modalities. While this may address the emergency disruption brought on by COVID-19, ministries and other responsible stakeholders will require long-term solutions to address the inequities laid bare by the pandemic.

¹ Online learning describes any education mediated by ICTs with the potential for educator and student interaction at a distance while distance learning describes any form of education where a student is not physically present.

Indeed, the path to post-pandemic recovery will require increased '*education and skills development*' with further investments in "STEM subjects², digital skills, equity, and lifelong learning" (Sachs et al. 2020). Instrumental to this transformation will be the further inclusion of ICTs in education to help accelerate recovery by advancing the system of education towards greater effectiveness, inclusivity, and robustness. Furthermore, the development and use of online education tools will ensure those affected by the ongoing technological revolution are given education and retraining opportunities during the transition to digital occupations.

Building on studies conducted by UNESCO and ECLAC in the education sector, this study explores the specific experiences and learnings of countries in the Caribbean, and identifies best practices and recommendations to support governments in adapting and advancing education at all levels.

This study is divided into four main chapters, followed by three annexes. Chapter I, Background, provides information on SDG 4 and the effects of the COVID-19 pandemic on this goal. This chapter also outlines key online learning concepts and addresses online learning as it pertains to ensuring learning continuity during COVID-19. The chapter then discusses the 'transformations' proposed in the 2020 Sustainable Development Report to ensure post-crisis recovery, with education a core element of this recovery.

Chapter II, Analysis of Online Learning in Selected Countries, describes the study's research methodology and provides a series of case studies across four countries—Barbados, Guyana, Jamaica, and Trinidad and Tobago—and one territory—the British Virgin Islands—informed by interviews with stakeholders as detailed in the methodology. To complement this analysis, interviews were also carried out with regional bodies—the Organization of Eastern Caribbean States and the Caribbean Examinations Council—as well as private enterprises and foundations and subregional representatives of the Commonwealth Youth Council.

Chapter III provides general findings based on the case studies, and Chapter IV concludes with a series of best practices and recommendations to support governments' development of online learning during and after the pandemic. Thereby, governments may 'build back better' national education systems towards greater efficacy and inclusivity across student populations.

Annex I provides background information on online learning in the Caribbean, including barriers to inclusion and access to online learning, while Annex II details interregional online learning initiatives within the subregion. Finally, Annex III contains the interview questions used during interviews with stakeholders.

² STEM refers to Science, Technology, Education, Mathematics as academic subjects of study.

I. Sustainable Development Goal 4 and COVID-19

A. Introduction

The COVID-19 pandemic has caused global disruption of human activity and development with the advancement towards the UN Sustainable Development Goals (SDGs) concurrently imperilled. SDG 4, which aims to *'ensure inclusive and equitable quality education and promote lifelong learning opportunities for all'* (UN, 2020) by 2030, experienced a "mixed or moderately negative (short term) impact" during the first months of the COVID-19 crisis, with the specific global consequences of "school and day-care closures, loss in the development of human capital, and poorer nutrition due to interruption of school meals" (Sachs, 2020: 4).

Indeed, with the continuous aim of stemming the spread of the virus in densely populated locales, closures across learning institutions of all types have remained one of the favoured courses of action for national and regional governments globally.³ The United Nations estimates that 87 per cent of the world's student population (over 1.5 billion learners) are affected by school closures related to COVID-19, and remote learning remains out of reach for at least 500 million or one-third of these students (UNSDSN, 2020). Furthermore, as institutions of learning function as much more than spaces only for information to be passed between educators and students, as will be discussed below, the development of learners worldwide is jeopardized, especially for poorer and more vulnerable children.

While the immediate consequences of school closures may appear short-lived, continuous disruption may result in an exacerbation of disparities over the long-term, with increased dropout rates across all levels of education and training, increased negative effects on women and girls—specifically, increasing rates of abuse, loss of wages with a greater share of women staying home as suitable day-care options dwindle, and child marriage preventing girls from returning to school—and reduced ability of working parents to both work and manage children at home, all of which disproportionately affect

³ At the time of writing, opinion on this was divided with schools across the region reopening in some capacity in the coming weeks. This disparity is addressed in greater detail within Section 2 of this study.

those already disadvantaged within societies (UN, 2020a). This “ripple effect” originating from school closures only accelerates as governments struggle to balance the reopening of school systems with potential new waves of COVID-19 (UN, 2020a).

Furthermore, it cannot be overlooked that students the world over, including those attending schools within the Caribbean, accrue benefits beyond formal learning in attending these institutions, such as the socializing effects of close proximity to peers and adults, and, particularly for the most vulnerable, access to essential health, psychosocial and nutritional support. Through these indirect benefits, schools provide a centre of stability and promotion of well-being which increase student performance and achievement (Colao, 2020).

Beyond students, school closures have also affected teachers and parents in diverse ways. In many instances, educators, often in collaboration with parents and guardians, have inherited the task of maintaining a distance learning environment through whichever means or media available with varying results. For teachers, frustrations related to logistical difficulties, lack of support and training remain obstacles to leading classroom activities remotely. At the same time, the burden placed on parents to facilitate the learning of their primary or secondary school children may stretch beyond available resources.⁴ Parents are faced with both a lack of time and technologies to ensure children’s participation in formal educational activities, and are not always equipped to ensure students sustain learning independently. For these parents and guardians, attention allocated to ensure children remain engaged amidst learning disruption may come at the cost of time spent at work, with a disproportionate impact on women, thus causing further pressure and stress in these households where a loss of income generates further pressure (UNESCO, 2020).

Certainly, the consequences of sustained closure or reductions in the normal functioning of institutions of learning for the current generation of students, whether at the primary, secondary, or tertiary level, are immense and difficult to fully appreciate as the crisis unfolds. At the time of writing, virtually all students at primary, secondary and tertiary levels in the Caribbean were affected by indefinite or partial school closures, with reopening of schools in subsequent months hinging directly on the rate of COVID-19 cases and national policies to be explored in part 2 of this paper (UNESCO, 2020a). According to available data, UNESCO estimates that nearly 7 million learners across 23 countries in the subregion have been affected by the pandemic (UNESCO 2020b), while the Caribbean Community (CARICOM) estimates among Member States the disruption of the education and careers of over five million students and two hundred thousand teachers across the Basic Education, Skills for Lifelong Learning and Tertiary Education Sectors, including the provision of special education (CARICOM 2020). The scale and severity of this crisis for a generation of Caribbean learners necessitates that priority be given to measures that ensure the continuity of education at all levels.

As evaluations of SDG 4 during the months prior to the COVID-19 pandemic highlight, countries of the subregion must address national obstacles at the level of ‘challenges’ or ‘significant challenges’ to achieve SDG 4 by 2030.⁵ While progress was either on track or decreasing prior to COVID-19, the pandemic’s effect will further undermine these trends (Sachs, 2020). Thus, it is within this context that we address remote learning in the Caribbean using national and regional case studies.

⁴ Facilitation activities may include ensuring attendance, providing access to devices and sufficient internet connectivity, and ensuring accessibility of digital learning programs.

⁵ As the Sustainable Development Report 2020 was released on 30 June 2020, this report will be taken as the definitive authority on the current status of SDG 4 for this study.

B. Concepts

While 'online learning' or 'e-learning' refers to any education mediated by ICTs with the potential for educator and student interaction at a distance, 'distance learning' and 'remote learning' describe *any* form of education where the student is not physically present—a separation, therefore, between the educator/institution and the student. Thus, remote and distance learning may be facilitated through non-technical means, such as physical/printed information packages, or through one-way means of content dissemination, such as TV and radio.

Furthermore, online learning and e-learning (electronic learning) are themselves broad terms used to describe the application of digital media, including computers and mobile devices (i.e. mobile phones, tablets) to develop, organize and conduct education. Traditional distance learning⁶ often includes some degree of face-to-face/in-person instruction along with the distance learning components, and may use traditional media (i.e. television and radio) to distribute educational content. Online learning, however, allows for learners and educators to remain at a distance throughout the entire learning experience by providing communication tools alongside content distribution features. Simply put, online learning allows for the entire education process, both education and administration, to be carried out online.

The variety of activities defined as online learning is vast and expanding⁷. Typically, online learning consists of some combination of these activities, using synchronous and/or asynchronous learning⁸, with the learning experience and administrative components entirely cloud-based, and therefore not confined to a single system of distribution. Finally, where both online and traditional classroom-based learning are combined, the term 'blended learning' is used. As the case studies below will highlight, a version of blended learning is often the objective of governments throughout the Caribbean, as a blended approach provides flexibility and benefits of both online and traditional education.

A transition to include online learning technologies within a given institution or education system requires numerous adaptations to all aspects of education delivery (Woodall, 2010).⁹ The design, curation, and delivery of content are often performed through new functional roles developed for these purposes. Moreover, virtual learning environments are often necessary to organize learning. This is often achieved through a Learning Management System (LMS), software that consolidates pedagogical, technical and administrative aspects of course delivery (Pappas, 2019). This approach requires new attention to quality control where "those involved in teaching, developing materials, and managing education or training in traditional settings do not have the skills and knowledge required in this new landscape" (Porto, 2019). Thus, in addition to the technical and financial requirements and decisive institutional backing or ministerial support for the adoption of online learning, it is the change in mindset and the need for training beyond traditional skills among education professionals on which the success of online learning often depends.

⁶ Such as correspondence courses by which distance learning first originated.

⁷ Online learning many include webinars, interactive workshops, and full semester-long courses mediated by learning management systems (LMS) as well as self-paced courses, spaced-repetition systems (SRS), and streamed video instruction in a private or massive open online course (MOOC) setting.

⁸ Synchronous learning is any learning activity where educators and students interact simultaneously in either the same place or at the same time—for example, using video conference technology to conduct a live class. Asynchronous learning, on the other hand, is any learning that does not occur at the same time or place—for example, self-paced online course modules which students complete in their own time.

⁹ Indeed, the success of online learning relies on the success of adaptations within the culture of an organization.

C. Remote learning through the COVID-19 crisis

The right to education for all peoples is enshrined both in Article 26 of the Universal Declaration of Human Rights, which asserts that education at the elementary and fundamental stages should be both compulsory and free (UN, 1988; and in Articles 208/29 of the Convention on the Rights of the Child, binding and ratified by all Caribbean countries (UN, 1990). Governments at all levels are thus obliged to invest, maintain and develop formal education systems towards inclusive and accessible education for all, no matter the circumstance or context within which the student population resides, nor the special adaptations a student may require to access this same education alongside their peers.

UNESCO reports that in the aftermath of school closures across the world, “governments have been deploying distance learning solutions and grappling with the complexity of provisioning education remotely, from delivering content and supporting teachers to providing guidance to families and addressing connectivity challenges. Equity is the paramount concern because closures disproportionately hurt vulnerable and disadvantaged students who rely on schools for a range of social services, including health and nutrition” (UNESCO, 2020c). As COVID-19 has illustrated, ensuring continuous accessibility and inclusivity must also extend beyond normal operations, requiring that contingencies be well understood and prepared to ensure that services continue in times of disruption. Such readiness for disruption to traditional methods of education requires a new, multi-faceted approach along technological, content, pedagogical/learning support, and monitoring and evaluation lines (UNESCO, 2020d). Indeed, the entire system of education must be reassessed for robustness and methods should be developed to address the fallibility of each component of the system, ensuring proven techniques and technologies are included where possible to guarantee resilient systems in the event of disruption.

Considering this need for continuity, and with the disruption in centralized, in-person learning, online learning technologies and new methods of instruction have quickly advanced from potential to necessary, providing unprecedented means for ensuring education remains a viable reality for all. As the chairman of the Council for Human and Social Development (COHSOD) for CARICOM, Hon Michael Bowne, has stated: “COVID-19 has amplified our awareness of the need for increased technological innovation in the operationalisation and assessment of educational systems and has triggered the need for a response to education for all in periods of crisis” (CARICOM, 2020). While in retrospect, the need for readiness and contingency during COVID-19 has become self-evident, ensuring the availability of online learning and underlying ICT technologies and infrastructure requires systemwide efforts of planning and implementation, characterized by considerable labour, resources and expertise as well as a consensus across all levels of government and/or institutional hierarchy.

Unprecedented in modern times, the speed, severity and scope of the COVID-19 pandemic precluded considered planning and execution, and instead required immediate response with resources and capacities already established to curtail negative consequences. However, even within ideal settings, where infrastructure and technologies for distance learning are available, logistical and knowledge barriers may remain. Migrating entire school systems online with limited experience among all stakeholders can prove problematic, revealing a range of issues related to human and technical capacity. As UNESCO has indicated, common issues which should be addressed by remote learning strategies include: “how students can access remotely delivered content and communicative support; how learners’ rights and data privacy can be protected; how teachers are supported in the transition to remote teaching; and how financial and technological resources can be mobilized to sustain the provision for several months” (UNESCO, 2020d: 2).

Beyond these issues of capacity, educators who have witnessed furloughing or reduced working hours of colleagues and staff in the wake of the COVID-19 crisis may lack motivation to build and maintain this new environment with unemployment - whether temporary or permanent - an ongoing

possibility. Even so, for the majority who remain employed, difficulties persist in the adaptability of education systems and educators themselves, to reckon with the new reality brought on by the pandemic. Beyond educators, negative sentiment generated by the pandemic has consequences for the mental health of all education stakeholders — particularly students who rely upon these educators, and education, for the stability provided by meaningful engagement on a daily basis. While supervision is implicit to any centralized system of education, learning at a distance increases the negative consequences of both low motivation and engagement in students and educators alike, and where informal methods for adapting education are present, any lack of a uniform, consistent approach will only deepen these consequences.

Where systems for remote learning are not fully established, and operational capacities, whether human or technical, remain limited, there exist numerous approaches, comprised of a variety of technologies and applications to ensure education continuity. While this study specifically concerns online learning, it is important to note that these 'hybrid systems' are often critical to such continuity, with the dissemination of education content facilitated by a variety of pre-existing, traditional technologies, including television and radio as well as printed materials for remote locations where neither sufficient connectivity nor legacy technologies have reach. For example, television and radio were used in a variety of countries, such as Guyana and Jamaica, to address remote populations in mountain and hinterland regions, respectively. Thus, approaches to ensure learning continuity during the COVID-19 pandemic require implementation and modification within a specific context, with combinations and "expansion of existing technologies, collating educational resources into a single digital location, ensuring content is available offline, offering e-versions of textbooks and the deployment of public Wi-Fi access points" and many others potential methods for increasing robustness over the short-term (Doodnath, 2020).

To facilitate these regional adaptations and to promote cooperation at the global level, efforts to address cross-cutting issues in education during the COVID-19 pandemic have led to the establishment of the Global Education Coalition (GEC). The GEC is a multilateral initiative led by UNESCO, intended to consolidate and strengthen efforts across organizations in the public and private sector towards immediate action on education disruption, especially as this pertains to "connectivity and content challenges...digital tools and learning management solutions...and curat[ing] resources for distance learning and strengthen[ing] technical expertise using a mix of technology and community approaches" (UNESCO, 2020c). Indeed, while the varieties of experience and lessons learned during the COVID-19 pandemic towards the stabilization of national education systems are often unique and particular, this study attempts to showcase insights, best practices and recommendations of universal applicability towards the objective of ensuring Caribbean education systems *build back better*.

D. Transformations to build back better

In order to ensure post-crisis recovery and to frame long-term strategies to build back better in the aftermath of COVID-19, a series of six SDG Transformations (Sachs 2020) have been proposed within the 2020 Sustainable Development Report. Directly relevant to the study at hand, 'education, gender and inequality', comprising Transformation 1, and increased development of the use of digital technologies, comprising Transformation 6, are highlighted alongside greater integration of vulnerable groups as essential components for both recovery and advancement towards the SDGs. Furthermore, increased investments in "STEM education, digital skills, equity, and lifelong learning" are considered necessary to achieve both transformations, with online education tools highlighted as critically important to facilitate the expansion of access to quality education.

At the same time, the report recommends careful attention be paid to the equitable expansion of digital activities across all of society, with equitable access to these services across genders, geographies, and social strata, thereby ensuring that no group of persons—particularly those workers most likely to be marginalized by expanding digital jobs—are left behind as digitalization becomes increasingly common. This redoubled focus on groups already or potentially marginalized by the digital revolution requires a restructuring of the education system both within and outside the context of COVID-19 with a renewed focus on lifelong learning and reskilling of workers. Above all, resilience is an essential component of any education system aspiring to recover from the COVID-19 pandemic, and governments, by way of these transformations, should favour flexible, dynamic systems with in-built preparedness for events on the scale of the ongoing pandemic. In the next section, online learning within the Caribbean will be further contextualized before addressing national case studies.

II. Analysis of online learning in selected countries

A. Research methodology

In order to analyse the design and use of online learning tools and resources for the primary, secondary and tertiary education systems in Caribbean small island developing States, a variety of research methods were used.

First, to inform the background of this study, global and regional policy frameworks as they related to SDG 4 were reviewed, with emphasis on the impact of the COVID-19 pandemic. Furthermore, current recommendations and best practices pertaining to online learning as provided by relevant UN agencies, including UNESCO and UNICEF, were assessed.

Then background data collected by centralized databases at the subregional and national level were assessed for the Caribbean and selected countries, respectively.¹⁰ These data were used to inform interviews and questions asked. Five countries were selected for their diversity of geography and demographics among the Member and Associate Member countries and territories served by the ECLAC subregional headquarters for the Caribbean.

In order to determine the adaptations, challenges and achievements of education systems in light of COVID-19, interviews were conducted with a variety of stakeholders from the selected countries. From the identified survey countries, along with relevant regional organizations, 24 representatives were interviewed. A copy of the survey instrument is provided in Annex I. Representatives of the Caribbean Community (CARICOM) and United Nations Educational, Scientific and Cultural Organization (UNESCO) were instrumental in providing relevant contacts in each country and territory.

¹⁰ Particularly, those made available by UNESCO and World Bank.

Finally, in order to provide context and to evaluate responses obtained during interviews, the author assessed Voluntary National Reviews (VNRs),¹¹ where these were both available and conducted recently, to investigate the current status of SDG 4 either pre- or post-pandemic. Where specific policies or initiatives were referenced in these VNRs, further research was also conducted as needed.

B. COVID-19 actions in ECLAC member countries

In order to provide context to the country case studies below, the table below compiles measures taken at the country level to implement online distance learning across the Caribbean. The table was compiled using data collected from several online sources, including the ECLAC COVID-19 Observatory in Latin America and the Caribbean.

Table 1
Overview of education measures taken by ECLAC member countries in the context of the COVID-19 pandemic

Country	Suspension of classes	Provision of tools for distance learning ^a	Dissemination of ICT equipment to learners	Provision of broadband services to learners	Maintenance of school feeding programmes	Provisions for students with special needs e.g. PwDs, migrant learners
Antigua and Barbuda	X					
The Bahamas	X	X	X			
Barbados	X	X	X	X		X
Belize	X	X	X		X	
Cuba	X	X				
Dominica	X	X				X
Dominican Republic	X	X	X		X	
Grenada	X	X				X
Guyana	X	X	X	X		X
Haiti	X	X				X
Jamaica	X	X	X	X	X	X
Saint Kitts and Nevis	X				X	
Saint Lucia	X	X				
Saint Vincent and the Grenadines	X	X				
Suriname	X	X				
Trinidad and Tobago	X	X	X	X		X

Source: Compiled by author.

^aIncluding online platforms, TV, radio, and distance-learning materials.

C. Barbados

Barbados is a single island nation located in the Lesser Antilles in the Caribbean with a Human Development Index (HDI) rating¹² of 0.813 (UNDP, 2020a) and a population of 287,025 (World Bank, 2019), of which 68.8 per cent is based in rural locales (UNESCO, 2019). The student population comprises 5,999 pre-primary, 19,828 primary, 18,617 secondary, and 18,979 students (UNESCO, 2019) with approximately 365 pre-primary, 1,496 primary, 1,506 secondary and 57 special education educators

¹¹ Voluntary National Review (VNR) is a process through which countries assess and present progress made in achieving the SDGs and the pledge to leave no one behind. The purpose of VNRs is to present a snapshot of where the country stands in SDG implementation, with a view to help accelerate progress through experience sharing, peer-learning, identifying gaps and good practices, and mobilizing partnerships.

¹² The HDI is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. An HDI rating is a geometric mean of normalized indices for each of the three dimensions.

(MOE Barbados, 2017). As of 2017, Barbados spends 4.7 per cent of GDP on education, equal to 12.9 per cent of total government expenditure (UNESCO, 2019).

The national government developed and implemented its Barbados Economic Recovery and Transformation (BERT) Plan in 2018 to “restore macroeconomic stability and place the economy on a path of strong, sustainable and inclusive growth” (Barbados, 2018). In alignment with the UN Sustainable Development Goals, the BERT Plan called for increased investments in education and social protection across the country. Specifically, these investments aim to increase youth and adult access to “technical and vocational skills for employment, decent jobs and entrepreneurship” (Barbados, 2018).

However, as Barbados prepared to deliver its Voluntary National Review mid-2020, COVID-19 spread within the country, forcing a major adjustment with one quarter of all workers filing for unemployment. In this context, we address the impact of COVID-19 on the education sector.

1. Educational framework and use of ICT

IT hardware availability for online learning

Prior to COVID-19, Barbados had developed the Education Sector Enhancement Programme, or EDUTECH program, coordinated by the Ministry of Education’s Information Technology and Quality Assurance Unit. This comprehensive education reform program is designed to “increase the number of young persons contributing to the sustainable social, cultural and economic development” (Barbados, 2020).

One component of this program is to integrate ICT technologies into the school system, including the provision of devices for each student across the country. Officials stated that this objective previously faced obstacles in maintaining required device volumes while ensuring available devices did not become obsolete. The government therefore had initiated a major appeal for donations even before COVID-19 to ensure that devices reached students. At the tertiary level specifically, the government has provided loans for students for the purchase of devices through the Student Revolving Loan Fund.

Despite these combined efforts, schools have indicated the need for more devices, with a shortfall across all levels of education. To meet this continued demand, the government initiated a new project pre-COVID-19 with the People’s Republic of Kenya to procure approximately 20,000 devices for all students and educators in primary and secondary education, as well as at the nursery (EEC) level. These devices were available for students at the beginning of the fall term in September 2020. Based on estimates, this program should also meet rising demand across the country with 2-3 per cent excess ordered to address this growth.

Connectivity for online learning

Beyond device procurement, the EDUTECH Program further aims to strengthen IT infrastructure across Barbados to allow greater inclusion of ICTs in the classroom. To this end, officials confirmed that an upgrading of IT infrastructure was underway prior to COVID-19, with the long-term goal of ensuring WIFI connectivity ‘fence-to-fence’¹³ within schools. In light of COVID-19, adjustments were necessary to address the need for online learning capacities beyond the scope of the education system, which will be addressed in the next section.

¹³ This to say, across the entire grounds of the school both inside and out.

2. COVID-19 response in the educational sector

COVID-19 response in primary and secondary education

Prior to COVID-19, officials confirmed that no online curriculum was available in the national school system alongside limited capacity for remote learning. Therefore, when COVID-19 entered Barbados, upskilling of educators and adaptation of the curriculum to a variety of remote learning modalities were needed to ensure learning continuity.

The Ministry used the Google Suite for Education to facilitate online learning at both primary and secondary levels during the initial lockdown. Officials reported that the majority of students were able to access this platform during the pandemic. While officials stated that TV and radio were considered as supplementary learning modalities, the low rate of COVID-19 penetration in Barbados led to limited interest in these modalities. However, collections of packaged materials were prepared to supplement online learning. As in-class attendance in the first term¹⁴ will be optional, these materials will remain available to students.

In preparation for the fall term, the Ministry of Education organized a week for planning and coordination between the Ministry, school administration, and educators.¹⁵ With schools partially reopening in September 2020, a blended approach has been initiated across Barbados, where online and in-class learning will be facilitated simultaneously. To support the online components of education, the Ministry has provided resource lists which educators can use as required (Barbados, 2020a).

Officials stated that, while all students were invited to attend schools where they must follow health guidelines regarding personal protective equipment (PPE) and social distancing, remote learning will be available for those who cannot or decide not to attend in-person classes. Resource departments have developed materials for in-person education to communicate health guidelines to students (referred to by officials as sensitization materials), which include flyers, banners and other print media.

In February 2021, Barbados officials stated that due to a spike in COVID-19 cases and subsequent lockdown across the island, a complete closure of schools was necessary with online learning fully initiated to ensure learning continuity. During this adjustment to online learning, officials met several challenges across the learning population, including shortage of devices, lack of internet connectivity, and a lack of electricity, all of which were currently being addressed by the Ministry.

Addressing issues of access

To ensure access to remote learning, officials confirmed that a multi-tier approach was used at all levels. The initial focus was to address those in the welfare system by providing access to the internet and ICT devices. As such, actions were taken to ensure students had sim cards, in partnership with ISPs, and were given access to zero-rated websites¹⁶ such as Google Classroom and education apps for online learning. Then, learners who did not have devices were prioritized, particularly those taking regional examinations (CXC) and national examinations (e.g. secondary school entrance exam), followed by students one year below exam level. The Ministry now states it is pursuing accessibility for all students at all levels and is developing a policy for maintenance, use, renewal, and curriculum reform across the system to ensure implementation of these devices.¹⁷ Officials also confirmed that guidelines for ICT in Education were

¹⁴ The fall term refers to the term beginning in September or October.

¹⁵ For adaptations at the tertiary level, specifically with the University of the West Indies (UWI) campus in Barbados, Jamaica, and Trinidad and Tobago, see 'COVID-19 Response in Primary, Secondary, and Tertiary Education' in section E.

¹⁶ This refers to websites that could be accessed with or without a data plan.

¹⁷ These guidelines were developed with lessons learned from previous attempts to increase sustainable access to devices and the 2004 Computer Misuse Act to clarify national policies on government device protection and information security.

already a work in progress but were expedited by COVID-19. Indeed, while a phased approach was used pre-pandemic, policy development and implementation are now carried out simultaneously.

The Ministry could not discuss all disparities and inequalities in education as data were still being collected from schools. However, some issues had already been highlighted. For example, although students may have had access to devices, many of these were often inappropriate for online learning. For example, while smart phones may provide access to online platforms, they make platform navigation difficult, a challenge less encountered with a larger screen. Furthermore, device affordability may prevent access for learners from low socio-economic status households, with cases brought to the Ministry's attention of up to three children in one household sharing a single device. To address these issues, the Ministry intends to create policies on devices and connectivity policies that match "right number, right type, and right connectivity" for students engaging in online learning. Currently, benefactors are providing devices and facilitating distribution, such as the Clara Lionel Foundation, which has targeted students of low socio-economic status.

Officials confirmed that Barbados does not have a significant urban-rural online learning access divide given the size of country, however, some areas experience lower internet penetration. Where this is the case, learning access is facilitated through tablets with sim cards, and ISPs have provided data plan discounts as well as zero-rating (i.e. providing access without financial cost) to education websites. The government also provides internet access through community centers, strategically placed around the country. These centers are currently open, yet face restricted access due to COVID-19.

To address special needs during the pandemic, selected schools are responsible for meeting the needs of these students across the country. Those who do not have a physical disability are asked to come into schools. Otherwise, a blended curriculum is provided to facilitate learning for students who cannot consistently attend in-class education. Overall, officials state that the Ministry has sought to provide devices and software that have accessibility features which address a variety of special needs. Further, to address specific special needs¹⁸, one location in Barbados provides tailored services, and has remained open to ensure continuity of education.

ICT training in education

Officials confirmed two different sets of teacher training were provided in Barbados. Pre-pandemic, Pro Futuro (PF) training was provided to enhance in-class teaching capacities, with the available curriculum extended during COVID-19 to encompass online learning. Currently, all educators at the primary and secondary levels in Barbados are using PF to update skills on an ongoing basis. Further, IDB training was provided to sensitize educators on how to use online learning, address students remotely, and incorporate online training tools into the curriculum. This training aimed to develop a national approach to online learning with training contextualized to Barbados.

With the advent of COVID-19, the Ministry took a long-term view of ICT training and began training educators to ensure online teaching strategies could be used in a blended environment. Beginning in early-April 2020, training in the Google Suite for Education formed the basis of this approach (Rollock, 2020)¹⁹, with educators initially invited to contact the Ministry or Media Resource Department to register for training sessions. Despite these efforts, transition to online learning during the pandemic was difficult, with teachers in Barbados reporting that the country was not yet ready for online learning (Phillips 2020). To address these concerns, the Ministry provided a series of publicly accessible training guidelines to educators to provide strategies for hosting online education at all

¹⁸ For example, education for the vision impaired and/or hearing impaired.

¹⁹ The Ministry provided additional resources, including manuals and YouTube videos, for teachers and students at the Media Resource Department's YouTube channel.

levels.²⁰ The Ministry also provided professional Development Courses to Educators in Innovation for education and ICT use for public primary and secondary school educators (Barbados, 2020d).

Stakeholder engagement

At the end of August 2020, major talks with educators were hosted by the Minister of Education, Chief Education Officer, heads of education and heads of public sector across Barbados. The purpose was to allow educators to express their views on the reopening of schools prior to the new term and communicate challenges they face going forward. These talks provided the basis for informed decision making, ensuring in-class and online learning policies were well-founded and took into account the day-to-day realities of educators. However, as mentioned above, teachers have expressed that the education system was initially unprepared for online learning, and both teachers and parents have faced challenges and disagreements over specific policy decisions, such as the decision to allow students to remove protective masks in classrooms (Bennett, 2020).

Despite these concerns, officials stated that parents are “very engaged”, particularly with educators via WhatsApp, which has resulted in students being engaged as well. Educators and the Ministry have provided face-to-face²¹, and online consultation as needed to address specific concerns. Furthermore, materials for parents are in development to communicate key responsibilities at home to ensure learning continuity, while at the school level, educators and administration provide context-appropriate information for parents through a variety of channels.²²

Ensuring education efficacy

As a result of the relatively limited COVID-19 spread in Barbados and optional in-class learning supported by online learning in the fall term, major changes to assessments have not been required to ensure education efficacy. Marking of assignments for those who chose to stay at home and use online learning or with supplemental printed material provided by the Ministry will continue alongside in-class marking to ensure curriculum goals are addressed at all levels.

3. Successes and challenges of online learning implementation

Moving education beyond the classroom

Prior to COVID-19, the Ministry of Education had begun reform of the education system at all levels. Officials state that COVID-19 has highlighted both the strengths and weaknesses of the system and where reforms are specifically needed. These reforms include a curriculum increasingly based on STEM subjects,²³ and expanded and strengthened blended learning opportunities alongside the increased use of mobile technology.

To address the lack of an online curricula, officials have partnered with the Inter-American Development Bank who approached the Ministry to provide support. Another possible approach going forward is a state-owned television channel for learning to provide support materials to supplement remote learning.

Evolution in education administration

Officials believe that the shift away from in-person learning to a blended learning approach will require the largest administrative shift inside the education system in the country's history. During the pandemic, schools experienced issues in facilitating online learning which will need to be addressed

²⁰ See 'Announcements' (Barbados 2020b) and 'Teaching in the Online Environment Guide' (Barbados 2020c).

²¹ Where possible and while upholding requisite health guidelines.

²² Context here may relate to the number of students and the education modalities offered.

²³ Officials provided training in robotics, to push engagement, display creativity and innovation, critical thinking, problem solving, as an example.

going forward. For example, an overlap of teaching schedules resulted in educators not reaching students in some cases.

To facilitate a blended approach, officials stated that a knowledge management system was also necessary. Indeed, a system was currently being developed through an external consultancy with the European Union (EU) and involving the Ministries of Education and Labour, with a timeframe for deployment to be determined.

Future developments in education

The Ministry will employ a Director of Reform to lead transformation across all levels of education into the future. Officials confirmed that the Director's mandate would include pedagogical reform, curricular reform, educator training, administration reform, and improvement of infrastructure including greater efficiency and effectiveness in addressing the needs of students in the future. To support the work of this Director and to ensure progress through the pandemic, officials also stated that informal channels are being used to share best practices across the country and subregion.

D. British Virgin Islands (BVI)

The British Virgin Islands (BVI), an Associate Member of ECLAC, is a British overseas territory and the northernmost of the Lesser Antilles islands within the Virgin Islands Archipelago. The territory spends roughly 3.2% of GDP on education with high levels of organized education attendance—over 99% for both sexes (UNESCO, 2019) across 531 pre-primary students, 2,342 primary students, 2,178 secondary students, and 2,141 tertiary students (UNESCO, 2020e). There are approximately 400-500 teachers across the territory.

Of the countries and territories analysed within this study, BVI is unique in its geography, comprising four primary islands as well as 50 smaller islands and cays, with approximately 15 total islands inhabited (BVI, 2019). With 53 per cent and 47 per cent of the 30,030 inhabitants based in rural and urban locales, respectively, the dispersion of population across islands and non-urban environments provides for a challenging setting for online learning policies in the time of COVID-19.

To further develop an understanding of BVI within its subregional context, an interview with the Education Development Management Unit²⁴ (EDMU) of the Organization of Eastern Caribbean States (OECS), of which BVI is an associate member, was also conducted, to facilitate in-depth and nuanced analysis.

1. Educational framework and use of ICT

The Ministry of Education, Culture, Youth Affairs, Fisheries and Agriculture is responsible for administering educational activities within the territory, including the development of enhanced ICT use within education across the islands. In July 2017, the government of BVI signed an agreement with the Caribbean Telecommunications Union (CTU) to develop a 'National ICT Policy and Strategy', allocating US\$100,000 for consultancy services to complete this by 2020 (BVI, 2019).²⁵

²⁴ The EDMU is responsible for facilitating and coordinating education initiatives resource mobilization, improving networking, and sharing technical expertise across states in order to improve the lives of children (via quality social services) not only through enhanced education but also through the promotion of student health, thereby ensuring social protection of all related aspects of children development.

²⁵ To complete this policy, the government has engaged public and private sector stakeholders to advance a policy that is "proactive, responsive and decisive" (BVI, 2019a).

IT hardware availability for online learning

BVI has divided its ICT delivery policy into grade levels to demarcate the age at which specific technologies should be available, as well as concomitant usage skills with these technologies, in order to facilitate learning. Indeed, progress towards a blended classroom had been in motion well prior to the COVID-19 pandemic, until the 2017 hurricane season critically disrupted infrastructure across the islands and destroyed many devices and network equipment, slowing the implementation of these ICT policies in education. Specifically, students in grades 5 and 6 were to have access to computers and ICTs for both in-classroom teaching and learning, while grades 7 to 9 would access digital textbooks (including quizzes, tests and note-taking abilities) and senior grades 10 to 12 would receive laptops.²⁶ Officials confirm that BVI has since aimed to regain its previous level of ICTs in education until the unexpected shock of the COVID-19 pandemic. Indeed, while the provision of devices below the secondary school level had been historically left to parents, a loan program was established during the first weeks of the COVID-19 pandemic for laptops and tablets at the primary level with investment by non-profit organizations. World shortages in devices has nonetheless led to insufficient device numbers across the territory.

Connectivity for online learning

Despite increased device uptake, internet connectivity remained an issue prior to the COVID-19 pandemic. Connectivity is often limited to urban populations, and where connectivity is available, affordable packages do not provide adequate access (i.e. bandwidth is limited) to accommodate online learning. Telecommunications companies have committed to providing packages at reduced rates, but these are yet to be rolled out. These connectivity issues are also being experienced at the tertiary levels of education, along with similar issues surrounding device programs.

ICT training in education

To facilitate the use of ICTs in education, BVI recognized that the training of teachers was an essential component. Therefore, kindergarten to grade 12 (K-12) public school educators were trained in the use of the ICTs in the classroom to promote a more successful blended learning environment.²⁷ Experts from Google and local WebEx professionals have conducted remote training for teachers and parents to ensure engagement of both stakeholder groups as students. This has been especially critical during the COVID-19 pandemic, where students require direction from both teachers and parents to ensure learning continuity. Such trainings have been carried out during the last few school terms, with teachers subsequently training students as needed in the proper use of devices and learning platforms. Prior to the pandemic, this training was important to facilitate the movement away from computer labs and to shift the mindset away from centralized training in computers to a blended paradigm of education.

2. COVID-19 response in the educational sector

COVID-19 response in primary and secondary education

With the COVID-19 pandemic initially forecasted as a limited period of disruption, the initial objective of providing a blended learning environment was decided upon to allow in-class and at-home learning to occur simultaneously. This decision required strategic expansion to facilitate a fully online learning environment for students at all levels, making class sets of computers available for primary aged students (i.e. grades 5 and 6), digital textbooks for grades 7 to 9, and Chromebooks for senior students.

As in many countries and territories across the region, online learning initiatives in BVI were phased into existence along the lines of education level and grade. However, the COVID-19 pandemic unified emergency action, with staggered programs quickly designed and implemented simultaneously.

²⁶ Chromebooks, in this case.

²⁷ Private school educators were included in these trainings.

Thus, the decision to facilitate online learning only required efforts to increase access to laptops loans for students (k-12), and to android tablets for grades 7-9 (BVI, 2020). Support from Unite BVI, a local non-profit organization (NPO), saw approximately 750 Chromebooks donated to public schools and some to private schools as well, which along with the 500 currently being purchased by the government, aims to close the digital access gap as it relates to devices. To assist with internet access, agreements with private enterprises brought about zero rating of educational websites (i.e. effectively making access free for all interested and with an internet connection) and discounted internet plans to increase affordability (BVI, 2020).

The shift to online learning further necessitated intense training for educators and administrators to both accelerate the move and ensure viability of learning and underlying processes. On the education front, where students and educators would interact, the Google suite for education was adopted—including material dissemination to students, Google classroom, etc.—and training ensured basic usability requirements were met.²⁸ For purposes of live communication, the use of CISCO WebEx within government was extended to educators, along with basic training to ensure online classrooms could be set up for students at a variety of levels.

Beyond training in the use of these technologies, educators have been encouraged to convert the curriculum for deployment online with both live courses and Open Educational Resources (OERs; e.g. digital textbooks) using Google Classroom and Google Drive as facilitating software. Officials stated that actions prior to COVID-19 to train and develop this capacity as well as personal initiative and use of these technologies by many teachers provided a critical foundation to expedite the uptake of technology towards online learning.

Addressing issues of access

Across BVI, officials have carried out informal and formal evaluations of ongoing learning processes and programs, during the COVID-19 pandemic. These surveys have addressed key stakeholders and have thus far provided findings that align with experiences this study highlights throughout the subregion. A lack of devices as well as internet connectivity issues and insufficient bandwidth remain limitations to access. To address this deficit, the purchase of 500 laptops supported in part by donations from NPOs, UNICEF, and the private sector will take place as soon as the shortage of devices in the subregion is addressed. Thereafter, all students in BVI should have a device for online learning use.

Despite this success, officials learned that many students and families have not taken advantage of online education or supported their children in attending online learning sessions. Compounding these challenges in the household are increases in parental unemployment due to the need for parental supervision of children at home (specifically kindergarten to grade 2) as well as increased redundancy of workers where in-person commerce and service sectors have been affected by health-related measures. Unemployment and school closures also result in more people in living spaces, making them challenging environments for learning.

Furthermore, children with special needs and younger elementary students remain particularly affected by the lack of structure, interaction, and supervision which characterizes education during COVID-19. Officials confirmed that addressing special needs was a struggle during the preceding term and they were at the time of writing still determining the best ways to address the need for special learning requirements in the presence of COVID-19. To this end, permission has been sought for those students with special needs to physically enter schools for face-to-face learning, while providing adequate PPE and observing social distancing practices, and having the remainder of students remain at home.

²⁸ KIKER Learning (US) provided initial training on Google for Education with a donation from United BVI making this possible.

BVI's migrant worker population comprises some 65 per cent of all employees; a phenomenon quite unique in the subregion. While the majority face no specific obstacles to education, a small percentage present a language barrier, there being a discernible number of Spanish language speakers from neighbouring Puerto Rico and the Dominican Republic. Historically, such barriers were addressed with special classes; however, it was found that full immersion in the language was a more successful approach, which officials confirmed will be attempted in the online environment as classes return in the subsequent term.²⁹ While officials stated that data collection had yet to uncover gender disparities, ongoing interactions with key stakeholders would confirm whether such disparities exist which officials would address accordingly.

In February 2021, representatives from the Ministry confirmed that, while improvements concerning access to devices had been made, connectivity issues remained a challenge across the territory.

Stakeholder engagement

BVI officials noted that all efforts were made to complete the previous term when full lockdown was initiated in the country in March 2020. As the crisis unfolded, stakeholder engagement was prioritized. To facilitate this engagement, the government has held a variety of Facebook Live events called 'A Chat with the Community' in order to communicate a variety of tips, coping strategies, and recommended activities to be done with children for parents and guardians, and to provide access to the Ministry for Q&A as necessary. Furthermore, PTA meetings continue to be carried out online to strengthen understanding across key stakeholders during the crisis.

Ensuring education efficacy

continuous research is being undertaken to ensure that best practices are integrated where possible. Furthermore, the ICT unit endeavours to remain current on technologies by following relevant groups on social media and as well as the International Society Technology in Education (ISTE) that provides relevant information, standards, and conferences for ICTs in education. This has helped address the need for education where the digital divide is most apparent, with BVI's current economic landscape requiring a unique course of action. With traditional forms of media, including TV and radio, both privately owned and prohibitively expensive to access in contingencies of the length necessary for COVID-19, along with the infrastructural damage these traditional media experienced during the 2017 hurricane season, a new approach was required. To address this necessity, BVI utilized a variety of cost-effective channels—including YouTube, Facebook, printed media, and WhatsApp—to communicate key messages and open dialogue with students and parents.

As BVI officials stated, the COVID-19 pandemic has inspired a universal sharing of information and methods across the region and globally, and BVI has looked to many international and regional organizations, namely, OECS, CARICOM, UNICEF, UNESCO, for guidance and ideas.

3. Successes and challenges of online learning implementation

Moving education beyond the classroom

Once COVID-19 cases were recorded among students, the Ministry decided to adapt all in-class learning to online learning (Haynes, 2020). However, as with other Caribbean countries and territories, TVET students were allowed to go into school to ensure they were prepared for CXC exams, where protocols were enforced to ensure social distancing and use of PPE.

²⁹ Officials confirmed while support for these students is limited with no structured form of intervention, another student may assist through the learning process.

BVI officials expressed the belief that online curriculum need not be different from curriculum carried out via in-class lessons, and that content need not be significantly changed. Instead, integration of content across the education system was necessary, ensuring that collaborative teams comprised of principals and teachers (and not divided simply by subject and grades) were used to ensure coordinated deployment across BVI. Modules with core content in social studies, English language, arts, and general science were prepared for teaching using online technologies and will be used in the new term for this purpose. To bolster relevant skills across the population, additional CISCO WebEx training packages for students and parents—both of which will work together in combined trainings to increase understanding inside families—were also confirmed for continuous deployment going forward.

Evolution in education administration

BVI officials stated that further integration of ICTs was needed to upgrade administrative practices in education. Indeed, much of the efforts to consolidate best practices and lessons learned were captured individually and lacked a centralized knowledge management system for storage and future reference. Officials stated this was an area of interest and aimed to address this following the COVID-19 pandemic.

Future developments in education

Over the next school term and into the future, BVI officials expressed the intent to continue building capacities for online learning while integrating use of ICT devices in the classroom once the COVID-19 crisis is past. The aim is to make remote learning a permanent fixture for students to use as needed, with the required technical capacity in the Ministry maintained and expanded to support this form of learning. This distance learning facility is especially useful in a multi-island country like the BVI with numerous school jurisdictions on separate islands. A blend of online and face-to-face learning remains the preferred method of delivery, which will complement increased practical skills in technology as part of the core curriculum. To this end, BVI has signed memorandums of understanding (MOUs) with companies that may eventually partner towards development of education activities and on the job training for students and educators to ensure relevant, job-ready capacities. Furthermore, ensuring access to education for students with special needs who required assistance was highlighted as a key challenge, despite some success in this area, for ensuring an inclusive education system going forward (both during and beyond the pandemic).

While officials determined that proprietary and/or free technology would be favoured for the current emergency circumstances (e.g. Google suite for education and WebEx), these same officials held that COVID-19 was a great opportunity to ensure technology was suited to blended learning in K-12. The pandemic has allowed for testing of the online learning component of the future blended approach, with all teachers effectively trained in technology use and eventual integration of ICTs into key subject areas across curriculum. Once relative normality has returned, educators in the territory will be polled on their comfort level in technology and results will directly inform future action and policy.

As specific final points of direction, officials highlighted that remote learning for advanced students would increasingly be project based and self-directed where possible, facilitated using systems already in place. In terms of knowledge management, a student information system, where all manual reporting and ongoing collection of data is captured, will be strengthened, whereas within the Ministry itself, the aim is to integrate knowledge management across teams will likely result in a consolidated effort to centralize knowledge management activities.

E. Guyana

The school-aged population in Guyana consists of 44,435 early childhood, 85,191 primary, 74,974 secondary level, and 82,414 tertiary students. The country spends approximately 15 per cent of its GDP on education, addressing educational requirements across coastal cities and rural 'hinterland'

communities, the latter which poses unique challenges relating to remoteness for the national government and educators.

In contrast to the single or multi-island states considered in this study, the Guyanese mainland covers some 214,970 km², the largest country by a considerable margin. Furthermore, with a population of approximately 745,000 (Guyana, 2019: p. 7), of which some 75 per cent are located in rural locales (UNESCO, 2019c), Guyana provides a very specific context by which online learning may be evaluated in the context of the COVID-19 pandemic (PMUN Guyana, 2020).

1. Educational framework and use of ICTs

In its first Voluntary National Review (VNR), the Guyana government committed to prioritizing education as the “mother of all goals, not only because of its pivotal importance to resilient economic growth, but also because of its potential to positively and significantly impact all aspects of life” (Guyana, 2019: p. 44). Indeed, this approach is confirmed by substantial investments in the education sector, with a high percentage of GDP directed to education and a 9 per cent investment increase in education infrastructure from 2016-2018 (Guyana, 2019: p. 25). Prior to the COVID-19 pandemic, national education policy prioritized curriculum reform across all levels of education, expansion of interventions to improve quality of STEM subjects, and increased public expenditure on education from GY\$31.8 billion to GY\$42.5 billion from 2015 to 2018 (Guyana, 2019: p. 44).

The Ministry of Education has developed a series of ‘ICT strategies’ to promote greater efficiency and support teaching and learning activities at all levels. These strategies outline concrete goals to enhance learning by increasing ICT access, training, and support activities (MOE Guyana, 2019). Within the Ministry of Education these strategies, along with key education activities, are centralized in the National Center for Educational Resource Development (NCERD). NCERD coordinates training, produces education materials, national assessments, coordinates curriculum development and education monitoring, and advises pedagogical development and policy. Officials confirm that lessons learned are currently informing development of a national ICT plan to be submitted for public review in the near future.

IT hardware availability for online learning

While exact figures were unavailable, officials stated that tablets and devices were being procured and distributed alongside the continued maintenance of computer labs as part of the current ICT in education policy. However, officials also recognized that current device availability was not sufficient to address demand during the COVID-19 pandemic. Prior to COVID-19, Ministry officials planned to introduce devices slowly over time in a multi-phased approach. However, this approach was abandoned during the pandemic, with officials now racing against time to counter loss of learning across the country. Thus, as was the case in other Caribbean countries, officials worked to address demand across all levels of education at once, providing online learning ready devices through a Global Partnership for Education (GPE) grant (see below: ‘Budgetary Adaptations’) to facilitate learning in hinterland communities (Guyana, 2020: 11).

Officials noted that while device penetration is high for students located along coastal regions and urban areas, students in the “hinterland” regions far inland lacked access to devices. Furthermore, even when devices were accessible, this did not always mean one device per student. Thus, even when a device may be available in a particular family, it likely was shared among many children and parents, significantly reducing the amount of time each student could engage with online learning activities.

Across Guyana’s 11 educational districts, regional education officers positioned in each district connect with government officials to obtain and transfer important information. In the case of device accessibility, survey software was used to gather information across these districts and results were

used to influence decisions. This structure of regional education officers responsible for all institutions in their regions is how the government attempts to reach every child with its policies.

Connectivity for online learning

Officials assert that the primary obstacle to increased ICT integration across the country is connectivity. To address this, efforts have been made to introduce services alongside expanded connectivity. For example, an initiative towards greater workforce skills development via online training was established three years ago during countrywide efforts to expand internet coverage.

However, connectivity has remained particularly limited among Guyana's indigenous populations whose communities are mostly found in the rural interior or hinterland of the country. The government has therefore recently surveyed students in these areas. To this end, an ongoing data collection instrument was distributed to students to research this issue with analysis aimed to be completed by early 2021. The aim is to combine the insights from this instrument with data from training centers positioned across the country, in order to gain a better understanding of the current state of connectivity for students at all levels of education.

So far, officials have learned that connectivity levels seem to influence learners' preferences related to learning method. For example, there is a preference for online learning among those students with connectivity, whereas students with limited connectivity often prefer blended learning. Officials aim to develop targeted learning packages for these populations based on preferences and levels of connectivity.

ICT training in education

To address teacher training in ICTs at the primary and secondary level, Guyana worked with Pro Futuro, a Spanish non-government organization, and the Organization of American States (OAS) on a project to train educators in ICTs across three regions. Officials stated that, while voluntary, the 100-hour theoretical training followed by practical training received strong interest from educators.³⁰ Permission has since been granted to expand these trainings across the country, with zero-rated access available³¹ to limit educator expenses for access and printed modules provided to areas of low-connectivity (where some 2,500 educators reside of the approximately 8,500 total educators³²) to ensure capacity is developed before eventual expansion of ICT infrastructure.

Beyond these offerings, Coursera was also used to train educators, and continues to be available for educators as needed (MOE Guyana, 2020). These courses were advertised to teachers, and officials confirm the program received high participation. At the same time, a previously initiated curriculum reform project has been revised and will now help Guyana's teachers to lead online training. Curriculum writers will be trained first to become "supertrainers" to ensure curriculum development is aligned with the needs of online learning. Officials also noted that private schools had begun their own training within each institution.

At the tertiary level, approximately 200 TVET instructors had begun training to lead fully online learning courses. Prior to COVID-19, movement towards a blended learning model had been underway. This has since been expanded and now aims towards full online learning during the pandemic.

³⁰ Officials noted that a 'soft launch' on 15 September has already received over 1000 participants.

³¹ This was the outcome of Ministry negotiations with GTT and Digicel.

³² This is an estimate based on World Bank data collected in 2012 for total primary and secondary school educators (World Bank, 2020a).

2. COVID-19 response in educational sector

COVID-19 response in primary, secondary and tertiary education

Guyana took several immediate steps towards ensuring access to learning in light of COVID-19. At the early childhood and primary levels, the Ministry decided that television would be the preferred modality where infrastructure was available, whereas secondary schools would incorporate online learning methods. Parents at the primary level were advised to work with children in preparation for National Grade Six Assessment (NGSA), the national exam for secondary school entrance, with materials provided by the Ministry. These materials were provided through the Ministry's website and a television channel, the Guyana Learning Channel, alongside the standard curriculum. Furthermore, radio broadcasts of Interactive Radio Instruction for Grades 1-3 and NCN Radio were aired to support remote education.

At the secondary levels, the Ministry initially aimed to ensure education continuity on multiple fronts, with a variety of software used across the system including Facebook, WhatsApp, Zoom, Microsoft Teams, and local platforms. However, as the pandemic continued, officials moved to consolidate software, favouring Zoom for communication and synchronous teaching, Google Suite for material distribution, and Moodle LMS for administering assignments, attendance, and grading. Apart from synchronous lessons, asynchronous recordings were also made available for students to access this content whenever they have internet. This asynchronous approach was also supplemented by Q&A sessions over WhatsApp (Newsroom, 2020).

For tertiary education, the University of Guyana also fully conducted online learning, with only essential services performed on the campus. Emergency administrative policies and applications were also rolled out and zero-rated websites were made accessible to students and educators to limit issues of accessibility throughout the pandemic (Kaieteur News, 2020).³³

Addressing issues of access

A multi-pronged approach was required to address diverse education needs across the country. For students with connectivity at all levels of education, the Ministry provides curricula guides, basic textbooks, and exercises on a government-hosted website, which both teachers parents can access (MOE Guyana, 2020a). Education content with outlines of curricula are made available on the television learning channel and by radio, both which are supported by private media companies. The Ministry also provides questions and answers across these modalities to assess student understanding of materials alongside outlines for educators and parents to follow to support students.

To address lack of devices and connectivity, the Ministry is investing in a television learning channel as television has a very high penetration across Guyana. However, as hilly areas and savannahs still lack necessary infrastructure, small radio stations are servicing these with education content.³⁴ Furthermore, materials preloaded on hard drives and flash drives are being distributed in remote locations. Across the country, seventeen distribution centers have been created which distribute physical materials to parents and students as needed.

The Ministry also worked to produce learning packages for children at primary levels and below including books, paper, and supplies. These packages were aimed at disenfranchised students, including those without electricity and those located in rural locales. Furthermore, for students who were unable to participate in organized learning activities, officials noted that educators conducted scheduled reach

³³ Officials estimated that 25% of all students would experience accessibility issues in continuing studies, but were adamant that continued efforts would be made to limit disruption across faculties during the pandemic. To this end, emergency telephone numbers were provided alongside continuous business hours between 10am and 2pm to address student needs.

³⁴ Officials noted that the expansion of radio and TV infrastructure will continue, ensuring education continuity despite the lack of internet access in many locations.

outs each day for EEC and primary schools, or each week for secondary school, to communicate with parents to ensure children were properly home-schooled.

Stakeholder engagement

To ensure all relevant stakeholders were connected, officials formed a 'Local Education Group' including international organizations (including UNICEF and other development partners), the Guyana teacher's union, government officials, educators, and parents. Officials note that this group was mandated by the Global Partnership for Education grant that funded response activities which required diverse stakeholder engagement.

The Ministry of Education, alongside Guyana Telephone and Telegraph (GTT), also provided a webinar series titled 'EduConnect' to support educators, teachers and students to make the transition to online learning. Themes of this series included "creating and maintaining a positive online reputation; safe use of the internet; and the evaluation of online sources and searches to support the collection of credible and accurate information during research" as well as using social media in support of learning (Chabrol, 2020). On this final point, educators were recommended to connect directly to students whenever possible via Zoom or WhatsApp to ensure that lines of communication were maintained and any issues in fulfilling academic obligations were brought to light and addressed.

Budgetary adaptations

Guyana is currently in the second year of its ongoing five-year education plan (2019-2023). Officials confirmed the current plan was budgeted well prior to implementation, therefore making adjustments to address COVID-19 difficult. However, as the COVID-19 response required immediate action to prepare online training, funds were reallocated to ensure that educators were trained to lead online learning.³⁵ Furthermore, of the GY\$52 billion [US\$249 million] allocated for education from the 2020 national budget, GY\$300 million [US\$1.4 million] will support blended learning modalities, such as television channels and radio, printed materials, and online platforms, including Google, Zoom and WhatsApp (Chabrol, 2020a). Supplemental funding was also necessary to address COVID-19 and a GPE grant was received (US\$3.5 million) to fund all response activities in areas across the country where need is greatest, specifically the hinterland and areas of lower socio-economic status.

Beyond these adaptations, funds were also provided for the reopening of schools to ensure PPE in schools at all levels and retrofitting of schools for COVID-19 health guidelines. These steps are to prepare for when the decision is made to return to in-person learning, however officials anticipate only remote learning for the foreseeable future.

Ensuring education efficacy

Officials confirmed that plans to ensure efficacy of learning through 'diagnostic tests' were underway, with educators being trained on remote learning assessment and feedback mechanisms. For students receiving physical learning packages, those distributed before early September were not returned for grading. For the new term, however, the Ministry aims to implement a schedule for students to return completed worksheets by certain dates for marking and subsequent communication to students and parents.

Officials noted that distribution of physical packages for eventual grading was difficult to manage given the need to uphold social distancing. To address this concern, parents of students are invited to collect materials from outdoor locations to ensure social distancing and reduce time spent in closed areas where proper ventilation may be difficult to sustain.

³⁵ See Pro Futuro and Coursera training above in section: ICT Training in Education

During the next term, the Ministry aims to increase data collection to ensure there are no students left behind during the pandemic. Officials confirmed that the Ministry has deployed workers in the field to collect this data, with any disparities uncovered to be addressed immediately.

3. Successes and challenges of online learning implementation

Moving education beyond the classroom

Although the initial pandemic response across education was unstructured, with emergency and ad-hoc options favoured over universal approaches, the Ministry is now consolidating lessons learned into plans since the beginning of the new term in September 2020. Indeed, officials had planned for education in Guyana to be more “technologically evolved” by this time, with greater introduction of ICTs at all levels. COVID-19 has provided a unique opportunity to accelerate efforts to bring ICTs into education. For instance, from the perspective of teacher training prior to COVID-19, educators were “attached” to schools and slow to incorporate ICTs for education beyond the classroom. However, with the Ministry now preparing educators to deliver lessons online, educators have adapted to online learning at all levels.³⁶

Despite the introduction of online learning, officials noted that the importance of face-to-face had been reaffirmed. They were therefore committed to returning in-class learning entirely in the future. Officials therefore observed that a blended learning approach is the ideal outcome across the country for all students, with the context determining the optimal modality for each situation.

Evolution in education administration

In terms of administration of education, officials indicated that all meetings within the Ministry were currently online, and even when the COVID-19 situation improved, better communication approaches would be used going forward. For instance, one official expressed they could now monitor regional meetings online which has increased transparency across the Ministry; this was not possible before COVID-19.

Future developments in education

Overall, officials saw Guyana’s education sector benefitting from the accelerated adoption of ICTs during the COVID-19 pandemic, while recognizing Guyana faced specific socio-economic challenges that might retard the achievement of these adaptations. This was reflected in Guyana’s VNR presented before the COVID-19 pandemic, which stated that “while Guyana is committed to prioritising the requisite reforms in education, it is recognised that resource-constraints restrict the acceleration of investments required to make quick and significant improvements to the sector. In this regard, partnerships are critical resources that can allow for knowledge-sharing, and skills and technology transfer” (Guyana, 2019: p. 91).

F. Jamaica

Jamaica spends 5.4 per cent of its GDP on education or 18.6 per cent of total government expenditures (UNESCO, 2019b). It has the largest student population of all countries included in this study, with 589,000 students in total (including private schools) in a total population of 2.94 million (World Bank, 2020). Of this total student population, Jamaica has 142,639 pre-primary, 273,553 primary, 237,966 secondary, and 263,211 tertiary students (UNESCO, 2020g). At the early childhood, primary, and secondary levels, Jamaica has an estimated total of 23,832 teachers with an additional 2,000 educators in tertiary education (Statistical Institute of Jamaica, 2017). With 44.6 per cent of the population based in

³⁶ Officials also expressed that educators who excel with online learning may attract students from different locations beyond their in-class reach.

rural, often remote locales, ensuring learning continuity during the COVID-19 pandemic has proven challenging.

1. Educational framework and use of ICT

In 2012, the Government of Jamaica developed the 'National Education Strategic Plan: 2011-2020' (MOE Jamaica, 2012). The plan proposed the development of an ICT in education policy framework for education at all levels to "guide the transformation of the nation's schools and to provide all students with access to current technologies while equipping all teachers with ICT skills to develop and deliver curriculum" (MOE Jamaica, 2012: 28). In 2017, a steering committee was established to implement the proposal and develop an ICT for education plan (MOE Jamaica, 2017).

Officials report that coordination between government departments to enact the policy remains challenging, with inadequate collaboration among relevant departments. Officials are of the view that an updated, more proactive policy would address this issue, while noting that the COVID-19 pandemic and its implications for the educator sector could not have been anticipated.

To address the need for increased ICT integration in the education sector across Jamaica's 803 early childhood and primary schools and 177 high schools, the E-learning Jamaica Company Ltd (EJC) was established in 2005 and operationalized the following year.³⁷ The EJC was set up to address three primary areas of concern: Devices, Connectivity, and Platforms for ICTs in education.

IT hardware availability for online learning

As with many countries in this study, early efforts to integrate ICTs in education saw computer labs installed in schools, with a more recent shift towards devices. In 2013, the government approved a 'Tablets in Schools' (TIS) pilot to test the introduction of 25,000 tablets for students across the country. As officials have noted, a lack of training and preparedness, along with lack of use and broken devices, limited the impact of this pilot.

In 2015, having considered lessons learned from the pilot, the government approved a TIS rollout program. The program would last 11 years with two vendors supplying over 100,000 tablets at a total cost of US\$31 million. However, challenges were again encountered with the rollout of this program.

A renewed effort to secure tablets for teachers and students was approved by the government a one day before COVID-19 induced lockdown in March 2020.

Roll-out began in July with 16,000 tablets for teachers distributed amongst 23,000 active teachers across the country. As these tablets were approved for private and professional use, the cost was offset by providing the tablets in lieu of a pay increase for educators. For students, the import of tablets also began in July but slowed due to COVID-19. The distribution of 31,000 tablets began in the second week of September, with full rollout by October.

Overall, with 18,000 tablets already in schools, and another 121,000 to be supplied within the 2020/21 academic year (approximately 45,000 already delivered³⁸), officials believe a total of 146,000 tablets will be available to students from early childhood to the tertiary education level. Although the long-term aim is to achieve full device penetration, the Ministry has adopted the approach that tablets are a shared resource, with a ratio of one tablet per three students (Henry, 2020).

At the tertiary level specifically, Jamaica has favoured a Bring Your Own Device (BYOD) approach to address limited accessibility. Subsidies are given for students to purchase and use devices for

³⁷ 90% of funding for e-learning Jamaica is from USFs (total: JM\$2.3 billion; balance from USFs of JM\$1.9 billion).

³⁸ Representatives from eLearning Jamaica confirm that 40,000 of the tablets delivered prior to 4 February 2021 were aimed at vulnerable groups.

education. For educators, subsidies were not provided, with devices instead supplied through their employing institutions. Officials confirmed that demand is now fully met across the country.

Connectivity for online learning

Prior to COVID-19, efforts to update Jamaica's internet connectivity infrastructure were underway in schools with a nationwide project to roll-out fibre-optic internet connectivity to schools. Where internet access was limited or unreliable, schools would be provided offline servers for teachers to download learning materials without the need for connectivity. However, school closures during the pandemic and a refocus on remote learning saw funding cut and efforts halted on this fibre optic project.

Officials confirmed that efforts were ongoing to address connectivity in communities where limited or no connectivity was previously available. Specifically, collaboration between government and telecommunications companies was underway to expand coverage alongside efforts to develop mobile content servers from which students can download content without internet access in order to "bridge the digital divide". Where coverage does exist, the Ministry has sought to improve data costs for students accessing educational content. Agreements reached with local carriers led to a discounted price of JM\$500 (approximately US\$3.50) for 500 megabytes (mb) of data usage over 14 days with access to 76 educational websites and platforms included in this price (Henry, 2020).³⁹

ICT training in education

To facilitate online learning and to consolidate disparate efforts across the education system, ECJ developed a national learning management system (LMS) to provide material for core curriculum alongside the Google Suite for Education to support all remote education activities. Across the primary and secondary levels of education, officials confirm that all teachers and students will be onboarded into the LMS, with 20,000 teachers and 2,500 school leaders (e.g. principals, administration) already trained on managing virtual classroom environments by October 2020. Implementation guidelines for online learning have also been developed and provided to educators and administration to assist in addressing concerns around process management, assessments and other key management activities.

While the Ministry previously favoured a staggered approach to training programme deployment, addressing each education level in turn, COVID-19 has forced training to occur all at once. As such, 20,000 teachers were being trained for delivery of online learning content. Furthermore, training was also provided for a number of content development activities, including e-book and lesson plans. While e-book content production is centralized, lesson plans are developed by individual teachers in alignment with government approved syllabus.

According to officials, the change in mindset required for educators to integrate online learning technologies into the curricula has been a key point of focus for training efforts. However, as officials anticipate that remote learning will be the norm for the foreseeable future, training efforts are essential as not only emergency measures, but as a permanent change to teacher training. As such, the majority of educators across the country are being trained, with students indirectly trained during day-to-day online learning lessons.

Finally, through UNICEF led training in emergency preparedness prior to the pandemic, Jamaica developed a disaster emergency management team and safety and security teams in schools. Through

³⁹ As online learning tools vary significantly in terms of internet speed requirements (measured by megabits per second (mbps)), it is difficult to confirm the internet speed and data usage needed for online learning outside of a particular context. For instance, while email and web browsing may require less than 1 mbps, a minimum of 5 mbps is recommended for online video calls. Therefore, zero-rating becomes important to offset the need for data consumption, where in this case 500 mb of data usage can be quickly consumed (SDE, 2020).

this training, educators and administration were trained in ensuring the safety of students and eventual learning continuity for students during natural disasters and emergencies, such as the COVID-19 pandemic.

2. COVID-19 response in educational sector

COVID-19 response in primary, secondary and tertiary education

With the first reported case of COVID-19 appearing in mid-March, the Ministry enacted the 'Education in Emergencies Plan' (EEP). Accordingly, all in-person education across Jamaica was suspended within the next 24 hours and provision for emergency remote teaching began across mixed modalities including online learning, television, radio, and printed materials. This multi-modality approach aimed to address the various levels of connectivity and hardware access, with full online learning using a variety of platforms (e.g. Zoom, Google, etc.) alongside radio, television programs on public broadcast channels, and printed lessons, books, and assignments. To support this, the EEP also provided psychosocial and nutritional support, and provisioned expanded access to digital devices and infrastructure (see further information on both below). For printed materials, distributions and pickup services were implemented across the country for parents or students to receive and return assessment materials at the end of each week. Despite this decision, officials noted that early responses of different schools to the virus saw high costs across the education system with institutions buying into diverse online learning services to fit their individual needs. While necessary to ensure learning continuity early on, a lack of consolidation made government management of learning during the pandemic difficult. Thus, the Ministry sought a uniform approach.

As with many countries addressed in this study, COVID-19 had an accelerating effect on online learning development across all levels of education. In Jamaica's case, before the pandemic a Learning Management System (LMS) was being experimented with across primary and secondary schools, as well as a 'flipped classroom'⁴⁰ learning model in a limited number of schools. Once schools were shut down due to the pandemic, decisions that traditionally required two years were made in a matter of months to ensure access. Education policy was also extended beyond integration of the LMS, with operational guidelines developed to address the specific safety requirements of the pandemic towards reopening of institutions.⁴¹ Furthermore, a 'Bring Your Own Device' (BYOD) and device loan program, as well as an e-book distribution for when in-class learning resumed, required specific guidelines to be developed and provided to institutions.

Finally, guidelines were also developed for students preparing for CXC examinations to enter schools before reopening to complete scheduled exams. A blended learning approach was implemented for these approximately 96,000 secondary school students, with a maximum of 8-9 students from each classroom attending in-person lessons to prepare for exams and to access personal tutoring.

While emergency actions were required to deploy technology and build online learning capacity among educators at the primary and secondary level, previous investments in online learning enabled immediate engagement at the tertiary level, with training and teaching rapidly adapted to an entirely online approach. To support this transition, tertiary education was provided an ICT grant to upgrade facilities where needed, and guidelines were provided to administer laptops which could be used as part of the student loan program.

⁴⁰ A 'flipped classroom' learning model introduces students to new content at home (through recorded videos, readings, etc.) and students complete assignments in-class.

⁴¹ Given preparatory measures need to develop and enact these policies, a delay of one month past the original first day of school was confirmed (original date: September 7th; new date: October 7th).

Addressing issues of access

Officials confirm that COVID-19 has revealed deficiencies in the education system, specifically access to internet and devices. Officials state these inequities have become glaring and require rethinking of education delivery.

In terms of access to IT hardware, officials confirm that connected devices are often limited or unavailable to students, or available devices may not meet technical requirements, such as a shared family smart phone. To address students in need, but those not currently benefiting from the Program for Advancement through Health and Education (PATH) program (see below), JM\$50 million was allocated to procure devices. For these students, tablets are also provided by ongoing donations from local providers and businesses. Overall, officials believe that 40-50 per cent of the total student population do not have devices, with at least 300,000-400,000 total devices needed to meet demand.

Partnerships with private industry also led to the development of an 'e-resource app'. Initially developed for schools, the Ministry expanded the app's use with offline content to address data access challenges across the country. The app currently hosts 112 learning programs across all education grades and levels covering literature, books, math principles, and drawing programs. The Ministry is now working to include the app into the Apple app store for easier access.

To address the expanded need for remote learning, the government held meetings with private enterprises to initiate zero-rated website traffic under subsidized data plans. This mechanism ensured that students would not be required to purchase data plans, with the government billed directly.

However, as internet penetration in inner-city and rural locales (particularly in mountain regions) stands at approximately 50 per cent and 10 per cent, respectively, the expansion of ICT infrastructure is currently underway.⁴²

Despite these efforts, officials estimate that 50-60 per cent of students have attended no online classes since the advent of COVID-19, with many facing obstacles beyond device access and connectivity. For instance, officials stated that difficulties of access for special needs students to quality education pre-dated COVID-19 and have persisted during the pandemic. While 12-13 special schools across Jamaica address specific needs⁴³, COVID-19 has seen a disproportionately negative effect on these students due to in-class learning restrictions. Furthermore, officials confirmed that there was a delayed response at the beginning of the pandemic, before meetings between principals and the Ministry were carried out to understand the variety of needs (mental and physical) and to customize support. As a result, in-class accommodations that were previously provided for special needs learners were adapted to the remote environment. For example, tablets provided by foundations were distributed along with targeted support, while a specific unit in the Ministry ensures that software on these devices is accessible to these students. Caregivers for those who need in-person support is provided alongside compensation for families to pay for this privately. Print materials were also provided, and parents were offered training to support education as needed. With increased private sector donations, and a new government likely to address this as a key area going forward, officials believe a cohesive response will be developed.

Beyond learners with special needs, officials stated that recent years have seen greater integration in Jamaica among different populations into the education system, including Rastafarian communities and informal settlements located across the country. Furthermore, no specific issues with gender in education have been identified, with girls attending school and performing well at all levels.

⁴² Government officials were in talks with telecommunications companies (DIGICEL, FLOW), and a satellite internet provider (REDYNET) to connect 100 schools pre-pandemic.

⁴³ Specifically, special needs related to vision, hearing, and physical disabilities.

Officials also confirmed that deep rural areas require urgent partnerships to provide ICT accessibility for these students. In these regions, device loan programs are provided alongside subsidized data plans. The Ministry has further partnered with content providers to ensure that educational content behind paywalls would be available for those who couldn't afford it. The long-term goal is to reduce the cost of access and provide high stakes testing materials, such as those for CXC or national assessments, at reduced rates.

Moreover, indirect support to students and parents has been prioritized during the pandemic. Nutritional support was provided by the Program for Advancement through Health and Education (PATH), a social safety net program to support families of very low socioeconomic status. While schools were the distribution hubs for this program prior to COVID-19, meals or financial assistance for nutritional needs was distributed directly to homes during the pandemic. Simultaneously, ongoing support is provided by private partners for nutritional support. Lastly, to ensure access to psychosocial care, thirty-six helplines are offered across the country for parents to receive 'psychosocial first aid' as needed through the crisis.

Ensuring education efficacy

Officials confirmed that assessments will be completed by the Ministry to determine level of learning loss caused by the pandemic and to address gaps in learning. The Ministry has provided resources to primary and secondary schools for this intervention plan, and educators will use the results of these diagnostic assessments to develop intervention plans to address any learning gaps. Sectoral committees at early childhood, primary, secondary, and tertiary levels have been formed with relevant stakeholders to ensure interventions are appropriate for specific needs.

3. Successes and challenges of online learning implementation

Moving educators beyond the classroom

Officials noted that COVID-19 sparked an overdue change in mindset and education delivery across the education system. Indeed, with education primarily focused on in-class learning prior to COVID-19, officials observed there was little interest in improving practices. That said, officials found a divide between institutions in adapting to online learning practices. Institutions with progressive administration and educators, and who have proactively managed student assessment prior to COVID-19 adapted well to this transition, with practices that have translated well to the online environment. Conversely, lower performing schools with more conservative approaches to learning have not achieved similar results. Officials believe that national success during COVID-19 and beyond will require greater capacity for online learning across institutions at all levels, with a necessary adjustment of mindset among administration and educators.

To benchmark and share approaches across countries during the pandemic, UNESCO and UNICEF have brought together countries to highlight decisions being taken in different contexts. UNESCO has also initiated 'train the trainer' sessions in Jamaica to build capacity for online learning and the unique challenges adapting to this new modality encompasses. UNESCO has also offered youth empowerment initiatives to ensure students develop interest in returning to school post-pandemic. For these initiatives, parents are provided informational material to support this return.⁴⁴ Officials also noted that the University of the West Indies (UWI) and the Inter-American Development Bank (IDB) have collected and shared data on how countries are managing the pandemic and the efficacy of specific innovations to rollout online learning in a variety of contexts.

⁴⁴ The material includes live videos and presentations distributed through a variety of online channels (i.e. YouTube, Facebook, Zoom, Instagram). During live sessions, students and parents are able to send questions live.

Evolution in education administration

The Ministry has initiated a traffic light approach to signify status of operations in schools during COVID-19. Accordingly, *green* signifies warning, where guidelines and initial communication are provided to institutions; *amber* signifies if there is a spread, where heightened guidelines and resources for more distancing of students, sanitation materials, and PPE are provided; and *red* signifies school closure, with all in-class education transformed to remote teaching. This is a blanket policy for all schools at all levels.

Officials state that all decisions in the Ministry are documented and updated into a shared knowledge management database. Officials will be able to access and query information from this in the future as policies and guidelines require adaptation to make this possible.

Future developments in education

Officials affirm that COVID-19 has allowed for a push into new ICTs supported by an increased willingness of educators to adopt this technology in education. Officials confirm that a significant investment in technology will occur over the next two years due to accelerated ICT integration. Discussions are also ongoing to determine how many students and educators will need to attend schools in-person. Officials believe a 'blended future' in learning is likely where schools become a component of a blended learning or 'flipped classroom'⁴⁵ approach alongside online learning. A shift in resources from physical texts towards e-books and devices will also continue as well as the development of asynchronous materials for absent students, spaced learning, and blended and/or a flipped approach.

COVID-19 has further opened possibilities for collaboration and data sharing across the region. Officials confirm that a content management system (CMS) is used to store student lessons and is currently being shared with other countries. For example, lessons on thirteen subjects broadcast on Jamaican television was also provided to Trinidad and Tobago for distribution on local television.⁴⁶

Overall, officials confirmed improvements in technological infrastructure must be intensified and expanded within schools and into marginalized households. The Ministry aims to increase monitoring across the system to understand what is being taught and provide guidance to educators as needed in the use of ICTs. Furthermore, surveys and communication to ensure school principals can collaborate remotely are needed as this has been an ongoing difficulty during the pandemic. Finally, infrastructure to facilitate e-testing via the LMS will be expanded to ensure that assessments can be carried out with equal capacity online and face to face.

G. Trinidad and Tobago

Trinidad and Tobago has 38,518 pre-primary students, 136,085 primary students, 91,280 secondary students, and 92,515 tertiary students (UNESCO, 2020i). The division of population across two major islands poses unique challenges to national policy and operations in education, particularly during the COVID-19 pandemic.

1. Educational framework and use of ICT

In terms of sustainable development in education, Trinidad and Tobago has committed to "Leaving No One Behind" with the creation of a development plan, 'Vision 2030'⁴⁷. As part of Vision 2030, achieving SDG 4 is addressed under the theme, 'Putting People First: Nurturing Our Greatest Asset' (Trinidad and

⁴⁵ A flipped classroom approach is an education method where students access lessons and content outside of the class while exercises are completed in-class where educator support is available.

⁴⁶ Officials confirm that the government of Trinidad and Tobago requested support.

⁴⁷ Vision 2030' is predicated upon the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction, and the SIDS Accelerated Modalities for Action (S.A.M.O.A.) Pathway as these align to both the SDGs as well as 56 national goals.

Tobago, 2020). Accordingly, this theme “speaks to the centrality of citizens to the national development process and the importance of creating a more equitable and just society, in which everyone is allowed to contribute and to realise his or her full potential” (Trinidad and Tobago, 2020: 29). The country has developed a National Performance Framework (NPF) to monitor and evaluate its own adherence to Vision 2030 and relevant SDGs.⁴⁸

Overall, national ICT policy in the country is driven by the Ministry of Public Administration with the National Information and Communication Technology Company Limited (iGovTT) implementing projects as part of national policy. Expanding on this policy, and recognizing the “immeasurable role” (Trinidad and Tobago, 2020: 40) education plays in ensuring prosperity and growth, Trinidad and Tobago has explicitly committed to expanded access of education to ensure the curriculum keeps pace with improvements in technology. The government has done so within the ‘Education Policy Paper 2017-2022’ (Trinidad and Tobago, 2020: 40) and ‘Trinidad and Tobago’s National ICT Plan ICT Blueprint 2018 – 2022’ (Trinidad and Tobago, 2018: 29) which guides the Ministry of Education’s efforts.

To implement this policy, the government employs 46 ICT professionals at the Ministry itself, and 84 ICT technical professionals at secondary schools. The professionals in secondary schools ensure student and educator access to learning platforms, and provide troubleshooting and administration support. At the Ministry, these professionals lead procurement of devices for the Ministry itself and seven district offices as well as 489 primary schools and 134 secondary schools.⁴⁹

IT hardware availability for online learning

Previously, to address inadequate numbers of devices in the student population, laptops were provided to specific cohorts, including students moving from primary into secondary. This early plan had weaknesses in terms of a proper framework for implementation and adequate training for students. Moreover, there was need for clarity regarding ownership of the devices, and schools were also unprepared to accommodate safe storage of laptops.⁵⁰ These and other issues influenced the decision to discontinue this program. Instead, centralized computer labs were once again favoured before a large procurement in 2018 of 13,600 laptops were made available for in-school use with 60–110 laptops distributed to schools based on intake size. Beyond this government assistance, schools also purchase ICT devices with corporate funding or PTA contributions, fundraisers, or subventions.

Early on following the advent of COVID-19, iGovTT was consulted by Ministry of Education to source devices for students. By mid-2020, procurement exercises were ongoing for devices—with both government and private sector support—as this was recognized as “a break in the chain” towards widescale accessibility to online learning and examinations. In total, the government procured some 19,000 laptops in preparation for e-testing to supplement the number of devices for online examinations to be held in 2021.

Connectivity for online learning

From 2010 to 2020, Trinidad and Tobago increased its internet penetration from 48.5 per cent to 77 per cent (Chevalier, 2020). To continue this trend as part of Vision 2030 and the national ICT strategy, iGovTT was established to ensure enhanced public service delivery, including improved internet connectivity and bandwidth to schools across both Trinidad and Tobago. The enforcement of social distancing due to COVID-19 has resulted in an expanded role, with the government consulting iGovTT

⁴⁸ Through the analysis of relevant planning documents for adherence to SDG 4, it was discovered that nearly 45% of all documents were in partial alignment this goal with another 45% found to be in total alignment. See: Trinidad and Tobago (2017).

⁴⁹ These schools are government and government assisted schools (i.e. private schools).

⁵⁰ Children de facto owned these laptops while they must remain in good working order.

as technical advisors to increase efficiency of connectivity and provide online learning support by managing ICT infrastructure.⁵¹

Overall, national internet penetration was lowest in rural areas, which officials confirmed was an issue in both Trinidad and Tobago. To address this, discussions inside the Telecommunications Authority of Trinidad and Tobago (TATT) have begun to take place towards expanded coverage. Moreover, local telecommunications providers are also looking to partner with national authorities to ensure students can access online learning. The government is also forming community access centers (homework centers) to provide broadband and devices in rural communities. While these centers were in development pre-pandemic, the rollout of these centers has been delayed by health concerns related to social distancing.

Prior to COVID-19, the government aimed to enhance connectivity across schools in Trinidad and Tobago. In primary schools, subventions accessible to secondary schools have not been available, and therefore, the Ministry of Education and government are needed to drive ICT developments. Before COVID-19, the Ministry aimed to expand digital learning environments to additional elementary schools (110 primary schools would have access) but this is currently on hold due to the pandemic and legislative issues. As of July 2020, across Trinidad and Tobago, approximately 118 primary schools do not have a working internet connection, or have not submitted their connectivity status to the Ministry. To address device availability, the public sector investment program (PSIP), the government's medium-term strategic investment tool, will contribute TT\$5 million for this purpose.⁵² While the project was produced to match Vision 2030 with all documentation prepared for launch, a lack of momentum currently obstructs this project.

To address connectivity, secondary schools receive funding from government, with a portion allocated to ICTs. This funding ensures internet connectivity and maintenance, with 100 per cent internet penetration at the secondary school level.⁵³ The government has also reached the award of contract phase in pursuing wireless connectivity in all secondary schools and will extend the GovNeTT Kit (see footnote 147) to in-class learning as well as CXC assessments. Officials stated that tertiary institutions receive less focus from the Ministry than primary and secondary institutions. As the needs of these institutions often differ, officials confirm that these institutions typically drive the process of expanding connectivity without government support.

Officials stated that the lack of infrastructure in rural areas remains a problem across all regions of the country. Geography is a limiting factor with respect to coverage, where natural landforms, such as valleys, prevent internet distribution in many rural areas. The government is currently discussing this issue, with proposals submitted to the Telecommunications Authority of Trinidad and Tobago (TATT) to widen connectivity. Furthermore, local telephone companies have expressed interest in partnering with the government to expand coverage. The government is also developing community access centers (homework centers), providing broadband and devices in rural communities.⁵⁴

ICT training in education

Officials observed that the education and training system of Trinidad and Tobago is increasingly centralized around the use of technology. As part of the 'Principals Leadership Training Programme', management at the school level were trained in, amongst other relevant subjects, the use of data and the inclusion of ICTs in administration and operational practices (Trinidad and Tobago, 2019: p. 48). This

⁵¹ Specifically, increased activities around domains and security.

⁵² Mechanisms of expenditure within the government of Trinidad and Tobago are regular expenditures, PSIPs, and the Infrastructure Development Fund (IDF).

⁵³ This connectivity of 35-100mbps as well as internet security (known as the 'GovNeTT Kit') is provided by a triparty agreement between iGovTT, Fujitsu, and Telecommunications Services of Trinidad and Tobago (TSTT).

⁵⁴ This project was in development pre-pandemic.

practice was complemented with parallel efforts to increase laptop access, as discussed above, through the 'ICT Readiness in Education' programme, which saw an 85% penetration of modern ICT use in secondary schools by July 2019 to facilitate education and CXC examinations.⁵⁵

Furthermore, the Ministry's 'ICT Teacher Professional Development Programme', in alignment with the UNESCO ICT Competency Standards Framework, has trained 2,180 educators by 21 June 2019 (Loop News, 2019). Training through this program is "platform agnostic", aiming to train general ICT skills more than specific technologies, with a wide range of platforms addressed.⁵⁶ The training encompasses reward structures, gamification, and other learning concepts relevant to ICTs with training sessions often completed online (using MS Teams) to ensure teachers work with ICT technology as they learn.

Officials expressed the belief that increased training in ICTs amongst educators will lead to the spread of ICT skills to other teachers and students, with knowledge spreading organically through the system without the need for formal training for every stakeholder. Thus, students are introduced to computers and trained on them by educators, although limited online learning content was accessible prior to COVID-19. This lack of content has seen the private sector⁵⁷ addressing this need to assist parents in home-schooling children during the pandemic.⁵⁸

2. COVID-19 response in educational sector

In 2018, the Ministry of Education began a strategic visioning of what ICT support might look like in the future, including online platforms and remote work, providing a foundation for addressing the COVID-19 crisis. This led to the decision of open source platforms for online learning, including a school learning management system (SLMS) based on the open source Moodle LMS and an EMIS (education management information system) supported by extensive teacher and stakeholder training. The SLMS allows the Ministry and its educators to "document, track, grade, report and deliver electronic learning to students" (Trinidad and Tobago, 2020: p. 40). The Ministry also recognizes that while issues of accessibility and inclusivity persist, activities are underway to ensure specific groups of underprivileged students, including students with disabilities, students in need of financial assistance, ex-prisoners, and vocational students, receive equitable access to education through programmes tailored to these populations (Trinidad and Tobago, 2020: p. 40).

As with other countries in this study, the Ministry initially promoted emergency online learning in March 2020.⁵⁹ With 75 per cent ICT training penetration among educators, COVID-19 required extension of the SLMS for remote learning. This ensured that grades, attendance, and assessments could be recorded or distributed as needed. Currently, 4,360 educators are using this platform, either trained by the Ministry or self-trained, with the online learning curriculum a mixture of government provided and teacher-generated content.

Further activities were also undertaken to enhance capacity during COVID-19. For administrative support, online access was provided to parents and guardians to view assignments and grades. E-book support was also provided with 'per student licensing' to increase access during the pandemic. Lastly, a

⁵⁵ In absolute numbers, this totalled at least 40 laptops for each secondary school. See: Trinidad and Tobago, 2019, p. 49.

⁵⁶ Specifically, YouTube, Moodle, Office 365 (including Teams, etc.), Quizlet, and Google Classroom.

⁵⁷ For example, see: <http://pennacool.com/>. Pennacool is a private education content provider sponsored by Flow, a local telecommunications provider, which offers free access to variety of content for Secondary Entrance Examination (S.E.A.) and science, mathematics, and languages.

⁵⁸ Officials stated that a working group has been setup to develop education policy around homeschooling. The practice has expanded considerably during the pandemic with much learning at home often a de facto form of homeschooling given the mediation of learning provided by parents.

⁵⁹ Anticipating that schools may be soon reopened officials note that both blended and online approaches were considered.

chatbot named 'ADA'⁶⁰ was made available as a support mechanism for educators where limited support and mentorship is available.⁶¹

In August 2020, the Ministry developed a hybrid strategy⁶², using a number of tools and platforms to ensure learning continuity. This primarily consists of online content which covers the majority of curricula at the primary and secondary levels.⁶³ While the online content is partially interactive, efforts are underway to make the conversion to interactive content quicker, including a collaboration with Notesmaster and Commonwealth of Learning (COL) to provide 26,000 content items developed for teachers and open educational resources across subjects.

Officials believed that overall collaboration and speed of processes had increased during COVID-19 to address the specific needs of the pandemic. For instance, during the system crash of e-learning services in early 2020, emergency efforts were necessary to return service to the platform.⁶⁴

COVID-19 response in primary, secondary, and tertiary education

To reduce the spread of COVID-19 in early 2020, all childcare and educational institutions were indefinitely closed (Trinidad and Tobago, 2020). While online learning content was not universally available pre-pandemic, several schools were able to continue their administrative activities (grades, performance) and lessons by using PowerSchool, a private learning platform. In these cases, PowerSchool was further used to provide information to parents as the situation developed and to distribute assignments to students. Many schools without access to this software implemented Zoom sessions to continue lessons through online synchronous classes.

Recognizing the need to facilitate remote learning across all schools, the Ministry of Education expedited the launch of its online learning platform, the School Learning Management System (SLMS) or TTEarn, in April 2020 one month after the pandemic began (MOE TT, 2020). The SLMS featured resources for students across early-childhood, primary, and secondary levels and continues to be available in the fall term which started in September 2020.

In preparation for the fall term, the Ministry developed guidelines to address education delivery at the primary and secondary school levels. The guidelines do not differentiate between primary and secondary, favouring a hybrid learning approach at both levels. Various modalities have been made available to ensure education reaches each student in Trinidad and Tobago. These will assist educators to carry out the proposed timetables of four one-hour sessions per day as part of the modified curriculum guide prepared by the Ministry for the term.

Officials shared insights on the adaptation to the pandemic within tertiary institutions.⁶⁵ Generally, tertiary institutions, particularly those with campuses in multiple Caribbean nations, benefitted from early adoption of connectivity and remote learning as part of their course offerings.⁶⁶ For instance, the University of the West Indies (UWI) provides both in-class learning as well as access to The Open Campus, a fully online learning platform which supports in-class, online and blended learning. Therefore, as the required infrastructure was already in place, along with the educator training

⁶⁰ ADA stands for 'academic digital assistant'

⁶¹ Where educators themselves are limited, particularly in rural areas, ADA's capabilities to ensure there is someone to facilitate basic lessons to ensure education continuity.

⁶² A hybrid or flexible learning approach means that educators are primarily responsible, alongside parents in a supervisory role, to ensure students continue education by whichever modalities are available to students.

⁶³ This includes content previously mentioned as well as content sourced online.

⁶⁴ Officials state this was caused by excessive simultaneous visitors (exceeding 100,000) on the platform beyond key stakeholders.

⁶⁵ Officials noted, however, that the Ministry of Education's activities primarily focus on early childhood education, primary, and secondary education.

⁶⁶ For more information on earlier adaptations to distance learning in the Caribbean's subregion's tertiary institutions, see 'Caribbean Subregional Context' in Section I, Part II of this study.

necessary for online learning, UWI locations were able to move courses online to its institutional learning platform (UWI, 2020).

Addressing issues of access

With an expedited rollout just one month after lockdown⁶⁷, TTLearn remained inaccessible at times, delaying communication and transfer of assignments between teachers and students. This issue was exacerbated by a lack of internet access and appropriate devices across the student population.

In August 2020, it was estimated that nearly a quarter of the total student population in the country (60,000 students) did not have devices to access the Ministry's e-learning platform (Doodnath, 2020). While plans were put in place to procure 30,000 laptops and 30,000 tablets for 2021, emergency measures were implemented ensure continuity of education in the fall term of 2020.⁶⁸

Indeed, to address that lack of access, the guidelines for the fall term categorized students as either having access to devices and connectivity, 'category 1', or not having access to devices or connectivity, 'category 2', in order to ensure alternative modalities are provided where necessary. For students in both categories, the overall curriculum was reduced to core objectives and skills with print materials provided to educators to support teaching of this curriculum via remote learning. Training was also provided to all educators prior to the school year for navigating the SLMS and teaching in an online environment.

For category 1 students, the SLMS is used for learning material and assessment distribution and upload with interactions between educators, students, parents and the Ministry also carried out via ICTs. In early 2020, a large renewal of government ICT infrastructure was underway, including support for the SLMS. When the pandemic struck Trinidad and Tobago, iGovTT experienced increased demand from areas previously not requiring assistance, and expanded technical support was necessary to adapt to that demand at primary, secondary and tertiary levels.⁶⁹ iGovTT has worked with Internet Service Providers (ISPs) to expand internet access in Trinidad and Tobago.⁷⁰ As officials stated, the government is "very cognizant" of the specific needs of the population, having provided learning modalities beyond online learning to facilitate education during the pandemic. However, the long-term objective is for iGovTT to work alongside ISPs to increased internet penetration with sufficient security, reliability, and bandwidth to allow for online learning across the entire student population.

For Category 2 students, printed packages are the primary modality, composed of learning content and practice tests. Extra assistance is also provided through television and radio programmes, including preparatory lessons for the Secondary Entrance Assessment (SEA). During the pandemic, two television stations⁷¹ were accessed by the Ministry to provide education programming, and radio programs were developed to supplement language learning. Furthermore, for CXC examinations occurring during the previous term, a local cable television provider supplied on-demand Caribbean Advanced Proficiency Examination (CAPE) and Caribbean Secondary Education Certificate (CESC) tutorials. Officials determined that television is accessible across all economic strata and therefore remains an important medium for students to access relevant learning content. As the term continues,

⁶⁷ System was setup previously between MOE and stakeholders, while COVID-19 expedited the developed of TT learn for students.

⁶⁸ The government reached this count of students without access to devices (this number is 65,000 by some estimates) by using the number of students who access the in-school nutrition program as a proxy for the marginalized student population.

⁶⁹ Officials confirm that a committee was formed to deal with this increased workload, which overlapped with the foregoing renewal project causing delays. Officials note that activities have since decreased to pre-COVID-19 levels as iGovTT has adapted to ongoing circumstances.

⁷⁰ These ISPs have confirmed geographic issues with internet connectivity are ongoing, a major obstacle for bringing students online.

⁷¹ While government television channels provide information for mediating learning from home, cases exist where students did not have access to any mobile technology or television and were in jeopardy of being left behind.

the Ministry stated it will maintain constant communication with teachers to ensure they can pivot efforts to these varied modalities as necessary.

In addressing students with disabilities, officials confirmed that a highly accessible platform was the primary aim when deciding which SLMS to use. The SLMS is currently adapted for use by students with ADHD and visual impairments with a variety of built-in accessibility features to its open source foundation (i.e. Moodle) including speech-to-text, contrast adjustment, as well as an accessibility checker which ensures accessibility of content. The Ministry has also provided scheduled sessions for guidance officers and counsellors for each class of students to ensure those who require psycho-educational support receive it. Further, for students with special needs, Special Education Officers will be available to provide “direct individualized and therapeutic interventions for students with diagnosed disabilities or other identified special education needs”. Special needs students are also categorized in terms of access to devices and connectivity (see above), and similar adjustments, for instance, paper-based learning packages, are also provided to ensure learning continuity. As needed, face-to-face engagement is also available in locations where social distancing measures can be upheld.

Along with inadequate infrastructure and connectivity, the Ministry has found that families of students who cannot afford basic nutrition and benefit from the school feeding program are generally located in rural areas. Lower socioeconomic status in these areas results in reduced levels of education attainment and lower access to education due to limited connectivity. This creates a mutually reinforcing pattern, undermining the prospect of raising the living standard. Indeed, this is confirmed by the majority of printed materials, and educational television programming, being distributed in these areas.

The Ministry has also addressed the issue of education continuity during the pandemic for undocumented migrant and refugee children to the islands from neighbouring Venezuela. The curriculum division of the Ministry has worked with the Catholic School Board (CSB) and NGOs to ensure these students can access devices,⁷² that the SLMS can support native languages (specifically Spanish), and ensure compliance of materials (i.e. printed worksheets in Spanish for distribution and return for correction).

Stakeholder engagement

To address stakeholder concerns, the Minister of Education conducts stakeholder group meetings regularly. Participants include Parent Teacher Association (PTA) groups, principal groups, and special education groups to ensure that all concerns are addressed related to connectivity, device accessibility, learning approaches, and curriculum structure. Lessons learned from these meetings have provided the basis for guidelines distributed for all stakeholders.⁷³ Importantly, educators are required to conduct attendance for each of their classes and absences communicated to the Ministry and parents. By this approach, the Ministry aims to pinpoint areas of difficulty where students are not participating, and determine where students require access to another modality. For example, should certain television lessons be recommended, parents are informed of the television lesson schedule to ensure children are available at the time of airing. Parents and educators must also establish communication loops through various mediums—e.g. WhatsApp and/or email—to ensure monitoring of performance and attendance. Educators are also asked to gather and pass along any concerns from students and teachers to the Ministry which will result in changes to the guidelines as needed. Lastly, orientation activities for

⁷² By providing recommended specifications of devices, while CSB and NGOs provide on the ground distribution.

⁷³ Officials state that the Ministry aimed for a cohesive strategy in order to transition from emergency education measures in March to ensuring every child can access education via at least one modality.

parents, students and teachers are mandated by the guidelines to ensure all stakeholders are informed on how the term will proceed.⁷⁴

Since COVID-19, PTA meetings have taken place twice per month for each of the schools. These meetings provide a communication loop to ensure information is disseminated quickly as school closures occurred in the early weeks of the pandemic. Executive meetings, including school principals, and general meetings, including parents and teachers, have allowed concerns or issues to be addressed. While COVID-19 has disrupted these in-person meetings across the country, online meetings are being convened via Zoom and other software for administrative processes.

Budgetary adaptations

Officials stated that COVID-19 has expedited the release of funding to address the unique issues currently being faced in education. Specifically, this has meant increased response time on email correspondence for procurement activities as well as the speed of budgetary processing. However, public sector regulations have required that financing remain the same without extra funds added to the budget. Beyond government financing, the Ministry has launched an “Adopt a School” device donation program. The program targets corporations in Trinidad and Tobago, industry bodies, and alumni associations to provide donations for devices for students across the country.

Ensuring education efficacy

Officials state that emergency measures taken by the government and schools in the early months of 2020 did not prioritize education efficacy across all modalities, and although TTLearn is now fully implemented, efficacy of education has yet to be addressed.⁷⁵ However, officials expressed the view that, as the psychological shock of COVID-19 has had a negative effect on student performance, any attempt to conduct an evaluation of progress would be inaccurate.

Nevertheless, guidelines provided to all stakeholders encompass continuous evaluation across all modalities. Thus, an assessment schedule to ensure assessments are distributed by educators and resubmitted either online or at drop-off locations will be initiated.

In context, officials note that learning efficacy is not the concern of modalities or assessment strategies alone. For example it has been observed that many parents or guardians, unsure future family income, tend to ascribe low priority to education in the household. In other circumstances, there is high incidence of shared devices or limited connectivity in the home. In others, students may be left unsupervised if parents must leave for work. In all these circumstances, low-income and rural families are most deeply disadvantaged by these factors.

Finally, an important component of ensuring education efficacy is to consolidate data processing from across schools for more efficient analysis in addressing issues. To this end, the Ministry is pursuing a comprehensive data storage mechanism as part of the EMIS, which allows greater extrapolation of data. Previously, this data collection would have been disaggregated into spreadsheets instead of a central repository of information, whereas the repository provides greater access for officials and decision makers.

⁷⁴ Orientation videos will be accessible via TV and Ministry of Education social media from September 1st - 5th- both parents and students are expected to avail themselves of the information provided

⁷⁵ However, officials believe that this is difficult to determine, with many students not receiving level of support needed to continue learning as well as the psychological shock of COVID-19 having negatively affected students as well, thereby inhibiting learning at all levels.

3. Successes and challenges of online learning implementation

Moving education beyond the classroom

Officials believe future education will favour a blended learning approach as an outcome of the COVID-19 pandemic. The pandemic experience has proven that education can be conducted from a distance without degradation in quality of delivery. However, curriculum reform would be needed, including ensuring that students do not simply learn in preparation for one exam, instead testing is used to learn throughout the school experience with electronic delivery playing a larger role.⁷⁶

Officials observed that educators and administrators have adapted to the realities of education in the pandemic. Early challenges with Zoom and other tools (such as WhatsApp and Google Classroom) were overcome with assistance from students and parents. Furthermore, officials observed a “massive increase” of YouTube videos being produced for students and parents which did not exist before COVID-19, with content across subjects and social learning between peers. However, due to COVID-19 restrictions, the Ministry has relied on educators to provide services beyond pre-COVID-19 duties, with many utilizing personal time and resources to do so.⁷⁷ Moreover, educators with families and other personal responsibilities must now balance these demands of caring for their loved ones in a time of self-quarantining and social distancing, while planning lessons, posting material and creating online assessments.

Beyond ICT-related issues, the inadequacy of teachers and such challenges as insufficient access to food for some students impacted the efficacy of education nationwide. Disabilities were addressed as a major issue even prior to COVID-19, with inclusive education and integrated learning⁷⁸ increasingly favoured in recent years.

Evolution in education administration

Officials stated that administrative issues in adapting to remote learning prevented students from learning in the early days of the pandemic. However, lessons learned from the previous term, as well as insights gathered from interactions with key stakeholders, have since improved the capacity for administering remote learning throughout the country.

The government has also recognized the need for sufficient teachers and staff at all levels to be prepared for: the specific needs of special education; adapting the system to ensure students meet the workplace demands of the 21st century; and the integrating of ICTs and technological innovations at all levels (Trinidad and Tobago, 2020: p. 42). Indeed, officials noted that the Ministry and educators are conscious of issues related to equitable access of these technologies, where the benefits to lifelong learners, learners in rural locales and those with specific disabilities are considerable. To this end, the Ministry confirms that all approaches and best practices to administer education have been documented in various forms for internal and external reporting.⁷⁹

Future developments in education

Officials stated that the update to infrastructure earlier this year was critical to “futureproofing services to a considerable degree”, allowing for more robust implementation and security. The government has also approved a cloud policy and has increased the use of cloud services towards greater agility to scale

⁷⁶ See ‘testing effect’ in Section III.

⁷⁷ Provided that the educator has their own devices and connectivity at home

⁷⁸ Where students with disabilities learn alongside those without disabilities. Officials confirm that an online meeting held to discuss this in September 2020.

⁷⁹ This have taken the form of project briefs, training plans, guidelines, policies and cabinet minutes which have been captured digitally for future reference.

services as needed. Officials believe more digitization, as per the government push in this direction, will be beneficial to all areas of education.

However, the largest adaptation during COVID-19 according to officials is the shift in mindset—particularly, the recognition that technology is not just for leisure but can provide serious improvements of business and impacting citizens as a whole, especially in difficult times. Officials state an increased trust in technology has been critical to this shift. By exposing a larger number of elementary school age children to technology as part of the normal course of their lives, officials believe students will experience technology as a positive impact on their lives.⁸⁰ To achieve this, officials state that all stakeholders should be engaged towards a full overhaul, or a comprehensive review at minimum, of the entire education system, and COVID-19 has provided the ability, timeframe, and ideas to move forward.

The question of where education primarily occurs—online, blended, in-class—has also been raised by COVID-19, with parents taking an increased interest in the future of education. While a majority of stakeholders believe that the responsibility for education will fully remain with the government post-pandemic, officials estimate that 25 per cent of the population have expressed interest in home-schooling, and may use online learning to facilitate lessons. This may produce a large change to how education is conducted at the pre-primary, primary and secondary level.

Finally, community centers were in development to ensure that low-income students and citizens were trained in digital skills. With funding provided by the country's Universal Service Fund (USF) and administered by the Ministry, rural and low-income areas would be targeted by this initiative. The first community centre was developed in the Carenage area of Trinidad and Tobago; however, opening was halted as the countrywide lockdown began. Regardless, the development and expansion of this program will be component of the next fiscal year.⁸¹

Overall, officials believe online learning advances will be bolstered by regional and global cooperation, such as iGovTT's commitment to sharing best practices and learnings within relevant organizations⁸², resulting in enhanced strength and coverage of infrastructure across the country.

⁸⁰ This will only accelerate as they become digital natives and benefit from new services, such as online learning, as they age.

⁸¹ October 2020 – September 2021.

⁸² CARICOM, Caribbean Telecommunications Union (CTU), and REDGEALC.

III. General findings

The case countries addressed in this study highlight the diversity of experiences that characterize online learning adaptations in the Caribbean during the COVID-19 pandemic. While each case illustrates online learning efforts specific to national contexts, several general observations, particularly with respect to common challenges and trends, can be made across the subregion. These challenges and wider trends are presented below, some addressed in greater detail within the context of the final recommendations made in this study.

As officials from all survey countries noted, the COVID-19 pandemic took ministries responsible for education and technology as well as other key stakeholders in each country by surprise, with contingency planning and national ICT policies generally unprepared. Indeed, while national ICT policies were either well established or in-development, many assumptions required adaptation in the face of COVID-19. Further, previous initiatives concerning ICT in education often centered around classroom-based learning, and were ill-suited for wide-scale online distance learning. Therefore, many countries experienced a period where adaptation was necessary, and the challenges faced during this period were common to all case study countries.

First, addressing access to online learning among marginalized populations and students with special needs remains an area of difficulty for all case countries. While the size of population groups varies across these countries, persons with disabilities, students from rural and/or poor areas⁸³, indigenous students, migrants, and other marginalised groups were shown commonly subject to reduced access to online learning. While efforts to expand access to these populations are progressing, officials recognize the need to ensure education continuity to all, particularly during emergency situations. Furthermore, data collection efforts to inform evidence-based policymaking and adaptations to COVID-19 have been insufficient to ensure online learning access across the population and efficacy of online learning. Countries have implemented a variety of approaches to improve data

⁸³ Including either those separated by bodies of water in multi-islands states, such as in BVI, or located in distant hinterland regions, such as in Guyana.

collection, including EMIS or centralized database as the favoured approach, as COVID-19 has illustrated the need for a robust, consolidated source of relevant data to support roll-out and administration of online distance learning. However, data collection generally remains a challenge with inconsistent collection mechanisms, thereby making access to and efficacy of online learning difficult to assess.

Beyond data collection, the pandemic has illustrated the inconsistencies of adaptation approaches across institutions in case study countries, where the lack of uniformity at specific education levels (i.e. primary, secondary) to including online learning have led to disparate costs and a lack of economies of scale for procurement. For example, where individual schools have chosen learning platforms and systems before national recommendations were communicated, national governments must now work to consolidate disparate systems, adding complexity to achieve a uniform approach. Budgetary changes to ensure adaptations to COVID-19 also presented common challenges. Specifically, legislative changes to address either new budgetary needs or reallocations of pre-existing budgets were delayed where constitutional amendments required in-person voting, a practice obstructed by the pandemic. Further, as budgets were often set for a fiscal year, officials required alternative means of addressing financial requirements brought about by the pandemic.

By all accounts, officials expressed that COVID-19 has accelerated the advent of online learning technologies, from the deployment of education technology to supporting measures, including educator ICT training. Indeed, all countries and regional organisations included in this study have taken steps during the pandemic to increase online learning capabilities at all levels of education. For some, such as CXC, Jamaica and Trinidad and Tobago, these efforts have sought to expand pre-existing initiatives and/or technologies to address the need for education continuity during COVID-19. For others, such as BVI, Barbados and Guyana, emergency efforts were necessary to both deploy online learning and upskill educators. These training efforts have addressed proprietary learning platforms and/or tools (e.g. BVI), national developed LMS (e.g. Jamaica, Trinidad and Tobago), or platform/content agonistic approach to online learning training (e.g. Trinidad and Tobago). More often, a combination of these learning objectives was necessary.

To expand access, governments have introduced zero-rated websites in collaboration with local telecommunications companies, covering educational domains and/or learning management systems. The consolidation of online learning content on specific websites was also a general approach, which, for instance, saw consolidation of content into an app (Jamaica) or on a government-maintained website (Guyana). Likewise, large-scale device procurement exercises are underway in all case study countries, with funding sources ranging from government approved budgets (Barbados), to private sector donations, loan programs (BVI), and bring your own device initiatives (Jamaica). Typically, some combination of initiatives was required to address shortage of devices at all levels, which remains a challenge as countries across the world each expand hardware availability with demand outstripping supply.

Specific learning modalities used are commonly demarcated by grade level, with traditional modalities (i.e. radio, television) favoured for primary students while online interactive modalities are directed towards secondary and tertiary students.⁸⁴ Furthermore, COVID-19 has also seen an *all at once* approach to online learning introduction at all levels of education supersede the staggered approach pre-pandemic. To this end, guidelines in conducting online learning and appropriate use of ICT hardware have been developed by education ministries, such as in Barbados and Trinidad and Tobago, to ensure consistent application of online learning at the primary and secondary levels. On the other hand, tertiary

⁸⁴ This is, however, only a general trend, as online video conferencing and traditional media content were also applied to primary and secondary/tertiary education, respectively.

education across the region has benefited from early adoption of online learning technologies, mainly to support distance learning well prior to COVID-19.⁸⁵

Despite the difficulties of communication while social distancing is mandated, stakeholder engagement across all case study countries has also expanded, with communication methods between educators and administrators, government officials, and parents and students strengthened using digital ICTs. Various channels, from social media to television and radio, were used as both a method for distributing important information and gaining feedback from parents and students to adjust ongoing efforts. Overall, the surveyed countries confirmed that online learning requires harmonization of efforts across multiple government departments and stakeholders beyond initial adaptations, with increased stakeholder engagement essential to this process.

Finally, officials from the survey study countries stated that ongoing efforts will not be wasted in the post-pandemic world. The surveyed countries had previously envisioned that a form of blended learning would be deployed in-class. This vision has now expanded to distance learning, benefiting directly from the introduction of technologies and ICT training currently underway.

⁸⁵ For instance, the Open Campus, the learning platform developed by the University of the West Indies (UWI).

IV. Best practices and recommendations

Following from the case studies above, several best practices and recommendations are proposed to increase the effectiveness of online learning in the Caribbean and ensuring greater inclusivity across all student populations. Indeed, online learning in the Caribbean is a challenging proposition, but “an essential one” (Porto, 2019a). These best practices and recommendations provide a sustainable approach to expanding and strengthening online learning across the subregion.

A. National governments, supported by regional organizations, should promote flexible and inclusive learning systems across all levels of education

1. Online learning implementation

While the COVID-19 pandemic is unprecedented in the modern world, the subregion’s vulnerability to extreme weather events and climate change impacts supplies a very different reason for ensuring a strong, distributed online learning environment for its citizens. Emergency education is often needed in many Caribbean nations following extreme weather events, and national education systems would benefit from a robust online learning approach to enable learning continuity in disaster situations, such as that reported in BVI after the 2017 hurricane season. Indeed, online learning holds great promise for learners across the Caribbean to address the need for sustainable distance learning, and the transition from traditional in-class learning to online learning environments provides numerous advantages.⁸⁶ Beyond the COVID-19 pandemic and extreme weather events, online learning’s capacity for remote education at scale provides obvious benefits for Caribbean learners. This is especially the case in

⁸⁶ Generally, ICTs in education can contribute to universal access to education, equality in education, the delivery of quality learning and teaching, teachers’ professional development and more efficient education management. See CARIRI, 2020.

multi-island states and territories, as is the case in BVI and Trinidad and Tobago, or in countries with vast inland regions, such as Guyana.

However, any initiative to expand online learning should be adapted to local context and limitations, and a number of key constraints must be addressed to ensure the success of implementation and sustainability. As EdTech Hub suggests, key constraints for using online learning schools at scale include the over-extension of education management and data collection systems, slowing of student progress against formal curricula, lack of access to technology or suitable learning environment, and wide variance in quality across educators delivering remote education (EdTechHub, 2020).

To address these constraints, a number of specific recommendations follow to lead a sustainable transition to online learning. It should be noted the recommendations are not listed in order of importance, and do not represent a sequence to achieve a robust online learning program. Each of the factors should be evaluated during the initial planning stages and consistently reevaluated through each stage of introducing online learning to inform current status and future goals of an online learning program.

Expand and strengthen connectivity

Two foundational technologies are necessary for online learning: internet connectivity and online learning ready devices. We will first address internet connectivity. While internet penetration⁸⁷ varies widely across the Caribbean, an average of 68 per cent penetration indicates that a large portion of the population lacks internet access (Internet World Statistics, 2019a). However, even for those who are counted as internet users, this does not necessarily guarantee online learning access. Indeed, for both synchronous and asynchronous online learning, consistent access to a quality internet connection, often for long periods of time, is required. Analyses have shown that many available access methods fail to meet the minimum recommendations for online learning (Trucco and Palma, 2020). For instance, mobile Internet connections provided through prepaid plans often limit download capacity and bandwidth, thereby limiting students' ability to access "learning platforms and other channels put in place for educational continuity" (ECLAC and UNESCO, 2020: p. 6).

Therefore, to ensure connectivity for online learning, governments and ministries may take a variety of actions depending on the context. For instance, negotiations with local telecommunications companies may allow for *zero-rating of education websites* to ensure access is free for all students, as was done in Barbados, BVI, and Guyana. Furthermore, *lifting data caps* can ensure continuous access to education websites and services, as can *providing free SIM cards* to students, bypassing data limits imposed by recurring or pay-as-you-go data plans. Where bandwidth through existing ICT infrastructure is limited, *bandwidth shaping* can also be used to ensure web traffic on educational websites and services are favoured over all other traffic to ensure increased internet activity does not affect continuity of education. Further, *Universal Service Funds*⁸⁸ may also be directed to the expansion of internet services to remote and/or marginalized regions - as Trinidad and Tobago has used to provide connectivity to rural areas - as can corporate incentives such as *tax benefits and/or special economic zones* to accelerate the expansion of infrastructure, services and support.

These mechanisms are particularly important where water barriers are present, as is the case between remote and less inhabited islands of a country or territory. As the case studies have shown, significant percentages of the region's population exist in these less inhabited areas. To achieve penetration in these areas, governments should increase incentives to expand connectivity to these areas such as lowering deployment costs through stable regulatory frameworks; reducing sectoral

⁸⁷ Internet penetration is defined as the percentage of the total population in a particular country or region who use the internet. While definitions vary on what constitutes an internet user, the definition used to provide this statistic is anyone who has "available access to an internet connection point" and "basic knowledge required to use web technology" (Internet World Statistics, 2020).

⁸⁸ See Bleeker, A., 2019.

over-taxation on broadband services, which also reduces end-customer expense; increasing competition; and introducing monitoring and measurement frameworks to ensure service stability and growth (OECD and IDB, 2016: 16). Furthermore, government should consider approaching inclusivity on a regional level where possible (as many initiatives have already done—see 'Background' section above) and take a multiple-stakeholder, cooperative approach, ensuring public participation through all stages of deployment and maintenance (Fonseca-Hoeve, 2017: 5).⁸⁹ Lastly, support systems and communication campaigns should complement the expansion of internet for online learning. This may include *community centres providing free connectivity* (i.e. community hotspots, such as the centers in Trinidad and Tobago) for access and/or downloading of materials as well as troubleshooting and regional support through SMS.⁹⁰ Of course, during a pandemic such as COVID-19, public health guidelines should be enforced at these centres, with appropriate use of PPE and social distancing. No matter the mechanisms chosen, affordable services to ensure continuous access among the local population is critical.

Expand adoption of online learning ready devices

As mentioned, the second of two foundational technologies on which online learning depends is online learning ready devices. This typically refers to tablets or laptops⁹¹ that meet technical specifications to support the learning goals for a particular cohort of students. Importantly, technical specifications and technology selection should *follow* learning goals, not vice versa. This means that until learning goals are clear, the modalities to reach this goal should not be chosen (Trucano, 2014). Once the needs are identified, however, national governments and relevant ministries may increase device penetration across the student population as needed.

To address the challenge of device access, which as mentioned is an issue across all case studies countries, many approaches are available to policy makers. For instance, large scale device procurement programs, as have been undertaken by many countries in the subregion prior to or following the spread of COVID-19, are a favoured approach with the goal of achieving a 1:1 ratio of access to devices for students factoring in yearly population growth. These exercises are characterized by large, multi-year agreements with vendors, and seek to address device access across multiple cohorts and education levels, depending on the level of demand and size of the student population. Beyond 1:1 assignment of devices, such procurement exercises may also facilitate centralized loan programs and device sharing, a practice particularly useful where device numbers are limited or other modalities exist to ensure learning continuity at particular levels (i.e. television, radio, or printed materials for elementary school students). Barbados' procurement exercise with the People's Republic of Kenya, Jamaica's 'Bring your own Device' program, and Guyana's GPE funded procurement exercise demonstrate the diverse mechanisms for increasing device penetration.

To achieve one or many of these approaches, several key considerations should be taken into account. First, a central executive and/or office, depending on the scale of the program, should be established to lead the effort and ensure program sustainability long-term. In Barbados, the appointment of a director of reform to oversee future developments across the education system provides a fitting example. Second, as with the foregoing recommendation on clarifying goals prior to procuring technology, determining the intended outcomes of successful program implementation and operation is important, requires ongoing monitoring, and will provide essential direction for all stakeholders. Third, stakeholder engagement is essential, where each step of the process should ensure

⁸⁹ See OECD and IDB (2016) and Fonseca et al (2017) for comprehensive recommendations applicable to the Caribbean.

⁹⁰ For full listing of potential strategies, see: Trucano, 2020.

⁹¹ See Reeves and Nass, 2003. Smaller device monitors are limited in terms of navigation and display less content when in synchronous learning sessions. Furthermore, research shows that larger screens increase memory of what is learned. Therefore, larger devices should be favoured for online learning whenever possible.

expertise and feedback from relevant private and public enterprises - as well as civil society - are solicited and addressed across the program lifecycle. While stakeholder engagement was demonstrated in each of the surveyed countries, efforts should be continuously strengthened across each of the foregoing groups to ensure broader, more robust uptake of online learning initiatives. Fourth, when choosing a program, a realistic outlook on speed of achieving program goals (i.e. benchmarked and compared against programs in similar contexts) should be fostered, balancing short-term demand against long-term sustainability. COVID-19 has made such planning difficult, but governments should strive to consolidate emergency actions into a long-term strategy as soon as possible once education continuity is secured at all level. Finally, it is not enough to provide devices in the hope that online learning will occur without user assistance. A plan should be in place to ensure student and educator onboarding and appropriate training, as well as maintenance and replacement of devices. Sustainability is essential to any plan to support onboarding and training for all users, as are continuous feedback from stakeholders and assessment of program effectiveness to reorient efforts to maximum impact.

Furthermore, where centralized learning is disrupted, as is the case during COVID-19, device sharing will require additional logistical support to allow for exchange of devices while maintaining national health guidelines. Yet even full device penetration (i.e. 1:1 ratio of devices to students) requires a coordination strategy, with hotlines for troubleshooting and maintenance for tablets and/or online help and centers for safe drop-off and pick-up of damaged or broken devices, respectively.⁹² These coordination activities must be factored into the overall strategy for learning continuity as well as the budget for these activities. As the case studies have shown, one-time procurement activities that fail to consider device maintenance or, more generally, program sustainability are often undermined by changes of government and fall quickly into disrepair, deterring future efforts to provide devices to students. Therefore, careful long-term planning is critical.

Development of a unified vision for curriculum and content

As case study officials expressed, online learning tools and content are in constant development, and selecting the appropriate means of achieving education goals can be a daunting task.⁹³ It is important to first recall that learning outcomes or goals are most important (IU and Aga Khan, 2018), and therefore content should be aligned with curriculum goals. Further, technologies to support learning should not be decided before goals or content, as both will inform which technology and tools are necessary to host and distribute the appropriate content.⁹⁴ Therefore, large scale changes to education, particularly those which require large expenditures, such as the procurement of devices as was done in many Caribbean countries in response to the COVID-19 pandemic, needs to be informed by curriculum goals and content decisions, not simply as a directionless decision to 'modernize' learning.

Importantly, online learning does not simply constitute the digitization of traditional, in-person lessons. Instead, specific capacities need to be developed by both educators and students (see training recommendation below), and certain development principles should be followed.⁹⁵ In terms of content, either pre-existing content, adapted to local contexts as needed or content designed in-country by stakeholders in a national context can be used. For pre-existing content, the use of Open Educational Resources (OERs) is an impactful way of ensuring a standard approach to a variety of subjects across curricula, as Trinidad and Tobago, the OECS and BVI have included in their online learning curriculum.

⁹² Certainly, much like vehicles loaned to clients whose vehicle is currently in service, devices would require a similar system to ensure learning downtime is limited due to device issues.

⁹³ For a listing of current online education tools, see: <https://database.edtechhub.org/tools/>.

⁹⁴ Of course, content is often already embedded within a system of distribution.

⁹⁵ Numerous courses and tutorials are available for good online learning design. See: <https://www.shiftelearning.com/blog/bid/277278/understand-these-10-principles-of-good-design-before-you-start-your-next-elearning-project> and <https://usabilla.com/blog/design-principles-elearning/>.

OERs are particularly useful in countries and territories with resource limitations where self-development of content is not possible or capacity for content adaptation to local contexts, as was done in Barbados, is limited.⁹⁶ While educators may contribute to the development of OERs - and should be encouraged to do so - this should not be the primary source of content for online learning, since quality may vary greatly and content production may not be sufficient and/or sustainable to address curriculum demand over time.⁹⁷ However, OER contributions can be reviewed and included in central curriculum once standardized by ministries or teams of educators selected to address content development. OERs also allow countries to participate in content sharing, particularly content adapted to local contexts where best practices and solutions may be shared across regions either without fees or through licensing arrangements between ministries, institutions, or educators themselves.

A major challenge faced by surveyed countries integrating online learning content was inclusivity. Indeed, no matter its origin, content chosen to support learning goals should aim towards highest inclusivity, particularly regarding accessibility and ease-of-use. Inclusivity of all learner groups is essential to the sustainable adoption of online learning, and individual countries will benefit from an increasingly nuanced understanding of the various groups and populations who face barriers to access.⁹⁸ For example, Trinidad and Tobago's development of a Spanish language user interface for its TTLearn platform recognized the specific needs of its migrant and refugee populations and the language barrier that would prevent learning continuity. One method for ensuring accessibility and appropriateness of content is testing and developing content in collaboration with students and/or soliciting feedback from students on learning platforms and LMS. Completing this for each identified student and special needs group provides critical insights otherwise overlooked.

Finally, as online learning often uses digital avatars to help learners navigate through content, it is important to be mindful of expressing the diversity of a given population in the character of these avatars. Importantly, avatars should express the diversity of ethnicities and genders as well as able-bodied and disabled learners throughout the online learning experience when used in content.

Develop centralized LMS or content page

As the case studies have demonstrated, Caribbean countries of varying budgets and size require scalable solutions to adapt to their particular context. Thus, while a fully featured learning management system (LMS) may be the ideal in one context, such as the TT learn platform in Trinidad, a simple website for collecting resources and information may be sufficient in another, as in the case of BVI. The LMS is discussed first before alternatives are addressed.

The term LMS encompasses a wide variety of centralized virtual learning environments which commonly facilitate both the administrative and educational aspects of online learning activities in a particular context (i.e. school system, institution, etc.). Indeed, much like a virtual database may replace or supplement physical documentation, a standard LMS provides for digitization of all management activities and access for students, educators, and administrators to carry out learning activities online.⁹⁹ While the design or selection of an LMS is not the focus of this study, a few recommendations should be noted.

⁹⁶ See the following link to a resource lists accessible to Ministries and educators with varying conditions of use: <http://documents1.worldbank.org/curated/en/964121585254860581/pdf/Remote-Learning-Distance-Education-and-Online-Learning-During-the-COVID19-Pandemic-A-Resource-List-by-the-World-Banks-Edtech-Team.pdf>.

⁹⁷ See: <https://unesdoc.unesco.org/ark:/48223/pf0000371129> for UNESCO and Commonwealth of Learning's 'Guidelines on the development of open educational resources policies' provides instruction on the creation of this content for Ministries and educators themselves.

⁹⁸ See Pages 90-91 of 'A Landscape Review: Digital Inclusion for Low-skilled and Low-literate People' for a typology for digital solutions that may be adapted to online learning content and tools.

⁹⁹ Not to be confused with an Education Information Management Systems (EMIS), which an LMS can be integrated with.

While custom built LMS platforms are possible, and highly effective when customized to a specific context, an LMSs need not be built in isolation as pre-built, customizable solutions often exist which can be integrated into existing education structures.¹⁰⁰ Of course, this selection requires a thorough understanding of the targeted student group. Specifically, levels of digital and traditional literacy should be well understood in order to develop online learning content that is easily usable but does not patronize the user group. This improves chances of student acceptability, and striking this balance requires research, co-operation, and testing throughout the design, development, and maintenance of online learning content.

Whenever possible, a relationship-based and non-linear user interface (i.e. modular approach) should be favoured for an LMS and its content. This provides a number of benefits: a modular approach allows for easier digestibility of content, and does not require previous learner exposure to hierarchical information designs that may confuse and/or frustrate learners (UNESCO, 2018). Further, a modular approach benefits educators and administrators as well with easier learning content maintenance through simple replacement of individual content pieces without disturbing linked content in a rigid structure.

Overall, lessening the number of steps to achieve any action in a digital learning space and striving for an intuitive platform is crucial to user-onboarding and ease-of-use. Of course, separation of content and delivery is not always simple and therefore choosing content may imply the use of a tool. Therefore, while specific tools may be linked to the LMS, always consider interoperability and ease of user experience to limit both compatibility issues as well as access issues.

Further, as with content itself, user interfaces should be accessible to migrant populations and indigenous communities to ensure equitable inclusivity and access (ECLAC and UNESCO, 2020).¹⁰¹ While these populations may be catered for, such as a Spanish version of TT Learn's user-interface for students who are Venezuelan nationals, other learners may be unwittingly passed over while choosing an appropriate solution¹⁰². When educating learners who are not fluent in the national language of education, highly illustrative, graphical interfaces that remove and replace superfluous text with visual cues can also improve the user experience and ease of navigation. This is especially critical when developing content for migrant and refugee learners, where language and cultural norms may differ widely from countries from which these populations originate. Finally, while quick action may be required in emergency situations to address urgent needs - as was the case with COVID-19 in all case study countries - decision makers should aim to limit technical debt¹⁰³, instead maintaining a long-term view for online learning in a particular context.

Where an LMS is unavailable, or plans have not been established to deploy or develop such a system, a content page with listings of approved content for educators is vital.¹⁰⁴ This listing will provide a one-stop-shop for learners, educators and parents to access approved content to support learning objectives. For instance, Guyana's Ministry of Education website provides this information to visitors on its homepage, limiting confusion and unnecessary navigation (see MOE Guyana 2020b). Of course, just as with an LMS, maintenance is essential, and key concerns and suggestions should be fielded from users and consolidated into information sessions and content (i.e. FAQs) as necessary.

¹⁰⁰ As many case study countries stated, local enterprises such as One on One Educational Services Ltd. and offerings from Google (i.e. Google Classroom) and Moodle, for instance, are readily available and supported not only by company's or partner service companies but by a large community of users.

¹⁰¹ See https://learn.moe.gov.tt/?lang=es_ve for TT Learn's Spanish interfaces for refugee and migrant populations.

¹⁰² As the case studies have shown, migrant populations may be especially susceptible to these oversights.

¹⁰³ The term technical debt refers to work that may provide temporary relief for a short-term problem yet may require undoing in the future, thereby causing greater overall costs in time and expenses.

¹⁰⁴ For instance, see Guyana's education plan published across national media with resource listings for all education levels: <https://newsroom.gy/2020/04/19/education-ministry-reveals-plan-for-online-learning/>.

In either case, LMS or content page maintenance and overall user accessibility can be increased by training superusers among educators. These superusers may support these efforts and field questions in local institutions or school systems, localizing support services to address context-based concerns of local stakeholders as they arise and providing continuous instances for user feedback to ensure ongoing support. As with content itself, cost of licensing, development and maintenance of online platforms and tools should also be well considered during the planning stage. Particular attention should be paid to personnel requirements beyond initial set-up to ensure ongoing maintenance and development (Trucano, 2010).

As a final note, while advances are ongoing in emergent technologies such as AI in learning, governments should favour widely accessible and proven online learning tools and technologies. Certainly, these emergent technologies have great promise and benefits in specific contexts. Yet while experimental integrations and trails may be attempted with test groups, and expanded accordingly should they prove successful, they should not be favoured over ensuring equitable, sustainable education for all learners through proven, evidence-based methods (Trucano, 2013).

Training programs for all key stakeholders

A major challenge regional governments face is resistance to long-term change in traditional learning methods among educators. While the surveyed countries have engaged educators at all levels to adapt education to the realities of the pandemic—such as Barbados and Guyana’s extension of educator capacities for online learning with Pro Futuro and IDB training, Jamaica and Trinidad and Tobago’s onboarding of educators into respective national learning management systems for educators and students, and BVI’s Google and WebEx based trainings for educators and parents—long-term training programs for educators are essential to ensuring the effective application of online learning in education going forward. The UNESCO ICT Competency Framework for Teachers provides recommendations on the curriculum for this training, identifying 18 competencies organized around six aspects of teaching practice¹⁰⁵ and three levels of pedagogical uses of ICT by educators: knowledge acquisition, knowledge deepening and knowledge creation (UNESCO, 2018).

Continuous training also provides benefits beyond knowledge transfer. Training efforts position governments and ministries as investors in each educator’s capacity to do their jobs better, leading to greater job satisfaction and lessening the fear that technological change brings to their profession. Furthermore, training provides an additional forum for exchange and learning from educators on issues they face in classroom environments which can inform future policy or guidelines. Training for educators may also be informal, with educator groups set-up for knowledge sharing between educators to ensure best practices and internal support.¹⁰⁶ As the survey countries often identified particular educators as more inclined to the adaptations necessary during the pandemic, these same educators may be co-opted and trained as superusers to strengthen ICT in education policies across the system. While training is necessary for current educators, online learning training should be also extended to all new educators and administrators as part of onboarding into learning institutions.¹⁰⁷

Further, as was the case in many of the surveyed countries, parents can be included in training alongside educators – for instance, BVI’s decision to include parents in CISCO WebEx trainings alongside students - particularly in supporting primary and pre-primary school students where parental support is critical for learning mediation and continuity. Inclusion of parents has several benefits, such as

¹⁰⁵ These include understanding ICT in education policy; curriculum and assessment; pedagogy; application of digital skills; organization and administration; and teacher professional learning.

¹⁰⁶ Note: These informal mechanisms of exchange should supplement, not replace, formal training sessions.

¹⁰⁷ The development of teacher-side capacities for online learning is perhaps the most critical element towards success and sustainable online learning models. A number of offerings exist to make this easier for Ministries, including the IDB’s Online Teacher Training course, now in its 8th edition. See: <https://cursos.iadb.org/en/indes/online-teacher-training>.

improving parent's ability to support student learning as well as improve communication between parents, students and teachers both during and following the pandemic.

Finally, training on online learning tools and technologies should also include students, with emphasis on accessibility features of online learning. As with educators and parents, student knowledge and skills in using digital devices and software is often uneven, despite claims of 'digital nativism'¹⁰⁸, and easy to follow training (perhaps as OERs or video tutorials) should be provided through a widely accessible medium (ECLAC and UNESCO, 2020). Indeed, a 'train the trainer' or superuser strategy may provide the basis for training sessions for student that are decentralized and carried out as needed by knowledgeable educators.

Assessments towards greater efficacy

While the importance of assessments in education is well established, the COVID-19 pandemic has highlighted the need to assess student progress, given the increased distance between educators and students. Generally, the surveyed countries considered this component of online learning as a low priority when compared to ensuring learning content reaches students in the first place. While this is certainly true during early emergency efforts to ensure learning continuity, efforts should be made to provide a feedback loop between educators and students so that progress can be determined, and necessary adjustments made when outcomes are poor. When possible, assessments should be pursued through online learning (or supplemental modalities, as necessary) to ensure performance feedback is provided, or via physical methods such as handout and assessment packages when online learning is not available.

Furthermore, effective online learning uses testing as a function of learning, known as the 'Testing Effect'¹⁰⁹, where students are invited to retrieve knowledge from memory which improves knowledge retention over time. Integrating the 'Testing Effect' into online learning can be accomplished by a variety of methods, including end-of-lesson retrieval exercises or small tests interspersed within online learning content (InnerDrive 2019). Apart from providing focus to student learning, improving student confidence with lesson material, and increasing knowledge retention, assessments also function as motivators and a linkage between educators and students, both aspects of learning jeopardized by social distance during the pandemic.¹¹⁰

2. Traditional media and non-tech modalities

While the benefits of online learning are numerous, the case studies above highlight that governments should favour flexible, dynamic systems with in-built preparedness for events on the scale of the COVID-19 pandemic. Indeed, effective online learning is susceptible to a variety of limiting factors, including connectivity, devices, training, content relevance, etc., and governments should consider a modality mix to cater for students facing connectivity issues or other limitations that may undermine or entirely obstruct online learning.

The modality mix of such a system should include low and no-technology online learning solutions alongside in-class learning to ensure maximum inclusivity across all students within a particular context. First, as BVI and Barbados demonstrated, student groups at the highest risk of falling behind may require access to in-person education prior to full reopening of schools. This includes students with special needs or those in challenging circumstances where learning continuity is greatly

¹⁰⁸ A 'digital native' is a person born after the widespread adoption of digital technology (Technopedia, 2020). The assumption, widely held, is that digital natives possess intuitive understanding and familiarity with technologies compared to those born before this technology was widespread.

¹⁰⁹ The 'testing effect' may also be referred to as 'retrieval practice'.

¹¹⁰ This is especially true for education provided via traditional media (i.e. television, radio, or printed materials), where assessments may be the only point of contact between educators and students.

impacted. This in-person exception may extend to children of specific groups of 'essential workers', thereby minimizing strain on vital sectors where parents may be forced to stay home with children (e.g. frontline healthcare workers), or children in financially constrained situations. Of course, any decision to continue in-class learning must adhere to national health guidelines, and should only be pursued if these guidelines can be safely upheld.

Secondly, a mix of traditional media (i.e. television and radio) and non-tech modalities (i.e. printed materials) should be integrated to ensure students without online learning capabilities are not left behind. For instance, television-based lessons, such as those broadcast on the Guyana Learning Channel or on Trinidad and Tobago's Education Channel, may enhance the core curriculum, providing additional learning support to students—particularly those at the primary level. Furthermore, printed materials, distributed by all case study countries, allow for education continuity for those unable to access online learning or those who choose not to attend schools during reopening, as was the case in Barbados. As Trucco and Palma (2020) note, primary school children are at a disadvantage when it comes to the continuation of studies online as the use of the Internet (through activities related to socialization and entertainment) typically begins in adolescence (ECLAC and UNESCO, 2020). Therefore, traditional media is appropriate for younger learners, while assessment mechanisms (i.e. drop-off and pickup of assignments) should be used to ensure learning effectiveness. Moreover, as circumstances are dynamic, particularly during the COVID-19 pandemic, multiple modalities should be available for students whenever possible to allow movement between modalities as required.

As with online learning materials, the development of content for low- and non-tech modalities should favour a co-operative and iterative design process. This ensures content is developed *alongside* targeted user groups and not simply *for* these same user groups. In order to accomplish the maximum extent of inclusivity, it is important to ensure development sees representation of all potential user groups and not simply the majority demographic. For example, greater focus on women and girls and migrant populations can also have far-reaching positive impacts beyond the initial exposure to online learning, where such actions to support female empowerment are strongly correlated to positive development markers across all of society. In the Caribbean, boys tend to underperform in education at all levels and have lower attendance than girls (Jackman and Morrain-Webb, 2019: 1). Therefore, attention can also be paid to learning modalities that cater to the specific needs of boys.

B. Cultivate a mindset shift among key stakeholders, particularly educators, towards wider systemic change

The arrival of COVID-19 created a unique opportunity for Caribbean governments and ministries to engage in systemic education reform. With education disrupted at all levels across the subregion, speed of adaptation to ensure learning continuity has been the chief concern of education ministries. As many officials have reported, these necessary adaptations have caused a shift in mindset among educators and administrators to adapt remote learning modalities.¹¹¹ As this shift in mindset is unprecedented, ministries and institutions can harness this evolution towards long-term redevelopment of education at all levels.

While the advance of online learning continues in the Caribbean amidst the pandemic, decisions on technology and teaching methods must be well founded. As previously mentioned, online learning tools and platforms are only vessels for content and curricula. Indeed, far more important than the tool or modality used is that learning induces the necessary mental work in the student. Policymakers,

¹¹¹ This shift in mindset exists in various stages along the spectrum depending on the case study country. Common among these statements was that the COVID-19 pandemic accelerated this mindset shift, allowing for increased adoption of online learning technologies across all countries and levels of education.

administrators and especially educators at all levels of education must ensure that technology serves this purpose for the learner. Therefore, it is crucial to train educators in the latest scientific research and guidelines to strengthen applications of online learning modalities in institutions of learning. However, this must go beyond online learning alone, and should address the most recent evidence-based practices in all learning activities.¹¹² In doing so, educators must embrace 'learner-centered instructional approaches', combining a deep knowledge of their subject area(s) with best practices of online pedagogy mediated by technology to create rich learning experiences for learners (Porto, 2019).

Moreover, just as in-class learning requires consistent application of time and energy to ensure effectiveness, online learning also requires constant mediation. Educators must be made aware of the importance of mediation actions at a distance, since "technology alone cannot guarantee good learning outcomes" (UN, 2020a). While the pandemic has displayed online learning's benefits to assure distance learning and learning continuity, those without the required technologies are easily left behind if a system remains too rigid. Indeed, online learning and its underlying technologies are only a component of a sustainable education system, a reality many of the case study countries have addressed by providing various contact points between educators and administrators on one hand and parents and students on the other.

Furthermore, all ministries of education interviewed for this study stated the future of learning in their own country or territory would be some form of blended learning. Therefore, flexibility and knowledge concerning which learning modality is appropriate to ensure students reach learning objectives are critical skills for educators and administrators. Increasing capacity and autonomy of educators to integrate online learning technologies also increases system flexibility as well, driving educators to seek technologies that address inclusivity and evaluate new approaches to ICT integration without the need for top-down supervision. However, increasing this capacity among educators is no replacement for a formal uniform approach to ICT integration in education.

Thus, while the advantages of ICTs in education are numerous, educators must be made aware of the evidence-based learning principles to apply them correctly (CARIRI, 2016). This requires strong leadership at the administrative and Ministry level to guide education towards evidence-based approaches. Alongside educator training and assessments to ensure training is effective, development of leadership capabilities to promote online learning integration is important, especially in learning institutions to foster communication and understanding between educators and administration. Jamaica's efforts to train school administrations and principals to manage online learning is one such example. Stakeholder buy-in to online learning can be fostered using training sessions with each session providing a forum for expressing thoughts and concerns towards online learning integration. Finally, administrations at all levels benefit from required adaptations brought on by COVID-19, with the need for strong EMIS (education management information services) systems highlighted to support remote learning. Software, such as Open EMIS provided by UNESCO¹¹³, strengthens data-driven operations in institutions at all education levels and increases the capacity of ministries of education to collect and use data for policy development and decision making.

¹¹² For current learning sciences and best practices see: *Understanding How We Learn: A Visual Guide* (Megan Sumeracki, Oliver Caviglioli, and Yana Weinstein) and *Make It Stick* (Henry L. Roediger III, Mark A. McDaniel, and Peter C Brown).

¹¹³ See: <https://www.openemis.org/>.

C. Promote and coordinate data collection and analysis with all relevant stakeholders

Beyond the introduction of an EMIS into school systems, comprehensive data collection and analysis at the national level are critical to the development of evidence-based policy interventions and shaping learning modalities for a student population. The continuous tracking of education data, particularly during the pandemic, has been limited; this represents a key challenge in the Caribbean. Yet for national governments, ministries, and institutions, policy and operational decisions are only as effective as the underlying data which informs them. Thus, decision makers must be aware of the current state of education in their own countries through the timely collection and analysis of robust, reliable data.

Collected data should allow tracking of indicators towards achieving SDG 4 as well as in key areas as personnel capacity allows.¹¹⁴ These key areas include, for example, penetration of connectivity and hardware availability, learner demographics including special needs students and accessibility, and individual capacity for mediating and leading online learning among educators and administrators. Of course, this emphasis on data collection also includes student assessment as well, with the objective of collecting diverse learning analytics, even if rudimentary, as means of evaluating progress. While case study countries have shown varying levels of insight on these measures¹¹⁵, improvements in data collection mechanisms are vital to achieving long-term education goals.

Modern learning platforms and tools provide various data collection mechanisms that may support formal efforts at the ministry level. For instance, assessments distribution for return and marking, including tests and grades for assignments, can be conducted via an LMS. This assessment data can be stored and analysed, allowing for interventions on an individual level as well as system-wide performance analysis by ministry officials and school administrators. This remote monitoring of student performance can provide evidence when interventions are needed to address students falling behind, an important feature when learners are displaced as in case study countries during COVID-19.¹¹⁶

Since education systems must be increasingly flexible with a mix of learning modalities, so too can monitoring of education activities. Where connectivity is currently limited - such as hinterland regions and remote islands identified in case studies - satellite offices may be set-up for both operationalizing education policy, such as distributing printed materials or devices for offline learning solutions, while also collecting data relevant to national policy. Indeed, notwithstanding the method or approach, every effort should be made to continuously acquire and utilize data towards better learning outcomes.

¹¹⁴ Tracking activities, including coordination, consolidation, and analysis of data, should be conducted at the ministry level with 'on the ground' data collection in schools coordinated alongside local administration and districts. Strong coordination of data collection activities are vital to ensure continuous annual reporting where large land or water distances are present. Furthermore, to facilitate data collection activities, electronic knowledge management tools should be adopted to ensure continuous, timely reporting and stable storage over time and school administrators should be trained on these tools.

¹¹⁵ While a robust, continuous method for data collection is ideal, countries with less resources can often adapt data collection activities to available resources. For instance, Guyana's ongoing data collection activities to address internet connectivity for education in hinterland regions combines data from training centers with data gathered directly from students to develop a clear picture of connectivity levels and obstacles faced in accessing education. Thus, as with education itself, a multi-modality approach is possible to ensure ongoing data collection for key metrics to online learning.

¹¹⁶ For an expanded discussion on relevant assessment approaches, see UNESCO, 2020e: 3.

D. General recommendations

Beyond the above recommendations related to effective online learning implementation, a number of general recommendations are also important for the development of a robust, flexible system at all levels of education—

Sustainability Above All – Sustainability of educational offerings of all types should remain the primary concern; projects and programs must aim towards continuous use beyond short-term impacts (Trucano, 2013). Furthermore, these projects and programs should be protected against potential disruption from election cycles, a challenge faced in certain case study countries. The long-term nature of device procurement and maintenance programs require planning beyond election cycles and can be protected by laws securing funding as well as independent (i.e. non-political) appointments to program leadership positions.

Support Helpline to Triage Enquiries – Guidance should be made available to students, educators and parents to address the various concerns arising from the adaption of learning to online environments. Therefore, a well-staffed helpline and internet based-chat services (as necessary) should provide a triaging service to direct specific enquiries - from device issues to accessibility concerns - to suitable assistance. Furthermore, helplines can provide triage services to direct needs beyond education itself. For instance, to address the worldwide increase in domestic violence during the pandemic, which disproportionately affects women and girls (UN Women, 2020), helplines also become vital to triage violence and health-related enquiries. Jamaica's decision to open 36 helplines to address psycho-social concerns during the pandemic is one such approach, yet helplines for learning support can also be used for fielding these requests to appropriate professionals. With understaffing and declining budgets of shelters and counselling centers reported across the Caribbean, along with limited internet access and transportation in rural locations, the importance of helplines and alternative means of reporting violence are raised significantly (Telson, 2020).¹¹⁷ This is especially important with approximately 83 per cent of total countries in Latin America and the Caribbean reporting disruption to services protecting children against violence.¹¹⁸

Diverse Stakeholder Inclusion – Curriculum and content development can also benefit from including students in this process—for instance, to test content before wide distribution. A valuable heuristic is to practice asking 'who is affected by this decision/program/content/etc' and include a representative from each stakeholder group to ensure all relevant stakeholders are engaged towards maximum inclusivity and sustainability and that no one is left behind. While case studies demonstrate diverse attempts to increase stakeholder inclusion, particularly concerning educator concerns and experience amidst the pandemic, systems would benefit from greater integration of student and parent experiences into decision making beyond the pandemic.

Flexible Systems Need Flexible Governance – A particular challenge identified across the surveyed countries, flexible governance and administration are required to adapt to the necessities of education during COVID-19 and beyond. This specifically requires moving away from the siloed approach to work within institutions and governments at the national and institutional level towards greater cross-departmental and governmental coordination, communication and cooperation. Furthermore, legislative changes to organizations - such as with governments and associations

¹¹⁷ Of course, with close proximity in households, using helplines to report domestic violence can be difficult. Therefore, it is important for governments to provide a variety of mechanisms to report violence and seek assistance (see Telson 2020 for more information), provide child-friendly information through all available learning modalities and hotlines (including emergency service lines and social media/ mobile applications) to reach school counselors, and adapt pre-existing community-based services to COVID-19 restrictions. These should be adapted to local contexts (see UNICEF, 2020: 12-15 for local adaptations across the world).

¹¹⁸ Of the remaining 17 per cent, only 3 per cent reported no disruptions, with the remainder unable to provide data or unable to complete the survey (UNICEF, 2020: 9).

(e.g. PTAs) - allowing for decisions to be confirmed remotely can accelerate adaptations, especially in a dynamic situation such as COVID-19.

Health and Well-Being via Education – It is important for governments to recognize that ICTs (platforms, communication tools, etc.) are often the only touchpoint between government and students and can provide an excellent communication tool to convey health and well-being related information in a pandemic. This information can address student health and self-care and provide support to address specific difficulties as they arise. Due to confinement measures related to COVID-19, for example, data showed that domestic abuse cases have increased in 2020 worldwide, with this violence disproportionately affecting women and girls (Telson, 2020). Indeed, UNESCO recommends that prior to addressing education itself, providing health-related guidance to promote stability in uncertain times is critical, particularly for those in strained positions (UNESCO, 2020d). Therefore, information supporting mental and physical health and support related to domestic violence should be extended to all learners, with an emphasis on vulnerable groups including learners with disabilities as well as those not fluent in the national language of education, including migrants and refugees. Indeed, all communication modalities (i.e. ICTs or otherwise) should be used to facilitate dialogue with students about psychosocial health during the pandemic. Educators, parents, and administrators should also have access to healthcare professionals for their own needs and the needs of students (see above: Support Helpline to Triage Enquiries).

Development and Revision of ICT in Education Policies – COVID-19 has shown the utility of online learning and ICTs in education, yet few countries in the subregion have national digital education strategies with a model that takes advantage of ICTs (Marinelli, 2020). From the case studies above, three out of five countries have implemented an ICT in education policy, while ICT in education policies are in development in the remaining two countries. The lack of national digital education strategies across the Caribbean is compounded by unequal access to an Internet connection, which results in an uneven distribution of resources and strategies, mainly affecting lower-income or more vulnerable groups (Rieble-Aubourg, 2020). To address this situation, authorities must, on the one hand, prioritize efforts aimed at maintaining contact and education continuity for those populations with greatest difficulty accessing online learning. On the other hand, protocols for resuming and continuing education when schools reopen must consider the inequities that will deepen during the crisis and address these accordingly (ECLAC and UNESCO, 2020). Moreover, a gender perspective must be incorporated in order to make visible and alleviate situations of gender inequality or violence that could be worsening under lockdown.¹¹⁹

Always Explain Why – Across the Caribbean, ministries, school administration and educators have faced the challenge of addressing parents and students with a confident, sustainable way forward through the pandemic with varying results. To improve the impact of decisions in society, educators should always explain to students and parents why certain technologies were adopted or why other decisions relating to online learning were made – 'because we say so' or implied authority is not helpful. More effective communication improves mutual respect, increases awareness, and lowers anxieties, particularly in emergencies such as the COVID-19 pandemic.

Public Private Partnerships with Local ICT Vendors – Public private partnerships provide governments access to an ever-expanding array of education products and services, and content exists under a variety of licensing structures which can be adapted to diverse contexts (UNESCO, 2020j). Further, collaborations with local and regional private enterprises, such as GeoTechVision and One on One Educational Services Ltd. (see Box 1 above), are vital as these companies understand realities faced in regional contexts, providing products and services uniquely suited to local needs.

¹¹⁹ See 'Health and Well-Being via Education' and 'Support Helpline to Triage Enquiries' above.

This tacit knowledge base will help remove issues of adapting online learning solutions from one context to another. It is also important to consider these points in partnering with private organizations:

- Should a partnership be terminated, avoiding lock-in or costly contract dissolution should be addressed at the negotiation stage to prevent future surprises.
- Be aware of difficulties of intersection between highly process-oriented ministries and dynamic small companies. Small companies often lack the capacity to manage complex legal and/or bureaucratic processes, therefore governments should approach these companies with a different mindset to achieve a sustainable partnership.

Promote Self-Reliance and Self-Learning as Lifelong Skills – Online learning requires increased student responsibility to manage time, resources, and effort, particularly when asynchronous online learning is used at the secondary and tertiary levels. While support and guidance remain crucial to ensuring learning continuity, educators and administrators alongside parents and guardians should foster self-reliance and self-learning in students to both adapt to the requirements of the ongoing pandemic and as a skill to support lifelong learning beyond formal education.

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Annexes

Annex 1

Online learning in the Caribbean

Caribbean context

While a comprehensive history of online learning activities within the Caribbean is beyond the scope of this study¹²⁰, it is important to illustrate the subregional context and several specific initiatives and organizations that have supported its development subregionally.

The history of remote learning and technology-enabled learning in the Caribbean dates back to the 1950s in the form of correspondence courses, and is a direct product of the geography of the subregion (Kuboni, 2017). Indeed, with many countries composed of islands separated by water barriers, forms of distance learning have been in use for decades to facilitate learning across geographic and political borders. Early efforts to sustain distance learning activities were led by The University of the West Indies (UWI). Serving 16 developing countries in the Anglophone Caribbean, UWI has been providing distance education since 1978 and has been instrumental in key distance learning initiatives across the subregion as ICTs have become central to these activities (Marrett & Harvey, 2001).

In 2000, two initiatives were developed that had wide effects across the subregion. First, the Commonwealth of Learning developed the Virtual University for Small States of the Commonwealth (VUSSC), “a network of small countries that work collaboratively to expand access to and improve the quality of post-secondary education in their countries”, which encompasses Barbados, Trinidad and Tobago, and Jamaica (COL, 2020). To achieve this goal, VUSSC engaged national institutions of Member Countries to build capacity and expertise in online collaboration, e-learning and ICTs in general. Participating educational institutions work together on the design, development, and delivery of post-secondary, skills-related courses and university-level programmes in areas that enhance their economic, financial, social and community growth.¹²¹ Second, the Caribbean Universities Project for Integrated Distance Education (CUPIDE), also aimed to develop online learning across universities and participating tertiary education institutions (George 2012: p. 19).¹²² The University of the West Indies, joined by four co-beneficiaries¹²³, led this initiative to evolve distance education away from the traditional synchronous teleconferencing, adopting ICTs as the standard medium for distance education.

In 2004, the Caribbean Community (CARICOM) launched the Caribbean Knowledge and Learning Network (CKLN) (CARICOM, 2005), which integrated learnings from CUPIDE and sought to expand ICT access in Member States towards strengthened distance learning (George 2012: p. 19). The CKLN aimed to streamline and consolidate distance learning projects across the Caribbean towards enhanced regional integration, and aimed to provide satellite internet to subregional tertiary institutions towards this goal (CARICOM, 2005). Furthermore, the Caribbean ICT Stakeholders Virtual Community (CIVIC) was also formed at this time (CARISNET, 2007). With a focus on the underlying technologies to support regional ICT integration, CIVIC provides a network for Caribbean ICT and education experts to share information, ideas, advances and technological innovations relevant to Caribbean countries (CARISNET, 2007a).

¹²⁰ See: Technology-Enabled Learning in the Commonwealth Caribbean Countries: A Baseline Study for a comprehensive analysis of ICTs in education across selected countries.

¹²¹ VUSSC also encourages the sharing and transfer of course content, learning materials and resources through the use of Creative Commons copyright licences. In this way, VUSSC increases the human resource capacity that enables small states of the Commonwealth to participate effectively in global economies and thrive as equal members of the world community.

¹²² Participation in the project was meant to “nudge” the co-beneficiary universities off the perimeter to follow the road to developing distance as a routine alternative for increasing student access and addressing national development needs.

¹²³ Odeku’s (Suriname), UG (Guyana), Uniqlo (Haiti) and Utech (Jamaica) See: Collaborative distance education in the Caribbean.

As ICTs became increasingly central to ongoing initiatives, the Caribbean Research and Educational Network (C@ribNET) was launched in 2013. Providing a broadband fibre optic network in the subregion, C@ribnet connects educational and healthcare institutions across 21 countries and 26 million users (CARICOM 2013) and the Commonwealth Education Hub for Commonwealth Caribbean countries has supported the expansion of ICT-enabled distance learning in the subregion. Lastly, the Caribbean New School Model (CNSM), developed by CARICOM as part of the Human Resource Development 2030 Strategy, conceptualizes a future direction of learning in the subregion. The model defining four quadrants of the education experience—learning spaces, curriculum, ICTs and resources—which represent the ideal for “a new paradigm model for school effectiveness” (CARICOM, 2018). The CNSM will be implemented in three 4-year Regional Action Planning (RAP) cycles, with action planning workshops with key actors and stakeholders in each cycle. The first RAP cycle is scheduled to finish in 2020 with a performance evaluation to determine achievement of Key Performance Indicators (KPIs) before progressing the second RAP cycle (CARICOM, 2018: 49-50).

Lastly, at the national level, ICT in education policies have been developed and implemented in several countries in the Caribbean. An ICT in education policy is essential to clarifying the inclusion of ICTs to address a variety of activities in an education system while reducing potential “perils” in advancing traditional education systems (World Bank, 2020b). These policies may be independent of or included in general education policies or national ICT policies depending on the country.¹²⁴

Barriers to inclusion and access to online learning

While the COVID-19 pandemic has caused widescale disruption of education activities, the disruption has also highlighted pre-existing barriers to inclusion and access to education at all levels. For many students, access to education relies on consistent efforts to ensure education continuity in times of normal operation. However, COVID-19 and public health guidelines have strained traditional methods of providing special needs education, in many cases undermining decades of progress.

Beyond special needs education, online learning requires a certain threshold for use and the gap between many students and their peers has only widened. In terms of “principal barriers” to digital inclusion (of which online learning is included), Schmida et al. (2017) lists “lack of infrastructure; low incomes and affordability; user capabilities (i.e. lack of basic literacy and digital literacy); [and] incentives” (UNESCO 2018: p. 32).¹²⁵

Despite the obvious advantages of a system where learning can occur anywhere, anytime, online learning is a learning modality founded on the availability of enabling technologies, such as suitable devices and infrastructure. Thus, the extent of e-learning, in terms of geographic reach and quality, often equates with the coverage of these enabling technologies and a supply of uninterrupted power, all of which are impacted by emergency events such as extreme weather and natural hazards.¹²⁶

According to the International Telecommunications Union (ITU), the Caribbean has approximately 68 per cent internet penetration, nearly 15 per cent higher than the world average, with growth across all Caribbean nations (Internet World Statistics, 2019). While promising, internet penetration is counted by a single engagement with the internet per annum. For online learning, where continuous connectivity is necessary to ensure regular contact¹²⁷ between students and educators, connectivity limited to short intervals of access to low-bandwidth connections all but inhibits the possibility for online learning.

¹²⁴ See UNESCO 2011 for the importance and development of ICT in education policies and Hinostroza 2018 for challenges for ICT in education policies in developing countries.

¹²⁵ Incentives, or lack thereof, include lack of cultural and social acceptance of internet use, awareness and understanding of the internet, and available and attractive local content).

¹²⁶ It is important in the discussion of TEL to have an appreciation of the availability of the Internet, both via computer and mobile device, and the available Internet download and upload speeds to facilitate the use of ICTs in TEL contexts

¹²⁷ This regular contact can also be asynchronous (i.e. where both the learner and educator are not online at the same time—such as with email), or when an assignment is submitted by a learner at one time to be evaluated at a later time by the educator.

The International Telecommunications Union (ITU) (2014) predicts that quality of access is likely to become the key distinction between rural and urban households. Given their sparse populations which deter both public and private investment, rural locales are characterized by less developed infrastructure - specifically grid electricity to support cell phone towers - and slower internet access. In the Caribbean, rural may also refer to less-urbanized islands, where lack of infrastructure and connectivity is exacerbated by the water barriers. Thus, as infrastructure investments in rural locales remain low, and power generation is often more expensive, this results in a lower affordability for a lower quality of service (UNESCO, 2018).

However, simply having access to the appropriate hardware and software atop robust infrastructure does not guarantee efficient and sustainable use. General knowledge of ICTs is necessary, but specifically, training of educators, administrators, and students themselves is critical to ensure efficient use of hardware and software in support of learning.

Overall, concerted efforts between government, civil society, and private enterprise are necessary to ensure underlying conditions are met before online learning is sustainable. Yet factors related to ICTs are only part of the requirements. As part of the transformation to guide recovery post-COVID-19 in accordance with the 2030 Agenda for Sustainable Development, attention to the needs of vulnerable and marginalized peoples, particularly students with special needs, is encapsulated in the core principle of “leave no one behind” (Sachs, J. 2020; p. 7).

Certainly, due to a range of physical, social, attitudinal and institutional barriers that affect persons with disabilities (PWDs), these individuals generally experience poorer outcomes in education along with health, employment, and housing (Bleeker, 2019). Since these poor outcomes are generally mutually reinforcing or detracting, strengthening access to education services at all levels is essential to improving general living conditions for PWDs across the Caribbean. As of 2018, 1.3 million persons are estimated to have a disability, of which 250,000 have a significant disability. This figure is set to grow due to demographic changes in the coming decades, and with disability correlated with lower socio-economic status, addressing this issue is essential to bridging the expanding accessibility gap for access to education.

In terms of online learning, accessibility for PWDs relates to robust and affordable connectivity on the one hand along with assistive hardware and software availability and accessibility on the other. Towards achieving the first necessity, two mechanisms for improving accessibility are Universal Service Funds (USFs) and Universal Service Obligations (USOs), providing extended access through a levy on telecommunications providers or compelling these same providers to ensure access across a country's entire population, respectively (Bleeker, 2019: p. 19). To the subsequent factors, well-designed software and online learning require direct input and interaction with end-users on a continuous basis (see Chapter IV : Best practices and recommendations)—from the design, development and launch of online learning tools and content to updates and maintenance. Extending access to online learning across all users, particularly persons with disabilities, is no different, requiring parties responsible for implementation of said technologies to be accessible to PWDs at all levels of education. To achieve this, Open and Distance Learning (ODL) and Universal Design for Learning (UDL) guidelines may be applied towards inclusive online learning implementation. Taken together, these guidelines ensure platforms, content, and modalities, including software and ICTs, remain accessible across all learning activities.¹²⁸ This may include introduction of accessible support services for students and instructors; providing opportunities for learner feedback to ensure accessibility options are successful and to incorporate feedback; replacement of inaccessible content as well as devices and software lacking accessibility options; and ongoing capacity building activities to ensure educators, administrators and learners understand how chosen modalities are best utilized (UNESCO, 2018a: 22-23).

¹²⁸ See UNESCO 2018a for guidelines on implementation.

Annex 2

Interregional online learning initiatives within the Caribbean

Organization of Eastern Caribbean States (OECS)

The OECS is an international inter-governmental organization dedicated to regional integration across the Western Caribbean. The organization is comprised of seven protocol members¹²⁹ and four associate members¹³⁰ across the Eastern Caribbean (OECS, 2020). The OECS has worked to improve educational attainment in providing knowledge-sharing and technical assistance services to Ministries of Education with the goal of greater economic performance among member countries (OECS, 2020a).

Educational framework and use of ICT

Within the OECS Secretariat, the Education Development Management Unit (EDMU) sets general standards for the operation of Ministries of Education in its Member States and facilitated the development of the current OECS Education Sector Strategy 2012–2021. This strategy encompasses formal education as well as its implications for economic development in the region for “all citizens, at every stage of their learning journey, from early years to adulthood, are able to reach their full potential and be successful in life, at work and in society” (OECS, 2012: 11).

This educational strategy identifies two cross-cutting themes: establishing effective knowledge management systems and integrating technology in education. The strategy also aims to create a policy context conducive to the full adoption of OERs in Ministries of Education and higher education promoting regional OER repositories.

As part of the strategy’s ‘Strategic Imperatives’,¹³¹ the OECS promotes the advent of online learning in the subregion and resilience to disaster situations, improvements to teacher training, teaching quality and learning, and assessments along the delivery side of education, and the extension of access and opportunities for TVET and tertiary/continuing education.¹³²

In discussion with officials from the OECS, it was confirmed that this strategy has been renewed for an additional five years given its continued relevance, particularly in light of COVID-19. However, the implementation of this strategy across the subregion remains contingent on the continuity of budgets from Member States, which has led to regional imbalance and divided focus.

COVID-19 response in educational sector

While approaches vary, Member States have adopted a number of key strategies throughout the crisis. Stakeholder engagement to address concerns has been facilitated through online meetings to ensure concerns are collected and addressed. While methods of collecting feedback allows for concerns to be channelled upwards to stimulate dialogue and influence decision-making, the lack of a strong collection mechanism in many countries has made determining the efficacy of online learning efforts across Member States difficult. Country reports have provided insights into a varied level of efficacy of online education for learners, educators, and parents and guardians alike. Indeed, as in many areas, it appears

¹²⁹ Antigua and Barbuda, Commonwealth of Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines.
¹³⁰ Anguilla, the British Virgin Islands, Guadeloupe, Martinique.

¹³¹ These ‘Strategic Imperatives’ include: 1) Improve the quality and accountability of Leadership and Management; 2) Improve Teachers’ Professional Development; 3) Improve the quality of Teaching and Learning; 4) Improve Curriculum and strategies for Assessment; 5) Increase access to quality Early Childhood Development services; 6) Provide opportunities for Technical and Vocational Education and Training (TVET) for all learners; 7) Increase access to and relevance of Tertiary and Continuing Education

¹³² The strategy also includes ‘Cross-Cutting Themes’ aimed towards expanded achievement levels in core subjects (including literacy, numeracy and technology), equity of access for marginalized and economically disadvantaged groups, strengthening disaster risk reduction and management, establishing effective knowledge management tools and integrating technology in the classroom and education.

while some teachers have excelled in the new paradigm with students and parents reporting meaningful lessons and activities, other reports indicate cases of disengaged students and periods of silence from teachers.

Across the region, the OECS saw the COVID-19 crisis as a catalyst for greater integration across the Eastern Caribbean both economically and concerning the free movement of people. Free movement was specifically highlighted as a paradigm shift in the subregion, where particular sectors (e.g. tourism) were negatively impacted not only by extreme weather events and COVID-19 but wider economic change. Therefore, a retraining and retooling of the affected populations of Member States was seen as imperative, where new opportunities for employment in emergent technologies (e.g. robotics, AI) were under review as potential subjects for education at the TVET level across the subregion. Officials stated that such changes require a major shift as well as reprioritization of government and OECS programmes and resource allocation.

With OECS territories varying in the extent of development, the OECS sees its role as a provider of resources and capacity which can be used and deployed as needed across Member States. Therefore, key stakeholders across the subregion were engaged to ensure learning could continue pursuant to guidelines for remote learning. While online teaching and learning is occurring in all OECS Member States, this is not necessarily via a specifically online curriculum, or via synchronous lessons, and the OECS has attempted to provide support to ensure online learning addresses students with effective content. To this end, the OECS has engaged in ongoing efforts to build a bank of resources ensuring educators and students have access to content for lessons across core subjects as needed. This resource initiative, comprised of a combination of OERs and new content, began in part as the majority of content curated from online resources was evaluated to lack relevance for SIDS specifically, and therefore some degree of adaptation or new creation of content was required. At the same time, OECS had reached out to educators across the subregion to determine the extent of content which already exists, as many educators have independently developed content for their own classes. The aim of this outreach was to determine the extent of resource development and what could be digitized, curated and shared for other educators as part of OECS's resource bank.

To further extend online learning capabilities, OECS is currently attempting to procure 14,000 devices across the subregion by way of a Global Partnership for Education (GPE) grant. Thus far, US\$3 million has been awarded to support Dominica, Grenada, Saint Lucia and Saint Vincent and the Grenadines, and connectivity to these devices will be facilitated in cooperation with the private sector. Simultaneously, training programs were initiated to ensure that teachers might further develop pedagogical skills to effectively manage teaching online (whether blended and/or completely online). To this end, the OECS has revised its budget via emergency alterations¹³³ with allocations made towards education itself and student health as a function of education.

Successes and challenges of online learning implementation

Reflecting the perspectives shared by its Associate Member BVI, the OECS also regards COVID-19 as an opportunity for systemwide change towards meeting long-term education objectives across the subregion. Specifically, OECS officials saw the strengthening of synergies across policies, for example, the fast-tracking of technology for teaching/learning to support general developmental policies, as a particular opportunity in the time of COVID-19.

To facilitate understanding, the OECD undertook an analysis of learning management systems (LMS) being used around the region in May 2020 with responses from 3,000 teachers. Policy options for Ministries of Education across the OECS will be developed with insights from these responses on what

¹³³ These alterations went into effect mid-August 2020.

systems and technologies are currently being used and how frequently. Officials note that this increased technology use in education requires emphasis on content development that meets various evidence-based pedagogical principles, a catalyst in itself for improvement in teaching and learning with a focus on quality. Guidelines were also in development to build resilience across national systems, allowing for more responsiveness to emergency situations or circumstances that cause an interruption in the formal school programme. The framework proposes use of blended approaches even when the full programme is restored in order to maximize the benefits of the various modalities, provide options for students with varied 'learning styles'¹³⁴, and create an environment where full transition to online learning, as necessitated by the contingencies and interruptions to normal functioning as mentioned above, is a simple process for all involved.

As mentioned, the OECS regards education as a cross-cutting concern, and the use of ICTs are a core strategy pillar in this domain. While the long-term aim is to develop a fully digital education system across the subregion, emergency measures in light of COVID-19 have included traditional technologies (television, radio, etc.) to ensure continuity of education irrespective of student context. Furthermore, vulnerable children from low-socioeconomic backgrounds, one of the targets for a recent GPE grant, as well as children with disabilities and special needs requirements are being considered in the development of online content, with funding aimed to ensure special education specialists take part in this development. According to officials, gender also plays a major role in education inequalities, with education of girls and boys affected in different ways during COVID-19. Therefore, the OECS has taken special steps to ensure content can be developed for online learning that may be attractive to boys in order to mitigate issues related to retention in education, thereby curtailing dropout rates. Indeed, while OECS officials recognize the capacity for distance learning to address instances of special needs amongst the student population, these same populations were prioritized to return to school first to ensure disruption in learning continuity was limited.

Finally, as connectivity in schools is often only available for administration with teachers and students lacking access, an international initiative to ensure all students are connected to the internet via institutions, the Giga program, has been adopted to the context of the OECS towards empowering stakeholders to make use of these technologies. With 9 of 11 OECS Member States having already completed mapping of school connectivity, the goal remains to have more than 60 per cent of schools with full connectivity over the next three years.

Caribbean Examinations Council (CXC) of the Caribbean Community (CARICOM)

Comprising sixteen participant countries in the subregion¹³⁵, the Caribbean Examinations Council (CXC) is a CARICOM institution that oversees the provision of subregional exams for primary, secondary, and tertiary education across multiple disciplines.¹³⁶ The organizational structure interweaves with Ministries of Education, with the Council itself made up of representatives from all participating countries. Furthermore, national committees operate at country level, allowing for communication between CXC and stakeholders, including parents, students, private sector, public sector, GOs

¹³⁴ Address non-scientific nature of learning styles in recommendations.

¹³⁵ Anguilla, Antigua and Barbuda, Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago and Turks and Caicos Islands.

¹³⁶ Beyond exam provisioning, CXC also provides consultancy services including (but not limited to): Syllabus and Curriculum Development, Competence Development for Professional Certification, Development of Educational Resource Materials, Examinations Development for various levels, Test Construction and Editing, Examinations Production (Formatting and Printing), Management of Examinations Administration and Security, Psychometric and Data Analysis, Teacher Training (Item Writing and SBA Management) See: CXC, 2020.

and NGOs, etc. CXC provisions online and offline testing depending on levels of IT hardware and connectivity access and provides needs-based accommodations as necessary.¹³⁷

Over the past five years, a shift towards an 'IT-Intelligent' organization has occurred, allowing CXC to remotely provide its services. Therefore, at the onset of the pandemic, 85 per cent of services were able to continue uninhibited, while the remaining 15 per cent of activities required distribution and receiving of paper-based exams. In order to adapt, CXC has reallocated funds previously budgeted for in-person travel and local exam logistics to online provisioning.

Initially developed to support self-paced exam preparation for out-of-school students¹³⁸, the CXC Learning Hub was developed to consolidate content and syllabi among other resources to assist synchronous and asynchronous learning across the subregion. Specifically, CXC has partnered with Notesmaster, an Open Educational Resource (OER) online learning platform that has provided access to content for students and educators across the Caribbean. Through Notesmaster, educators can create virtual classrooms, track performance, and interact directly with their students, using the content available on the Learning Hub as well as their own personal content.¹³⁹ While the Notesmaster platform has provided remote learning support during the COVID-19 pandemic, the set-up of physical testing environments and maintaining health guidelines during testing poses new difficulties. Furthermore, the entire exam cycle was rescheduled during COVID-19 delaying seasonal exams by ten weeks.

As many officials expressed in this study, CXC believed that COVID-19 produced a positive shift in mindset towards subregional development, proving that remote work and services are possible. Indeed, CXC confirms that training workshops held over a 2-3 week period to enhance educator capacities¹⁴⁰ experienced high demand. Thus far, 500 educators have been trained, and oversubscribed sessions required CXC to add new sessions.¹⁴¹ The organization also engages students and parents directly in training to remove misinformation around the online exam platform and to improve communication between these stakeholders and educators. Beyond formal training, CXC captured feedback through social media and online newspaper articles to improve services and communication. The pandemic also saw expansion of the stakeholder base, with private sector, PTAs, and principal associations joining 2,000-3,000 participants for information sessions broadcast online to communicate key exam changes and adaptations during the pandemic. The CXC communications team have also monitored analytics through the CXC learning hub and adapt outreach accordingly.¹⁴²

Indeed, CXC believes that COVID-19 will permanently change operations in the organization across the subregion with several specific adaptations. First, differentiated learning¹⁴³ will become the norm across all levels of education, driving a new form of educator-driven experience. This will ensure that speed of learners and/or diversity of interests are not hindered by rigidity of curriculum; second, core subjects will be increasingly conducted online without the physical limitations of the classroom; third, policies will adapt to the new reality and support greater focus in reaching more students with appropriate learning material throughout their education; and fourth, CXC will increasingly position itself as an enabler, not just setter, of exams.

¹³⁷ These may include testing services for the deaf or the blind, while the validity of exams must be taken into account to ensure accommodations do not void the scoring of the exam. The guidelines provided by the Joint Council for Qualifications (JCQ), a UK-based organization, are followed in these instances.

¹³⁸ Specifically, those just beyond oldest secondary school cohort (aged 18 or 19) who wish to receive workplace recognized certification.

¹³⁹ All teacher developed content is peer-reviewed prior to publication online via Creative Commons licensing.

¹⁴⁰ Particularly to facilitate online learning and manage virtual classrooms.

¹⁴¹ CXC confirms that sessions are now developed as required/requested across the subregion with no limitations for educators to access this training.

¹⁴² For instance, FAQs were developed to ensure recurrent information is addressed and disseminated accordingly.

¹⁴³ Differentiated learning, or differentiated instruction, refers to tailoring learning to individual needs. This is a key component of student-centered learning, or personalized learning, which CXC supports.

While these changes are likely, the CXC cautions that resource constraints across the subregion are ongoing and speed of achieving these goals must be tempered accordingly.

Box A1

Private sector in online education

The private sector has also stepped in to support online learning and classroom management in several Caribbean countries. Those business have been working alongside governments during the pandemic to address important gaps and assisting with normalizing educational services. Here we provide two examples of such business models:

GeoTechVision and EduTechAid

GeoTechVision (GTV), based in Jamaica and Guyana, supplies their own brand of tablets and integrated Learning Management System (LMS) to schools and learners across the region in support of national curricula^a. To match the unique requirements of the subregion, the company has designed the tablets with a 'rugged build' that supports use across both urban and rural environments. Curriculum loaded onto these devices is developed by schools while the tablets can be used for online tutoring and subject matter practice as necessary. Onboarding and continuous training are offered by the company to ensure educators are fully comfortable with managing virtual classrooms and educating through these devices. The company stated that no one solution fits all needs from primary to tertiary learning and has worked to tailor solutions and services accordingly.^b Indeed, recognizing the spectrum of uses across the subregion, particularly in disaster situations^c, has led to the creation of a central helpdesk for tablets, capable of send push notifications and content to students as needed.

Devices supplied by the company are reported to be currently used in homes or in rotation between students during COVID-19 lockdowns across the subregion. However, the company found that the initial COVID-19 response in education was slowed by two factors: a lack of understanding of the value of online-learning and a general lack of competence in conducting online learning. To this end, a series of webinars in partnership with the ACS and University of the West Indies (UWI) have been held with themes concerning inclusivity and access to online learning.^d

In terms of accessibility, the company states that comprehensive data is critical to making informed and effective interventions.^e To address regions of greatest need identified by this data, a portion of all sales at GTV were redirected to EduTechAid (ETA)^f, a private foundation to conduct research to support distribution of devices to these regions and/or demographics^g. ETA offers a mode of donation for potential partners (for instance, commercial banks) who may wish to donate devices to these specific segments of the student population where demand is highest.

One on One Educational Services LTD.

One on One Educational Services LTD (One-on-One), based in Jamaica, supplies online learning access to students across 10 countries in the Caribbean (One-on-One, 2020).^h The company's offerings evolved from in-class tutoring to fully online learning platforms with self-paced/asynchronous courses and regional exam preparation.ⁱ

This capacity was particularly applicable during the COVID-19 pandemic. For instance, at the outset of the COVID-19 pandemic in Jamaica, the company collaborated with the Ministry of Education to launch an online learning system for students at all levels, which was made possible by prioritizing investment in online learning, devices and teacher training over the past seven years. As such, teachers across the region were able to provide synchronous learning to students and had prepared more than 15,000 hours of pre-recorded CSEC and CAPE lessons, with video search capabilities, to support education. Furthermore, the organization had developed a standardized timetable for primary and secondary school students to continue their participation in online classes in Jamaica and The Bahamas.

However, according to the company, student onboarding issues began immediately during the pandemic, highlighting the need for better reporting on attendance and integrations with Open EMIS systems, which One-on-One has now begun in The Bahamas. To ensure accessibility during COVID-19, One-on-One also aimed to increase access to devices and partnered with regional telecommunications company Flow to ensure access to free content for students with internet connectivity (Business Wire, 2020).^k The company also worked with governments to ensure that infrastructure is extended to areas with limited connectivity and partnered with various foundations and companies^l to extend funding for devices and connectivity where these are limited. To address areas where infrastructure is limited^m, the company is developing tailored solutions, such as the "Classroom in a Box" technology, to provide mobile wireless stations for online learning in these remote locales. Furthermore, the company is researching best approaches to address hearing and visually impaired students and conducted a hackathon to develop strategies to address the diverse accessibility issues across the subregion. According to the company, subregional governments now understand what is necessary to ensure online learning across national student populations.ⁿ

However, maintaining strong lines of communication with students and obtaining key data for policy improvement remain obstacles despite the company's own efforts to address these issues. Further, the company has addressed the lack of teaching capacity through extended training efforts with the launch of a teacher success program to reach the long-term goal of educators to autonomously digitize 100 per cent of national curricula across the Caribbean. Overall, One on One believed that public private partnerships are essential to modernizing the education sector across the subregion.

Source: Author's compilation.

^aA learning management system (LMS) encompasses a wide variety of centralized virtual learning environments which commonly facilitate both the administrative and educational aspects of online learning activities in a particular context. GTV works in collaboration with an Israeli company to provide an LMS for their devices.

^bFor instance, 'white label' devices for universities and community colleges. 'White label' refers to devices do not come with branding and can therefore be branded by the purchasing institution.

^cThe company has also partnered with the Association of Caribbean States (ACS) to host a virtual camp on disaster resilience specific to the subregion.

^dExample themes are as follows: how to address vulnerable groups in education, managing students with mobility challenges, generating data on status, an education as preventative component to social security.

^eThe company focuses on questions concerning: the age of children, who is filling out the survey, level of education, current level of access to technology, male or female, internet access at home, internet access at school, level of inclusivity.

^fSee: <https://edutechaid.com/>.

^gThus far, the company has determined that rural communities, students of low-socioeconomic status, and female students suffer the largest disparities in access.

^hOf the case study countries, this includes Barbados, BVI, Jamaica, and Trinidad and Tobago.

ⁱThese platforms use a skills-based approach, with an initial assessment conducted on students to develop a 'personalized' path to close targeted skills gaps for primary, secondary, and tertiary students. For instance, the company's 10n1XL platform provides 'curated online learning courses' across a host of topics, containing 10,000 internationally sourced content pieces with the aim to include regionally developed content in the future. For schools, the 10n1 LMS provides an online environment for content creation, communication and collaboration, blended-learning and accreditation while the 'Classroom in a Box' solutions provide a complete package for managing and conducting lessons and to access, curate, manage, and publish content for distribution. This platform has improved data captures of student interactions with online learning materials which ensures learning is occurring and analyzes this data to improve the experience.

^jStudents selecting wrong schools from a dropdown menu on the website.

^kIn total, over 130,000 students benefit from this initiative.

^lFor instance, the travel company Sandals.

^mThe company stated that traditional media, such as television and radio, which are currently being repurposed for education content distribution in remote locales during the pandemic, are insufficient as they do not allow for the two-way communication necessary for effective learning.

ⁿOne-on-One also states that parents who homeschool their children and educators at all levels of the system would benefit from the content on the platform and hope to increase awareness over the next months.

Commonwealth Youth Council

The Commonwealth Youth Council (CYC) is a non-profit organization representing some 1.2 billion young people to advance youth development agenda across the Commonwealth.¹⁴⁴ CYC works alongside the Commonwealth Secretariat to gather concerns and recommendations which are addressed to relevant Ministers, Ministries and heads of government.

Understanding the cross-cutting importance of education, CYC advocates for best practices and quality education across the subregion towards expanded entrepreneurship and employment. CYC representatives state that student dropout rates are a key obstacle to this goal which must be addressed, with secondary school students and residents of rural areas at greatest risk. Further, representatives state that lack of quality internet and difficulty adjusting to learning at home during the pandemic may jeopardize progress in this regard.

¹⁴⁴ The primary objectives of the Council are: a) To contribute to the achievement of the objectives of the Commonwealth; b) To mainstream young people into the work of the Commonwealth at all levels; c) To centre for mobilise the voices and actions of young people in the advancement of youth across the Commonwealth d) To advocate for governments meaningfully engage young people in its representation internationally e) To be a centre for information on youth work and development f) To partner with the Commonwealth Secretariat and other Commonwealth organisations with a focus on youth development on behalf of young people. See: CYC, 2020.

As such, infrastructure to increase access is critical to ensure students who may be easily cut off from the evolving education system (internet access, etc.) are retained. While representatives recognized the benefit of Universal Service Funds (USFs) to address this need, it was felt that, although underutilized, these mechanisms may be susceptible to corruption.¹⁴⁵ Instead, special economic zones or tax credits may provide more sustainable incentives to expand infrastructure and service packages to marginalized populations. No matter the mechanism, representatives stated that a long-term vision beyond election cycles and short-term political interests were vital.

Currently, the CYC aims to consolidate student concerns during the pandemic, conducting webinars, social media surveys, digital townhall events, and correspondence with student representatives across institutions. The aim of these activities is to produce a primary document for presentation to the Commonwealth Secretariat.¹⁴⁶ Due to the pandemic, this presentation has not yet been scheduled.¹⁴⁷

Furthermore, the CYC, alongside the UNDP, Sir Arthur Lewis Institute for Social and Economic Research (SALISES) and regional organizations, co-hosted a Development Challenge competition as part of its 'Ready Set Recharge' youth webinar series.¹⁴⁸ The hackathon challenge brought together experts and youth participants to address six thematic areas with the winning team addressing 'Reducing Inequalities in Education (focus on technology and connectivity)' during the ongoing pandemic and beyond.¹⁴⁹

¹⁴⁵ On underutilization of USFs in the Caribbean, see: Bleeker, A., 2019.

¹⁴⁶ While the CYC strives to include all levels of education, representatives at the tertiary levels are most responsive to this outreach, as many schools at lower levels do not have representation.

¹⁴⁷ Much as with PTA meetings in Trinidad and Tobago, constitutional changes would be necessary to allow for the meeting to take place online.

¹⁴⁸ See: <https://readyssetgreatja.com/about-ready-set-great/>.

¹⁴⁹ The winning pitch, branded 'Covinnected', aims to ensure equitable digital access throughout the education system with no student left behind. Ms. Williams, in defining the standout features, noted that 'Covinnected' was a comprehensive model guaranteeing access to devices, access to the internet, ability to manoeuvre platforms and ability to connect to stakeholders as required See: UNDP, 2020.



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