



COVID-19 AND EDUCATION IN ASIA AND THE PACIFIC

GUIDANCE NOTE

JANUARY 2021

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Notes:

In this publication, “\$” refers to United States dollars.

On the cover: (1) Computer graphics and multimedia research laboratory, School of Engineering and Applied Sciences at the National University of Mongolia (photo by ADB). (2) Salasika, 8, does her homework at her home during the lockdown of schools caused by the spread of coronavirus disease (COVID-19) in Jakarta on 27 March 2020 (photo by Afriadi Hikmal/ADB). (3) Two Sri Lankan children browsing details about COVID-19 through the internet at home in Colombo, Sri Lanka 04 April 2020. Sri Lankan government suspended all arriving flights, implemented an island-wide curfew until further notice in the country, and highly requested people to follow safety measures recommended by health authorities. Election commission announced that the scheduled 2020 general election will be postponed due to the prevailing COVID-19 pandemic; the country has so far reported 159 cases and 5 deaths from COVID-19 (photo by M.A.Pushpa Kuara/ADB). (4) 14 May 2015. Saima, 8, helps her 6 year-old sister to read a book at their house near Balloki head works in Punjab, Pakistan. Saima and Naseem started school late as their father could not afford their education. Now he works with the Balloki head works extension project and is able provide a better life (photo by ADB). (5) Computer graphics and multimedia research laboratory, School of Engineering and Applied Sciences at the National University of Mongolia. The Higher Education Reform Project will enhance the quality and relevance of higher education programs and address issues such as governance and management, financing, and access (photo by ADB).

Cover design by Anthony Villanueva.

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The education sector has undergone unprecedented disruptions due to COVID-19. The impact on the lives and health of people is of paramount concern to governments. Yet, there has also been a strong recognition of the need to address the revival of key economic and social sectors to mitigate the pandemic's negative consequences on livelihoods and poverty levels. Appropriate interventions for the recovery of the education sector will also help the recovery of other sectors through powering improved skills and human capital. This guidance note recommends dealing with COVID-19 beyond the immediate crisis to initiate far-reaching reforms and strengthen the resilience of education and training systems. It frames actions to be taken in the three Rs: Response, Recovery, and Rejuvenation. Key principles that are outlined can help shape the development of a “new normal” for education.

COVID-19 and Education in Asia and the Pacific: Guidance Note complements and adds to guidance notes prepared by other international agencies. Shanti Jagannathan from SDCC led the preparation of this guidance note, with valuable perspectives provided by members of the Education Sector Group. Special thanks to Brajesh Panth for the overall guidance and Sungsup Ra for strategic advice. Fook Yen Chong, Lynnette Perez, Per Borjegen, Jukka Tulivuori, Jian Xu, Lisa Kreibich, Meekyung Shin, Sameer Khatiwada, and Kirsty Newman contributed feedback and inputs. The guidance note also benefited from the review of Sonomi Tanaka and Zonibel Woods of the Gender Equity Thematic Group and Bruno Carrasco of the Governance Thematic Group.

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ADB hopes this guidance note contributes to strengthening the resilience of the education sector in a post-COVID-19 world. It is also intended to provide suggestions and pointers for deliberate actions that stakeholders in developing countries can consider in responding to the pandemic, as part of a long-term road map to improve quality, relevance, and inclusion in the education sector. Continued dialogue and exchange between international agencies and governments will ensure the coherence and impact of concerted efforts.

Abbreviations

ALS	alternative learning system
ADB	Asian Development Bank
COVID-19	coronavirus disease 2019
DepEd	Department of Education
EdTech	education technology
ILO	International Labour Organization
OECD	Organisation for Economic Co-operation and Development
TVET	technical and vocational education and training
UNICEF	United Nations Children's Fund
UNESCO	United Nations Educational, Scientific and Cultural Organization

Executive Summary

Dealing with Disruptions Arising from COVID-19: How Can Education and Training Systems Bounce Back?

Globally, education and training systems are undergoing unprecedented disruptions due to the coronavirus disease (COVID-19), calling for timely efforts to ensure that learning can continue in one form or another. While most of the attention in relation to response mechanisms has understandably been focused on the impact on health, safety, livelihoods, and economic growth, the pandemic can undermine hard-earned progress in education at all levels unless timely action is taken.

This note provides guidance on how the developing member countries of the Asian Development Bank (ADB), in partnership with ADB and other development partners, can reimagine education sector operations in dealing with the pandemic. Governments have announced and rolled out a series of measures to cope with and respond to the challenges posed by the closure of education institutions. Several international agencies have prepared guidelines to address different types of disruptions and responses needed (See bibliography). This note draws on and reinforces key principles outlined in these guidelines, and augments and complements them.

The scale of shock to education systems is unprecedented, and thus calls for commensurate actions. Most stakeholders agree that the crisis brought about by COVID-19 could well be the opportunity to put in place transformational approaches and policies that address deep-seated problems in education. While the practicalities of resource mobilization and professional capacities need to be examined, this is an opportune time to explore a full-scale review.

This note recommends that dealing with COVID-19 should go beyond the immediate crisis to initiate far-reaching reforms to strengthen the resilience of education and training systems, and frames the actions to be taken in the form of three Rs:

- **Response:** How can education and training systems sustain teaching and learning during closure of education institutions due to the COVID-19 outbreak (3–10 months)?
- **Recovery:** How can education and training institutions prepare for the recovery phase when they reopen, make up for lost time for students, and enable their transition to higher levels of education or their entry into the job market (6–24 months)?

- ➡ **Rejuvenation:** How can education and training institutions undertake initiatives in response to the crisis to rejuvenate teaching and learning with new tools and techniques, particularly expanding online education to complement face-to-face learning in pedagogically effective ways, and deploying new technologies to improving the quality of learning (8–36 months)?

While countries are preoccupied with responding to the crisis in the short term, it is important to consider strategies and solutions that not only provide immediate relief, but also incorporate medium- to long-term support to enable the recovery of education systems. Such an approach will build resilience within and help rejuvenate the education system.

This guidance note outlines key principles that can help shape the development of a “new normal” for education. These include recognizing the transformational potential for education technology (EdTech) solutions in responding to the ongoing pandemic, finding short-term solutions within a longer-term framework, ensuring that EdTech solutions are developed in the context of a holistic setting and ensuring adequate capacities in the system to take forward reforms and changes in response to the pandemic, and putting policies within education using a multisector approach for better results and impact.

EdTech integrates information and communications technology by deploying hardware and software technologies to improve efficiency in the learning process. EdTech, often using new and disruptive learning technologies such as personalized and adaptive learning technologies, machine learning, and artificial intelligence, have completely redefined pedagogical and learning models through the delivery of education beyond physical environments. EdTech primarily aims to bring vastly improved learning experiences for students; it also relies on computing power to run learning management and other administrative tasks.

While all education and training institutions are adversely affected by COVID-19, the nature of disruptions are different in K-12 (covering kindergarten to grade 12 of school education), technical and vocational education and training (TVET), and higher education, as also the responses needed, given the state of play and age of students. This note thus looks into different response mechanisms needed for K-12 school education, TVET, and higher education.

EdTech tools and approaches can be game changers in many ways. While this guidance note advocates a transformational approach to reforming education systems through EdTech, it is important to keep in mind that the most important goal of education is learning. In adopting and scaling up EdTech, it is crucial that policy makers put high-quality learning by students as the central objective. Recovery strategies thus need to ensure that learning is the key underlying motive for the application of EdTech.

Six overarching priority actions are recommended in deploying digital strategies to address COVID-19 to ensure focus on learning:

- 1 Sustain uninterrupted learning through alternative and flexible approaches using multiple channels and platforms, including online, mobile phones, TV/radio, and printed materials to ensure a learning environment to where students are located.
- 2 Revamp teacher training and support teachers to cope with the requirements in new learning environments, including medium- to long-term professional development to integrate the use of digital tools in traditional teaching and learning practices.
- 3 Develop high-quality digital content in partnership with national and global institutions and drawing on regional and global standards.

- 4 Ensure equal learning opportunity for students who lack access to devices, connectivity, and a favorable learning environment at home through adequate social protection measures and other mechanisms.
- 5 Articulate clear policies toward assessments and examinations, certifications, and transition to higher levels of education, while formulating new approaches to testing and examination.
- 6 Provide for innovative financing arrangements and partnerships to support innovations and pilot new approaches and invest in capacity building through twinning arrangements between institutions to draw on lessons learned from other countries to facilitate scaling up deployment of new technologies to improve learning.



Elementary students wearing masks sit with distance to each other during graduation in Tokyo, 25 March 2020. Japanese Prime Minister Shinzo Abe has called for all schools in the country to close until the end of the spring holidays to reduce the risk of spreading the virus (photo by: Richard Atrero de Guzman/ADB).

1 Introduction

According to United Nations Educational, Scientific and Cultural Organization (UNESCO) data as of September 2020, 80 countries continue to implement nationwide or local school closures, affecting about 1.1 billion students globally.¹ The anticipated prolonged closure (beyond 6 months) poses an unprecedented challenge to education and training institutions to sustain learning and development.

A number of international agencies, including UNESCO, United Nations Children's Fund (UNICEF), Organisation for Economic Co-operation and Development (OECD), International Labour Organization (ILO), and World Bank, have come out with their respective analysis of the impact of the coronavirus disease (COVID-19) and outlined necessary policy responses, including a strong focus on new approaches to teaching and learning while remaining closed.

Governments have put in place arrangements for learning continuity across all levels of education even as education and training institutions remain physically closed.² (See Bibliography for guidance notes by international agencies and other references).

¹ During the initial outbreak of COVID-19, as many as 187 countries were implementing school closures impacting around 1.7 billion students globally.

² A series of issue notes, good practices, and practical tips have been developed by various international agencies and stakeholders to provide guidance on online and distance learning, digital curriculum, and resources for teachers and learners during COVID-19, a framework to guide education programs during COVID-19, support to teachers and parents as students learn from home, resources to offer lessons through radio broadcast and mobile apps, considerations and health precautions toward re-opening of schools, etc.

Prospects of Prolonged Closure amid Uncertain Times

It is clear that the closure of education institutions is likely to be extended (beyond 6 months to an entire academic year) with far-reaching effects on education. Policy makers deal with uncertain times due to risks of COVID-19 outbreaks reoccurring, which calls for continued lockdown and quarantine procedures.

There is evidence that even prior to COVID-19, education systems were grappling with a so-called learning crisis, described as increasing portion of students in developing countries not reaching desired learning attainment levels. Disruptions from COVID-19 are compounding poor learning conditions in developing countries; without concrete action, the pandemic will exacerbate “learning poverty” in low- and middle-income countries,³ and will have long-term negative consequences on economic growth and human capital.

There is concern regarding equal learning opportunity during COVID-19 as the main mechanism of coping with school closure by far has been internet-based or online learning. According to a recent UNICEF report, more than 90% of countries have implemented some form of remote learning policy in response to the pandemic.⁴ But many governments in developing countries are noting that a significant number of students do not have access to internet connectivity or the required devices. The UNICEF report estimates that at least 463 million students, or about 31% of students from pre-primary to upper secondary school levels, face serious disruptions to education, mainly due to a lack of remote learning policies or lack of equipment needed for learning at home. They are not able to access online learning due to either lack of policies supporting digital and broadcast remote learning or lack of household equipment needed to receive digital or broadcast instruction. Governments have had to put together a mix of approaches that include using radio and TV broadcast, mobile apps for learning, and printed materials to be used at home.

Another common feature of policy directions to recover from COVID-19 is the potential for “building back better” where flailing education systems can use the crisis as an opportunity to put in place new practices and build far more resilient, efficient, and equitable systems. This would require investments to improve nationwide connectivity, support students to learn at home to complement face-to-face learning, and enhance digital and other pedagogical skills of teachers to manage blended and remote learning as well as psychosocial well-being of students.

The underlying premise of policy directions being discussed suggests that governments and societies must put in place measures to respond to the COVID-19 crisis not as a stopgap and transitional measure (while there may be transitional elements to the policy responses), but to formulate a response strategy that has a medium- and long-term outlook to improve the quality and resilience of education systems, and that seeks to significantly improve the quality of learning for all.

³ World Bank introduced the concept of “learning poverty” defined as being unable to read and understand simple text by age 10.

⁴ UNICEF. 2020. COVID-19: Are children able to continue learning during school closures? A global analysis of the potential reach of remote learning policies. <https://data.unicef.org/resources/remote-learning-reachability-factsheet>.

Key Principles That Can Shape the Emergence of a New Normal in Education

As governments and other stakeholders put together measures to fight the pandemic and ensure continuity of the education process even as institutions remain closed, the emergence of a “new normal” has begun to dominate discussions. This stems primarily from the premise that even after COVID-19, education systems will need to maintain measures that will be introduced and become part of the new operating procedures, and that these alternative mechanisms could potentially help to address specific needs of students.

Key principles that can help shape the emergence of the new normal in education and training systems include the following:

Recognizing the Transformational Potential of Education Technology

While digital solutions have been a key response to the disruptions caused by the pandemic, it is clear that these have great potential to bring positive transformations in education and training irrespective of COVID-19. EdTech solutions look promising particularly in three areas: (i) improving student learning outcomes through personalized and adaptive learning, (ii) improving teachers’ ability to monitor student learning and targeting improvements, and (iii) improving transparency and accountability of education systems by linking education delivery with learning data. Such solutions can be applied across different levels of education—K-12 school education, technical and vocational education and training (TVET), and higher education.

For optimal returns, five interrelated areas need attention: (i) identifying critical policy reforms; (ii) investing in expanding access to affordable and reliable internet connectivity for education and training institutions, and households (by leveraging funds outside education ministries); (iii) revamping teacher professional development in light of technological developments and digital skills needed for both teachers and students; (iv) supporting parents and students for continuous learning in institutions and at home; and (v) promoting public–private partnerships to mainstream EdTech solutions even in poorly resourced environments, drawing on philanthropic resources.

In this context, it is important to keep in mind that digital learning cannot and should not fully replace face-to-face learning that has many other dimensions for the holistic development of students.

Linking Short-Term Measures with Long-Term Reforms

While immediate measures are put in place to ensure learning continuity, such measures should be part of a long-term framework to address poor learning. As mentioned, even prior to COVID-19 many students are demonstrating poor quality of learning, thus there is a need to mitigate obstacles to raise the quality of learning. Online and distance learning strategies introduced during COVID-19 could help address the gap. Long-term planning will open up new ways of managing blended learning (face-to-face and virtual) and strengthening teacher preparation for managing student learning, using digital content and tools to help students who may be lagging behind.

Locating Education Technology Solutions in a Holistic Framework

The pandemic has amplified existing inequalities, but it has also shown new opportunities given the shift in learning from school to home. COVID-19 has brought heightened awareness to earlier recognition that students learn from all manner of sources, even outside the physical confines of education institutions.

A holistic framework that engages different stakeholders in the various environments that contribute to learning requires taking into account different pillars: (i) government policies in emerging priorities such as continuous formative assessment and broader monitoring to ensure learning progress; (ii) infrastructure for reliable, affordable, and stable connectivity in partnership with telecommunication companies; (iii) teacher and school readiness to manage new ways of learning and scaling up such practices; (iv) support to parents and students for personalized learning and learning outside of school premises to reduce inequalities in learning opportunities; and (v) partnerships with different providers for digital content, assessment, and adaptive learning platforms to ensure high-quality and more effective delivery mechanisms.

Investing in Capacity Building to Optimize Education Technology Solutions

The transition to online learning arising from COVID-19 has revealed significant gaps in capacity among teachers and education administrators to manage the adoption of alternatives to physical schooling. Institutions responsible for curriculum, assessment, and teacher professional development need to partner with universities to strengthen capacity within the system and be able to attract talent from the public and private sectors for transforming teaching and learning. There is a need to rethink capacity building given the transformative role of technology. In the short term, developing countries can seek to adapt innovative solutions from regional and international partners.

Mobilizing Support to Education Sustainable Development Goals

Budget allocations for the education sector need to be protected in the face of fiscal constraints arising from COVID-19. As policy makers direct resources to health and economic recovery activities, this may, in turn, lead to budget cuts for education. The decline in funding will have long-term negative consequences as education and human capital development get adversely affected. Investing in skills for priority sectors would be critical to accelerate economic recovery. Investing in the education sector to help meet the Sustainable Development Goals becomes crucial. Investing in internet connectivity for education and training will bring wider benefits across sectors and the overall economy. It would create new opportunities for self-directed and lifelong learning for students and teachers.



Electronics engineering students of Batam State Polytechnic design their own printed circuit boards at one of the campus' numerous electronics labs. This Indonesian school is a grant recipient of the ADB's Polytechnic Education Development Project (photo by ADB).

2 Coping with COVID-19 Disruptions

This guidance note underscores the great opportunity to re-invent education systems to be more resilient and aligned with the needs of future societies, workplaces, and knowledge domains.

The scale of disruptions to education systems is unprecedented and calls for commensurate actions. Most stakeholders agree that the crisis brought about by COVID-19 could well be the opportunity to put in place transformational approaches and policies that address deep-seated problems in education, particularly related to shortfalls in learning. Based on this premise, the framework prescribed in this guidance note for dealing with COVID-19 considers three phases: Response, Recovery, and Rejuvenation. The first stage involves responses to immediate needs when institutions remain closed for physical classes. The second is when institutions begin to reopen but cannot function as per usual practice. The third phase involves implementing reforms in education using a long-term and sustainable framework.

The following sections explore these three phases in three levels of education and training: K-12 school education, TVET, and higher education.

K-12 School Education

Response Phase

The rapid outbreak of COVID-19 has led to a massive shift to providing education outside the formal setting of education institutions. The suspension of physical schooling to contain the pandemic has called for reliance on distance learning modalities on an unprecedented scale. This has also called for a rapid compilation of online education resources.⁵ However, this large-scale, unplanned shift from traditional school-based learning to online learning poses challenges to even more developed countries.

Deliberate and systematic strategies that link short-term needs for continuing learning with the longer-term imperative to improve student learning outcomes need to be put in place to ensure that the crisis is turned into an opportunity for better recovery. While online learning has been scaled up greatly due to various benefits it brings, governments have also had to rely on interactive radio and TV materials in local languages and/or dialects to ensure learning continuity.

Tables 1 and 2 outline key planning and implementation steps to deal with school closure in the immediate response phase, a scenario of 4–8 months closure, and an extended scenario of 6–10 months closure. Learning continuity is a critical part of the immediate response phase as the shift to online education may have disproportionate adverse effects on students from poor backgrounds or with different disadvantages such as disability and language barriers. These include girls who may be drawn into housework while boys who may drop out from school to augment household income, and other students with learning challenges.

Table 1: K-12 Response Phase: Key Issues and Actions for Consideration

(Scenario of 4–8 Months Closure)

Issues and Areas of Intervention		Illustrative Actions to Be Taken
4–8 months closure	Introduction of distance learning strategies	<ul style="list-style-type: none"> ➔ Conduct rapid situation assessment of needs. ➔ Boost information technology infrastructure for teachers and students in the form of devices and connectivity in school and household to move to online and offline delivery modes in partnerships with telecom providers. ➔ Determine the curriculum and materials to be delivered and digital contents available for remote learning in different channels, including potential printed student guides and teacher guides to serve students without access to any electronic channels. ➔ Forge partnerships with TV and radio channels to broadcast lessons with clear schedules. ➔ Initiate a framework for developing materials at central and local levels to support local bodies, school administrators, and teachers with resources and modalities to deliver online education and through radio, TV, and mobile channels. ➔ Identify mechanisms and expertise to provide quick pedagogical tools to move to online environments.
	Preparation of teachers for online education and use of multiple modalities adjusted to new realities	<ul style="list-style-type: none"> ➔ Provide teacher training to deliver curriculum through online classes and other means such as radio, mobile phones, social media, etc. This requires coaching and ongoing teacher support to plan student activities and assessment.

continued on next page

⁵ UNESCO. 2020. Distance Learning Solutions. <https://en.unesco.org/covid19/educationresponse/solutions#>.

Table 1 continued

Issues and Areas of Intervention		Illustrative Actions to Be Taken
4–8 months closure	Plan to ensure equity and inclusion through participation of girls and boys, vulnerable students, students from poor communities, and students with disability	<ul style="list-style-type: none"> ➤ Review learning needs of students with different types of disadvantages. ➤ Adopt a multichannel approach to learning continuity.
	Continuation of critical social security measures to students	<ul style="list-style-type: none"> ➤ Ensure continued provision of school meals in the community through food vouchers or subsidies to parents. ➤ Ensure continued support to early childhood care and nutrition for kindergarten children through education vouchers. ➤ Ensure continued scholarship payments.
	Navigating uncertain terrain, ensuring communication with stakeholders such as information and guidelines to teachers, students, and communities	<ul style="list-style-type: none"> ➤ Set up Q&A resources, online and phone helplines at central and local levels with guidelines to respond to common issues, grievances and resolve problems faced by students, teachers, and communities. ➤ Support parents for home-based education, particularly in poor communities where homes may not offer appropriate learning environments and where parents may have to share their resources such as mobile, radio, and TV.

Source: Asian Development Bank.

Table 2: K-12 Response Phase: Key Issues and Actions for Consideration

(Scenario of 6–10 Months Closure)

Issues and Areas of Intervention		Illustrative Actions to Be Taken
6–10 months closure	Introduction of comprehensive distance education programs that cover all students, including those in poor and remote environments	<ul style="list-style-type: none"> ➤ Enhance technological capacities of online national platforms and support provision of devices to students from disadvantaged communities. ➤ Introduce distance learning strategies to help students achieve adequate competencies. ➤ Formalize multiple channels with adequate funding to ensure sustainability. ➤ Forge partnerships with telecom companies for reliable and cheaper connectivity to teachers and households.
	Monitoring of remote channels of education	<ul style="list-style-type: none"> ➤ Explore mechanisms for monitoring of student participation, particularly in one-way channels of TV and radio, for student learning assessment.
	Continued growth of students and approach to health, sports and psychological well-being	<ul style="list-style-type: none"> ➤ Develop guidelines to help parents and students keep up physical activity, maintain good health that could be delivered through radio and TV channels. ➤ Provide broad guidance to parents and communities (through pamphlets or radio and TV broadcasts) on helping children to remain connected with education.
	Support and guidance to parents and awareness building	<ul style="list-style-type: none"> ➤ Develop guidance to parents to play an effective role in the home-based learning of their children, particularly to facilitate learning by very young children who cannot be autonomous learners. ➤ Provide guidelines to parents to ensure adequate home study environment and access to devices in an equitable way in the household.
	Mental health and psycho-social support	<ul style="list-style-type: none"> ➤ Coordination among government agencies to ensure protection of children, particularly girls, to implement safeguarding of students.

Source: Asian Development Bank.

In the immediate aftermath of COVID-19, a majority of educational and training institutions remain closed. Governments and school systems, nevertheless, need to ensure continued learning by students by putting in adequate interim measures.

To offset the large-scale closure of schools, governments are establishing or strengthening national e-learning platforms to provide immediate support to learning continuity.⁶ The sudden shift to online learning has challenged the capacities of even developed countries, but developing countries have also made substantial efforts to shift to online teaching and learning. Box 1 describes how Sri Lanka is rolling out its national e-learning portal.

BOX 1

E-Thaksalawa—National E-Learning Portal for Grades 1–13 in Sri Lanka

The Ministry of Education in Sri Lanka deployed the national e-learning portal called E-Thaksalawa, which provides free access to online learning for general education with learning content for grades 1 through 13. The Telecommunication Regulatory Commission of Sri Lanka partnered with telephone companies to enable school children to continue studying from home.

The initiative is part of the government's vision of empowering the nation through e-learning that was initiated by the Information and Communication Technology Branch of the Ministry of Education. E-Thaksalawa was developed through collaboration among skilled government teachers and subject directors, with strong support from the publication and examination departments as well as the Sri Lanka Rupavahini (TV) Corporation.

Sources: *Colombo Page*. 2020. Internet access to e-Thaksalawa free for students without data charges. 25 March. http://www.colombopage.com/archive_20A/Mar25_1585117046CH.php; Government of Sri Lanka, Ministry of Education. e-Thaksalawa: The National e-Learning Portal for the General Education. <http://www.e-thaksalawa.moe.gov.lk/web/en/e-thaksalawa/about-e-thaksalawa.html>.

In K-12, the response has mostly been to move to online classes and address other aspects of learning continuity. However, it is also important to consider the plight of pre-school students along with their in-school nutrition and vaccination, which have become precarious during the COVID-19 crisis. Over 368 million children globally rely on school meals, which are difficult to provide during school closure and as a consequence may lead to widespread malnutrition and stunting.⁷

In India, 100 million students receive midday meals and state governments were questioned by the Supreme Court on how this was being dealt with. Local governments and communities aim to put in place food stamps and other means to continue the delivery of school meals, which need to be monitored in order to take corrective action, where necessary. Prolonged closure of education institutions and lack of play opportunities may affect the mental well-being of young children and even their parents.

⁶ UNESCO. National learning platforms and tools. <https://en.unesco.org/covid19/educationresponse/nationalresponses>.

⁷ UNICEF. 2020. *Policy Brief: The Impact of COVID-19 on children*.

Many countries lack adequate public early childhood care and affordable private pre-school facilities. This puts an enormous burden on parents at all times, all the more so during COVID-19, thus education systems need to pay particular attention to early childhood care, nutrition, and education.

Recovery Phase

Once education institutions reopen, it will not be regular operations as usual since systems need to catch up on any losses in instructional time and deal with learning issues arising from closure. Depending on the length of closure, during this recovery period governments need to consider a range of interventions in partnership with appropriate institutions.

The temporary measures implemented during the immediate response period need to be reviewed and adjusted with medium- to long-term interventions put in place. Policy makers can assess the value of implementing new and innovative approaches, based on lessons learned from the crisis. A number of interventions and safeguards need to be in place at the time of re-opening schools; countries may consider gradual and/or partial re-opening depending on the COVID-19 situation.

Schools may re-open when the COVID-19 situation is “under control” rather than “fully eliminated,” which means that ongoing measures to manage COVID-19 prevention at the school and community level are critical. If there is further outbreak of cases after school re-opening, governments may again decide to implement closures. Governments need to consider precautionary measures such as sanitation, screening, and preventive care when schools re-open to teachers and students.⁸

A number of countries have adopted special measures for school re-opening. The Republic of Korea, for example, has developed a comprehensive response strategy for the education sector in response to COVID-19.⁹ An interagency group comprised of UNICEF, UNESCO, World Bank, UN High Commissioner for Refugees, and World Food Programme has prepared a joint school re-opening framework. There are also individual guidance notes on school re-opening (see Bibliography).

Tables 3 and 4 provide an overview of key aspects of making the transition from crisis response to resumption of in-person school operations while ensuring health safety precautions, with possible continuity of remote learning through online education and other means including TV, radio, and printed materials. Possible reopening of schools within periods of 6–8 months and by 8–10 months is considered. The resumption of regular classes is likely to be staggered and gradual, with the initial phase incorporating measures such as social distancing and other health protocols.

Research suggests that prolonged closure increases risks of dropouts by students, particularly those that did not continue some form of learning during school closure and those who were drawn to income-generating activities. A critical part of the recovery phase is to minimize the dropout rate, while also increasing or maintaining the level of student participation.

The recovery phase is critical to build resilience in the education system and to bridge the gap between pre-COVID-19 and school closure and re-opening. Governments need to ensure adequate precaution against repeated waves of infection while resuming education.

⁸ UNICEF. 2020. Framework for reopening schools. <https://www.unicef.org/media/68366/file/Framework-for-reopening-schools-2020.pdf>.

⁹ Korea Education and Research Information Service (KERIS). 2020. COVID-19 Response by South Korea and KERIS Through Online Distance Learning for K-12 (Q&A). https://portal.portaleducoas.org/sites/default/files/COVID-19_Korean%20Response_KERIS.docx.pdf.

Table 3: K-12 Recovery Phase: Key Issues and Actions for Consideration

(Scenario of Reopening after 6–8 Months)

Issues and Areas of Intervention		Illustrative Actions to Be Taken
Re-opening after 4–8 months	Resumption of classes and school functioning with adequate health precautions against recurring infection	<ul style="list-style-type: none"> ➤ Prepare schools with facilities planning, supplies, and mechanisms for health management in place. <ul style="list-style-type: none"> • Health protocols for sanitizing school premises • Supplies for reentry of students such as soap, sanitizers, personal protective equipment • Arrangements for health screening as needed • Guidelines for access to school by vendors • Guidelines on serving school meals with enhanced health and safety screening ➤ Ensure support for students. <ul style="list-style-type: none"> • Timely detection of symptoms, screening • Practicing caution yet not ostracizing students of families with the coronavirus disease • Active monitoring of school attendance and detect students at risk of dropout
	Enabling a smooth transition from home to school re-opening	<ul style="list-style-type: none"> ➤ Provide support for teachers and administrators. <ul style="list-style-type: none"> • Assignment of responsibilities (e.g., task force) to plan and manage reopening • Raising awareness on public health protocols to be followed after reopening • Orientation of teachers for assessing learning levels of students after return from home study • Assessment of need for additional short-term teachers • Social dialogue on “new normal” working conditions for teachers
	Teacher management, additional teachers, and teaching and learning materials	<ul style="list-style-type: none"> ➤ Ensure adequate teacher training. <ul style="list-style-type: none"> • Bridge the gap arising from school closure, provide teacher materials and self-learning materials for students • Support assessment of learning levels
	Review of educational status of students returning to school	<ul style="list-style-type: none"> ➤ Monitor returning students. <ul style="list-style-type: none"> • Monitor and prevent dropout of students, particularly girls, students from poor households, and children with disabilities • Take stock of student numbers with online and offline education during school closure • Review and announce revised school calendar • Assess a possible “condensed school year” and spill over to next academic year • Announce “catch up” studies policy such as after-school classes or classes during holidays
	Review of end-of-grade tests, examinations and promotions	<ul style="list-style-type: none"> ➤ Prepare and announce examinations and/or automatic promotion policies. <ul style="list-style-type: none"> • Review and delay timing of end of grade tests and assessments if needed • Arrange to assess student learning upon return from home-based learning • Policies toward high-stake exit examinations • Policies toward entrance examinations to universities, colleges, and professional institutions, and start of new academic year

Source: Asian Development Bank.

Table 4: K-12 Recovery Phase: Key Issues and Actions for Consideration

(Scenario of Reopening after 8–10 months)

Issues and Areas of Intervention		Illustrative Actions to Be Taken
Re-opening after 8–12 months	Assess implications of lost time in schooling and government policy on completing grade-specific curriculum and grade promotions	<ul style="list-style-type: none"> ➔ Carry out diagnostic assessments of student learning to estimate gaps in grade-specific learning levels. ➔ Review academic calendar and curriculum completion. <ul style="list-style-type: none"> • Assess completion of grade-specific curriculum, particularly for students without online classes; review need for after-school classes and partnerships for coaching at community level to ensure that students reach grade-specific learning levels • Assess spill over to next academic calendar
	Promoting flexible learning more as a norm than an exception introduced during the response phase	<ul style="list-style-type: none"> ➔ Review and institutionalize blended learning modalities. <ul style="list-style-type: none"> • Review and plan continuation of online learning with physical schooling • Institute more regular TV/radio and take-home learning packages and personalized learning opportunities ➔ Explore with teachers, students, and parents the potential for continuing blended learning frameworks beyond the coronavirus disease pandemic.
	Revisit final grade assessments and examinations	<ul style="list-style-type: none"> ➔ Initiate a suite of formative assessments and tests to monitor students' learning achievements. ➔ Develop partnerships for online assessment tools and enhance school capacity to administer them.

Source: Asian Development Bank.

Development of appropriate online resources helps education systems to become resilient to future crises that cause disruptions to physical schooling. Box 2 describes how the Philippines can strengthen resilience (the country is prone to natural disasters) through online solutions.

BOX 2

DepEd Commons—Online Alternative Delivery Platform for Basic Education in the Philippines

The Department of Education (DepEd) in the Philippines has developed DepEd Commons, an online educational platform supporting alternative learning modalities during the extended quarantine period due to the coronavirus disease (COVID-19). The platform contains open educational resources developed by public school teachers who are subject experts. Initially intended for public school students, it has been made more inclusive with extended access to private school learners as well.

Although DepEd Commons was developed as a response to COVID-19, it is being seen as a system that can mitigate school disruptions arising from any kind of emergencies and thus enable children to continue learning beyond the physical classrooms. From an alternative delivery mode to traditional school-based education, it has included content for DepEd's Alternative Learning System (ICT 4 ALS)—the country's non-formal education system that caters mainly to out-of-school youth. DepEd Commons allows teachers to customize and redistribute content by blending it with a learning management system delivered through a distance learning modality.

continued on next page

Box 2 continued

DepEd obtained the support of telecommunication firm Globe Telecom Inc. in providing free access to DepEd Commons through its subscribers. The Globe e-Library, which contains e-books including textbooks on core subjects such as math, science, english, filipino, music, and arts, was integrated into the platform.

DepEd Commons went live on 15 March 2020 and has garnered positive feedback from teachers, students, and parents, noting that it has helped them understand lessons better. From 417,244 users a week after it was launched, unique users increased to more than 7.21 million by 16 May 2020. It was expected that the number of users would reach 16 million from public schools alone by the time classes resume (5 October 2020).

Sources: Government of the Philippines, Department of Education. 2020. *DepEd Commons now available for private school learners*. 8 April. <https://www.deped.gov.ph/2020/04/09/deped-commons-now-available-for-private-school-learners/>; Government of the Philippines, Department of Education. *DepEd taps telco partners for free access to DepEd Commons*. 20 April. <https://www.deped.gov.ph/2020/04/21/deped-taps-telco-partners-for-free-access-to-deped-commons/>; ICT resources for the Alternative Learning System. <https://sites.google.com/view/ict4als/home?authuser=0>; Government of the Philippines, Department of Education. 2020. *Towards a Working DepEd Commons: Part I Roadmap*. 20 May. <https://commons.deped.gov.ph/deped-commons-roadmap.pdf>.

The recovery phase entails the reopening of schools, although school operations cannot be undertaken as they were prior to COVID-19. Schools need to consider social distancing measures, requiring planning of classroom sizes as well as teacher capacities to serve multiple classes, which carries considerations on financial, physical, and human resources. Given the large-scale use of online learning during school closure, schools and education administrators are considering a mix of online learning and in-school classes. Solutions have been implemented on how to practice social distancing while optimizing teaching resources. The People's Republic of China has addressed these issues effectively as schools reopened in the first wave. Box 3 describes how Beijing 101 Middle School is making the transition while continuing online learning and using technology to help teachers manage students in two classrooms.

BOX 3

Moving to Blended Learning in Beijing 101 Middle School

The People's Republic of China was very quick to respond to disruptions due to the coronavirus disease (COVID-19) by taking measures to provide learning continuity. Approaches were adopted to rapidly transform offline teaching modules to online and familiarize teachers in livestreaming classes.

The country also witnessed an enormous surge of student participation in online learning using public and private education platforms. The large-scale transition was facilitated by many providers of online education as well as concerted efforts by the government to enable access to students even in poor and remote environments. Due to such extensive efforts, by the time of school reopening, all grade levels across different schools, including 101 Middle School, started offering online learning. Even when schools reopened, school leaders decided to continue online learning. As a result, a blended learning approach was adopted during the first wave of school reopening for third year high school students.

To observe social distancing requirements, there was a need to reduce class size and consider teachers' workload, and also improve efficiency in managing class schedules. Classes were split into two concurrent sessions taking place in two adjacent classrooms. The use of a large-screen intelligent monitor enables teacher presence in real-

continued on next page

Box 3 continued

time in multiple classrooms. Teacher and students are thus able to have interaction across the two classrooms. The teacher can also physically move between classrooms to address the learning needs of students.

This example illustrates the need for schools and teachers to consider a blended approach. Parents and educators believe that education, in general, can be delivered through a blend of home/family, school, social, and self-learning environments.

Source: Duozhi.com. 2020. https://www.sohu.com/a/397515032_112831 (translated from a local news media focusing on education).

COVID-19 has highlighted the need to focus on the home as a venue for education. With school closures and education taking place through remote means as students remain in their homes, there is an important need for policy makers to address the role parents to support the learning of children. There is a need to ensure not just an adequate learning environment at home, but also for parents to facilitate or take part in the process of continuing education of students. Box 4 describes how New Zealand uses radio broadcast to provide parents with assistance in the remote learning of their children.

BOX 4

Support for Parents in the Pacific via Radio Broadcast in New Zealand

Talanoa Ako is a radio program aired on the Pacific Media Network (PMN) station in English and seven Pacific languages. Its program for 2020 supports distance learning from early learning to senior secondary. It is available to Pacific families via radio broadcast and mobile app.

The time spent on academic learning per level of education is (i) 2 hours for primary, (ii) 3 hours for intermediate, and (iii) 4 hours for high school. Talanoa Ako provides key information and tips on how parents can support their children with distance learning. It covers topics like literacy, numeracy, careers and vocation pathways, school reports, and parent-teacher interviews. Primary and secondary education teachers conduct 30-minute sessions in different languages. Children can likewise be involved in planning what they want to learn. Parents can guide their children to focus on areas of interest and strengths.

Talanoa advises parents that everyday household activities are opportunities for learning. Routine and special activities support children to develop self-management skills, language, expression, and empathy; strengthen relationships; and use social media to connect with family and communities, and consult school websites and platforms for learning. Tips for parents to support learning have been translated in 10 Pacific languages. Ako Centers in several locations provide access to parents.

Sources: Government of New Zealand, Ministry of Education. 2020. *More support for Pacific parents via Talanoa Ako radio broadcast and mobile app*. 20 April. <https://parents.education.govt.nz/essential-information/news-stories/tv-education-channels-launching-on-april-3/>; Government of New Zealand, Ministry of Education. Distance learning support during the COVID-19 event. <https://learningfromhome.govt.nz/>.

Rejuvenation Phase

The third phase will help education systems innovate and set new norms and practices, based on lessons learned from the COVID-19 crisis, to enable long-term changes to policies and practices. These policies could stem from two considerations: first, in making education and training systems more resilient and capable of responding to similar crises in the future; and second, in making them more innovative by taking on completely new practices and models that were either implemented during the period of ongoing crisis, or were developed as a potential coping mechanism to support students and teachers. Rather than simply returning to usual school operations after the crisis is over, this requires more deliberate thinking by policy makers and educators so that there is a conscious effort to address (i) deficiencies in the system, particularly around poor learning levels, and (ii) lack of relevance to job markets.

It is expected that the large-scale shift to online learning as an emergency measure will not be rolled back completely after schools reopen. Similarly, many new digitally powered initiatives introduced during COVID-19 can be continued and mainstreamed as they will help modernize education systems with data-driven and evidence-based planning and delivery. However, this requires additional financial and human resources.

Table 5: K-12 Rejuvenation Phase: Key Issues and Actions for Consideration

Areas of Intervention	Illustrative Actions to Be Taken
Availability of a suite of learning approaches: flexible learning, online learning, teacher-mediated, and self-learning tools as a norm rather than exception	<ul style="list-style-type: none"> ➔ Establish technical support groups to develop a range of curricular and pedagogical models that combine different options. ➔ Develop goals and objectives to implement a combination of school-based and online education, particularly personalized learning, to improve learning levels.
Remote, facilitated, and real-time assessments of student learning and feedback to students and parents	<ul style="list-style-type: none"> ➔ Rethink classroom and formative tests, and terminal examinations to incorporate online assessments that can provide real-time information to teachers, help craft individualized learning plans, and lead to measurable learning gains. ➔ Develop new methodologies for terminal and high-stakes examinations that offer multichannel progression to students.
Availability of an expanded set of options for online and off-line learning outside schools and school hours and in the community	<ul style="list-style-type: none"> ➔ Build a repository of teaching and learning resources available to teachers, students, parents, and communities. ➔ Articulate lifelong learning strategies and learning society principles.
Productive partnerships between governments and private sector and civil society organizations (CSOs) for home-based learning as a supplement to school-based learning and as substitute for the school during crisis (e.g., natural calamities such as floods)	<ul style="list-style-type: none"> ➔ Establish partnership frameworks to collaborate with education technology (EdTech) companies and CSOs to pull in advanced technology applications for education delivery. ➔ Develop guidance notes on how educational institutions could be better prepared to deal with crises in the future.
Vibrant start-up culture in the education sector, including companies that seek to scale up affordable EdTech to the masses through a wider variety of educational products and services	<ul style="list-style-type: none"> ➔ Improve regulatory environments for education start-ups and facilitate partnerships at scale for taking EdTech to the masses. ➔ Migrate education administration and management to online platforms with linkages to education management information systems to strengthen real-time and evidence-based decision-making.

Source: Asian Development Bank.

The crisis has amplified several existing dysfunctions in education systems. Reforms in student assessments, examinations, and teacher professional development are some of the areas that will benefit from new digital solutions. Governments alone cannot take the agenda forward to raise the quality of education through innovation. More partnerships and joint work is required with the private sector, EdTech companies, and

civil society organizations (CSOs) in developing state-of-the-art practices, while also ensuring that these models serve the interests of the poor and disadvantaged. Adequate financing mechanisms need to be in place to adopt new technology options and training programs (Table 5).

As blended learning and new approaches get underway after COVID-19, governance and delivery of education becomes crucial, including real-time monitoring; regular stock taking with teachers and schools, and with communities and local stakeholders; and real-time data tools to aid decision making. Roles and responsibilities of the education stakeholders need to be reviewed, as well as the governance structure in place to monitor feedback and response. The rejuvenation phase needs to consider a more rigorous systems approach better understand how interdependent the reforms and/or changes are.

The post-COVID-19 new normal can be expected to speed up digitalization of education. Box 5 describes how Indonesia is poised to transform its digital solutions implemented during COVID-19 into long-term, sustainable solutions to expand education delivery.

BOX 5

E-Learning Platforms in Indonesia

Indonesia has been ramping up investments in education technology, including online and distance learning.

In the aftermath of the coronavirus disease (COVID-19), the government designated seven e-learning platforms to enable students to continue learning at home. These include (i) Zenius Education, providing open access to over 80,000 learning videos for elementary and senior high school students; (ii) Rumah Belajar Kemendikbud or Learning House with digital learning materials and provision for digital classes and virtual laboratories; (iii) G Suite Education to help students and teachers conduct remote classes in areas with limited internet access; (iv) Microsoft Teams with all its features; (v) Quipper School, offering digital materials and exam preparation exercises; (vi) Ruangguru, providing live teaching sessions and teacher training; and (vii) Sekolahmu providing online and off-line digital learning programs. In addition, TV Edukasi, an educational television station owned by the Ministry of Education and Culture, is airing live education programs for students and teachers.

The country aims to expand online education to enable open access to quality education for its citizens with greater flexibility and opportunities for learning. The government plans to establish the Cyber Education Institute to enhance the quality of online education and to serve as a marketplace for different types of education and training opportunities. It is taking far-reaching steps to allow universities to offer a mix of online and off-line courses so students can learn with greater flexibility, and obtain credits and degrees.

These measures will not only provide digital learning experiences for students with greater readiness for future job markets, but also significantly expand the provision of higher education that would not be feasible through enrollments in brick-and-mortar universities in the short term.

Sources: *The Jakarta Post*. 2020. Studying from home: Seven online learning platforms for students. 16 March. <https://www.thejakartapost.com/youth/2020/03/16/studying-from-home-seven-online-learning-platforms-for-students.html>; World Bank. How countries are using EdTech (including online learning, radio, television, texting) to support access to remote learning during the COVID-19 pandemic. 25 May. <https://www.worldbank.org/en/topic/edutech/brief/how-countries-are-using-EdTech-to-support-remote-learning-during-the-COVID-19-pandemic>; P.Pannen, R.D. Riyanti, and Ridwan. 2019. Indonesia Cyber Education Institute: Assuring Quality of Online Education in Indonesia. In *Proceedings of International Academic Conference in Dresden 2019*. <https://books.google.co.in/>

Although this guidance note puts emphasis on digital platforms and e-learning, it is important to keep in mind that the shift toward online learning needs to be viewed with the following considerations: (i) many students are unable to access digital platforms; (ii) effectiveness of learning through online platforms is lacking; and (iii) non-digital resources will continue to be important even where digital solutions are effective, whether or not they are widely available to students.

Technical and Vocational Education and Training and Disruptions to Job Markets

A survey of TVET providers in 40 countries undertaken by ILO and UNESCO indicated that as of 9 April 2020, 98% of countries that participated in the survey had completely closed TVET schools and centers as a response to the spread of COVID-19. The delivery of work-based learning, including apprenticeships, has been equally affected. Unlike academic education, which made a widespread switch to online delivery, delivering TVET entirely through online modalities has been a challenge. Online TVET is likely to mostly cover theoretical aspects with practical and hands-on training not easy to deliver without digital tools.

The impact of COVID-19 on labor markets has been catastrophic. ILO estimates that the economic and labor crisis created by the COVID-19 pandemic could increase global unemployment by almost 140 million full-time jobs.¹⁰ Declining employment also means large income losses for workers, which ILO estimates to be from \$860 billion to \$3.4 trillion by the end of 2020. As a consequence, consumption of goods and services is expected to decline, in turn affecting the prospects for businesses and economic growth.

ILO also projects a significant increase in “working poverty”—from 8.8 million to 35 million people globally are expected to fall into this worldwide, compared to the estimated 14 million people projected for 2020 prior to COVID-19.¹¹

These pose unprecedented challenges to employment and labor market policies, and in sustaining TVET delivery. Similar to school education, the following analysis considers three levels of dealing with labor markets affected by COVID-19—Response, Recovery, and Rejuvenation.

Response Phase

Table 6 provides a snapshot of disruptions to TVET delivery and the labor market a list of actions that can be considered. Workers who are still employed need protection and support against COVID-19 while those who have lost their jobs need facilitation to re-enter the job market. Globally, a significant proportion of informal workers have been rendered jobless and vulnerable. Even in the organized sector, with factories and businesses suspending their operations (if not closing down) due to government restrictions, large numbers of workers have either been retrenched or furloughed. Mitigating job market disruptions and supporting TVET in these difficult times would help alleviate some of the burden. There is also an increase in demand for certain types of workers and associated shortages such as frontline medical and care workers and workers engaged in essential services in the e-commerce industry.

¹⁰ ILO. 2020. *COVID-19 ILO Monitor: COVID-19 and the world of work. Fifth edition: Updated Estimates and Analysis*.

¹¹ ILO defines the working poor as employed people who live in households that fall below an accepted poverty line. While poverty in the developed world is often associated with unemployment, the extreme poverty that exists throughout much of the developing world is largely a problem of employed persons in these societies.

Training institutions found that it was very important to maintain contact with students during periods when classes were suspended or during breaks as a measure to sustain motivation and reduce potential non-completion. It has been relatively harder for TVET institutions than K-12 schools to keep learning moving forward in a seamless way. Moreover, training delivery and assessment models had to be redesigned to suit online delivery, a task which consumed substantial time and resources. During the lockdown, workplace-based learning (apprenticeships, traineeships, and internships, in particular) have been very adversely affected. There is a need to invest in developing virtual work placements as a response to remote work, in partnership with employers. This clearly poses challenges in the face of considerable job losses that have occurred and companies streamlining their workforce to survive.

Table 6: TVET Response Phase: Areas of Intervention and Actions for Consideration

Areas of Intervention	Illustrative Actions to Be taken
Online training for learning continuity	<ul style="list-style-type: none"> ➤ Assess the need for additional IT infrastructure and devices for institutions, trainers, and students to undertake online and off-line delivery modes. ➤ Determine extent of training that can be covered through remote learning in different channels, including potential online, video, and mobile-based resources for students. ➤ Develop quick pedagogic tools to assist trainers to deliver technical and vocational education and training (TVET) virtually. ➤ Assess the proportion of theoretical and hands-on and equipment-based training, and how it can be delivered
Training and resources for trainers to shift to online delivery and the use of multiple modalities adjusted to new realities	<ul style="list-style-type: none"> ➤ Support training of trainers and develop resources and expert guidance to deliver the curriculum through online classes or other means, such as video lectures and demonstrations, mobile phones, etc. This requires coaching and ongoing support to trainers to plan student activities and assessment of learning.
Plan to ensure equity and inclusion to provide for continued participation of girls and boys, vulnerable students, students from poor communities, and students with disability	<ul style="list-style-type: none"> ➤ Develop mitigation measures to address the suspension of participation in physical training, particularly keeping in mind poor and disadvantaged students and girls and boys who may be at a high risk of dropout from training.
Role of public employment service centers	<ul style="list-style-type: none"> ➤ Adapt and reorient public employment services to address short-term shock in labor markets by using such centers for relief activities to workers (e.g., distribution of food). ➤ Accelerate training in foundational and digital skills to keep the workforce engaged and prepare them for re-entering the labor market.
Short-term training and retraining for emergency medical and supportive response	<ul style="list-style-type: none"> ➤ Repurpose workers from low- to high-demand areas (e.g., from tourist operations, construction work to health care, e-commerce/food delivery and logistics). ➤ Target vulnerable workers such as garment workers, migrant workers, and informal workers for reskilling and upskilling including digital literacy for re-entry to job markets. ➤ Provide training in 21st century skills, such as occupational health and safety, for workers laid off or furloughed.

Source: Asian Development Bank.

Recovery Phase

The recovery phase will see enterprises gradually start operations and economic activities; however, the pace is likely to be slow along with hiring workers. While the hiring of workers will take time to pick up pace again, public policy will help support the recovery of labor markets. This phase also needs to invest considerably in reskilling and upskilling to direct unemployed workers to productive occupations. Training institutions need to consider how to resume training using face-to-face modalities and how to ensure that students return to their programs.

In the recovery phase, TVET institutions would do well to prepare contingency and resilience plans to improve agility in respond to future crises and disruptions. The ILO survey of TVET institutions highlighted the poor preparedness of most systems, and the lack of contingency and business continuity planning in the TVET sector, as a whole (Table 7).

Table 7: TVET Recovery Phase: Areas of Intervention and Actions for Consideration

Areas of Intervention	Illustrative Actions to Be Taken
Skills for jobs	<ul style="list-style-type: none"> ➤ Promote reskilling and upskilling of workers to access jobs in the markets, and to enable unemployed workers to find jobs in new sectors. ➤ Ramp up digital skills development, encompassing basic digital skills to advanced skills.
Online training and simulation-based training to complement physical training	<ul style="list-style-type: none"> ➤ Implement catch-up programs to make up for lost instructional time particularly hands-on training.
Special provisions for workers and students at risk	<ul style="list-style-type: none"> ➤ Develop special training packages for women, youth-at-risk, laid-off workers, and migrants, in particular those who have no access to the internet. ➤ Ensure prioritizing of students and workers at risk to receive social assistance packages as well as economic stimulus interventions.
Incentives to revive workplace-based training and apprenticeships	<ul style="list-style-type: none"> ➤ Review feasibility of wage subsidy to retain apprenticeships. ➤ Review subsidies to companies willing to implement “no firing” policies.
Transitional employment-linked policies to help casual and informal workers to recover from widespread job losses	<ul style="list-style-type: none"> ➤ Implement short-term employment guarantee schemes, particularly in areas such as public works, to provide minimum wages to workers who have lost their livelihoods. ➤ Explore policies such as unemployment insurance and outline key policy measures to help protect the rights of workers as private sector sheds many jobs.
Fiscal stimulus packages to revive jobs	<ul style="list-style-type: none"> ➤ Active labor market policies and economic stimulus that favor job creation.
Revisit final testing and certification	<ul style="list-style-type: none"> ➤ Review calendar of outgoing and incoming student cohorts together with entrance and exit tests and examinations. ➤ Review the scope and potential for online assessments and examinations.
Home-based and/or digital entrepreneurship development	<ul style="list-style-type: none"> ➤ Provide training and start-up support for home-based digital businesses and other small-scale enterprises to help unemployed workers.

Source: Asian Development Bank.

Institutions would do well to explore more innovative TVET delivery and assessment models. Moving to digitally delivered training, especially hands-on learning, is a challenge as is appropriate assessment models. Existing training and assessment mechanisms could undergo improvements while new designs and models are being piloted. It is critical to not make any large-scale shift to untested solutions but retain and build on flexible approaches that reinforce the shift away from centralized training and assessments toward more agile and contextual processes.

In TVET, extensive job losses are a matter of major concern especially for vulnerable and informal workers. ILO estimates that 25 million jobs may be lost and working poverty will increase significantly if lockdowns continue. A key consideration is to revamp skills and training to enable laid-off workers to re-enter job markets, and to make institutional training more future-ready. There are indications that companies that have moved toward digital solutions to cope with the pandemic may continue some of these measures even after COVID-19, which would call for greater reliance on digital skills among workers. The economic impact of COVID-19 has made radical reskilling an even more urgent priority for both job seekers and employers. Box 6 describes an example of partnerships between employers, job matching platforms, and skills providers to facilitate rapid re-entry to labor markets.

BOX 6

Infosys Reskill and Restart Program

Infosys, a digital consulting services firm, forged a consortium with pymetrics, a talent matching firm, and with training partners Merit America, Per Scholas, Revature, and Woz Enterprise. The consortium will leverage the Infosys Wingspan platform and pymetrics' artificial intelligence-based talent matching platform to meet the reskilling and employment needs raised by the COVID-19 crisis in the US.

Reskill and Restart by Infosys Wingspan will help job seekers undergo aptitude and skills assessment, followed by curated job-specific skills training, and culminating in matching with available positions. Taking into account the ongoing churn in labor markets where traditional occupations are likely to be transformed into more digital job roles, the consortium of partners has built new pathways for talent to transition from traditional jobs across various industries and workstreams to digital and operations jobs of the future.

The platform will help employers to have access to talent pools for the right match as workers undergo rapid and job-specific reskilling on the integrated multi-stakeholder platform. This initiative promotes the ethos of lifelong learning and the partnership with entities offering skills assessment, training, apprenticeship placement provides opportunities for worker to grow their skills and find relevant employment opportunities.

Assessing that jobs held by women and people of color have been disproportionately affected by COVID-19, the coalition will use the partnership as an opportunity to level the playing field for women and disadvantaged communities back to work. The talent matching engine of pymetrics addresses individuals' cognitive, emotional, and social aptitudes and reveals opportunities for skill enhancement via integration with Burning Glass and leads to personalized recommendations for training and jobs. This approach focuses on potential, not pedigree, and can be instrumental in getting displaced and disadvantaged employees back to work.

Source: Infosys. 2020. Infosys launches Reskill and Restart, an innovative solution to reskill the American workforce and fulfill employment needs following COVID-19. Press Release. <https://www.infosys.com/newsroom/press-releases/2020/reskill-restart-innovative-workforce.html>.

Rejuvenation Phase

Major initiatives to rejuvenate TVET by strengthening quality, relevance, and equity will be a powerful strategy to help rebuild from the pandemic. Skills development needs to be an important priority in dealing with massive job losses, particularly among informal workers, and to provide the readiness to take advantage of new economic opportunities that might arise from expected post-COVID-19 transformations. Trends suggest that businesses will be making enduring changes to business practices. For instance, physical sales teams have been moved to digital sales and marketing teams overnight. Even after physical offices are reopened, it is anticipated that businesses will rely greater on digital modes. Some subsectors may die out while some new entrepreneurial ventures may rapidly expand. Appropriate TVET responses will help ensure greater agility within the workforce to respond to such shifts in markets. Table 8 provides examples of key areas that require consideration and action points.

Table 8: TVET Rejuvenation Phase: Areas of Intervention and Actions for Consideration

Areas of Intervention	Illustrative Actions to Be Taken
Flexible and responsive labor market policies	<ul style="list-style-type: none"> ➔ Strengthen labor market policies that are adaptive during crises in collaboration between government, private sector, civil society organizations, and social partners such as trade unions.
Transforming pedagogical practices by integrating physical training sessions with digital and distance learning modalities	<ul style="list-style-type: none"> ➔ Invest in new information technology infrastructure to increase resilience and ensure continued working training delivery. ➔ Reengineer modalities of training with greater investment in the use of simulators, augmented reality and virtual reality, and artificial intelligence tools.
Preparing for automation and ramping up digital skills	<ul style="list-style-type: none"> ➔ Accelerate reskilling and upskilling of workers in occupations at high risk of automation. ➔ Scale up training in digital skills, spanning basic to advanced levels, to prepare workers to be effective in increasingly digital workplaces and digital business practices. ➔ Expand training offerings in new domains and emerging occupations including next phase of development in renewable energy, information technology, and biotechnology, and also in areas such as smart grids and smart transport.
Modernizing credentials and certification for technical and vocational education and training (TVET)	<ul style="list-style-type: none"> ➔ Review feasibility and road map for regulations related to new microcredentials for TVET, stackable credentials, digital badges, and other new methods for certification, and their updating.
Digitally powered employment services	<ul style="list-style-type: none"> ➔ Provide online employment services such as career counselling, coaching, placement, and post-placement services and career planning. ➔ Professionalize employment, placement services, and labor market projects in cooperation with the private sector.
Supporting incubation of e-commerce and digital enterprises	<ul style="list-style-type: none"> ➔ Harness digital technologies in the development and delivery of new services and products.

Source: Asian Development Bank.

COVID-19 has contributed to making advanced technologies more accessible. Stakeholders, including governments, are looking into how EdTech solutions can help to bring learning on track by not only addressing current disruptions, but by strengthening the capacity of systems to withstand future disruptions. Box 7 describes the use of augmented reality (AR) and virtual reality (VR) in classrooms.

BOX 7

Augmented Reality/Virtual Reality Empowers Teachers and Students

EON Reality's AVR Platform was designed to simplify the creation of augmented reality (AR) and virtual reality (VR) even without basic coding knowledge. Teachers and students can learn to create AR/VR lessons, which aim to make learning more immersive and interactive, through watching videos.

As the technology becomes more accessible, it also points to a need for teachers to adjust to pedagogical changes to effectively use digital tools like AR/VR for improved learning.

EON Reality also warns that pedagogy continues to be the key element of a successful online learning experience. As training institutions remain closed and uncertain when to reopen, the use of advanced technologies such as AR/VR is being explored.

Due to the coronavirus disease (COVID-19) pandemic, perception that online education and training is far less effective than in-person learning has been disproven. While the benefits of in-person learning cannot be underestimated, the large-scale shift to virtual learning has brought attention to making online learning an important alternative.

AR/VR technologies aim to make the learning experience more authentic and as close to reality as possible. Demand for such modalities is likely to grow even after COVID-19. EON Reality has witnessed a 500% rise in its AVR Platform users since the paywall was lifted in March 2020.

Source: Eon Reality. Become an Expert At Creating AR / VR Lessons With These 5 Videos. <https://eonreality.com/expert-at-creating-ar-and-vr-lessons/>.

Higher Education

Globally, higher education has also been significantly disrupted by COVID-19, with millions of students now pursuing studies online, with closure of campuses and institutions. International students have been badly affected with many returning to their home countries with no clarity on when the academic year will resume. Completion of the tertiary cycle as well as new entry of students into universities is now a challenge in the current environment. Recent estimates by UNESCO indicate that higher education enrolment may be the most affected by COVID-19.¹²

¹² UNESDOC Digital Library. 2020. UNESCO COVID-19 education response: how many students are at risk of not returning to school? Advocacy paper. <https://unesdoc.unesco.org/ark:/48223/pf00000373992?locale=en>.

Tertiary education is vital for producing the workforce needed for economic activities and raising the competitiveness of countries. Highly educated tertiary graduates help boost knowledge-based economic growth and innovation. Tertiary education also supports school education and TVET by helping prepare teachers and trainers. Businesses also rely on graduates produced by higher education, but the lack of skilled workers can hinder economic growth. Thus, effective strategies to sustain and strengthen higher education should be included in recovery efforts from COVID-19.

As of 8 April 2020, universities and other tertiary education institutions remain closed in 175 countries, and over 220 million post-secondary students—or 13% of the total number of students affected globally—have had their studies ended or significantly disrupted due to COVID-19. The following section explores the response, recovery, and rejuvenation phase for tertiary education.

Response Phase

As with other levels, tertiary institutions such as universities have also closed down in response to the spread of COVID-19 and were compelled to make large-scale transition to online learning. Private learning In addition to universities, private higher education providers are also rapidly making the transition to online learning. The response strategies in higher education would not only help tertiary education students, but also students in K-12 (primary and secondary) schools and TVET by improving the capacity and knowledge of teachers and trainers in moving to a new paradigm of teaching and learning online.

The response phase could also consider the evolving role of universities in the context of the rise globally in the role of massive open online courses (MOOCs) that offer free courseware to students anytime, anywhere. There could be re-consideration of foundational courses at tertiary education level in the form of public good, which could strengthen the base for further in-depth study and advancing knowledge-based economies. University portals could use online resources for typical mainstream subjects as well as materials in local languages, making them more accessible. There is also a need to consider multiple pathways and equivalences between non-formal and formal education, and between professional training and academic studies, adding flexibility to the system, in general.

The response phase could thus be an exploratory one wherein new models and renewed approaches are evaluated to inform the future directions of tertiary education in the context of developing economies and knowledge-based economic growth. The directions during this phase could provide the necessary support to planning the long-term rejuvenation phase for tertiary education. In some countries, tertiary education institutions may be autonomous, whereas in others, they may be regulated by a central authority. In either case, to safeguard the interests of students and building resilience, a framework to guide future pathways would be useful to develop. Table 9 lists down key areas of intervention and actions to ensure a timely and effective response in higher education.

**Table 9: Higher Education Response Phase:
Areas of Intervention and Actions for Consideration**

Areas of Intervention	Illustrative Actions to Be Taken
Planning/implementing the shift from traditional face-to-face format to online instruction	<ul style="list-style-type: none"> ➤ Enable institutions and instructors to make the transition to online teaching and learning: <ul style="list-style-type: none"> • Assess and move coursework and materials from physical to online form. • Assess the capacity of students and teachers to access and use online resources. • Establish and strengthen national e-learning platforms to deliver online education. • Train faculty and administrators in moving teaching and learning materials to online formats and mechanisms for student support.
Providing faculty training, developing curricular approaches and pedagogical support	<ul style="list-style-type: none"> ➤ Develop and deliver new modalities for faculty members to teach remotely. ➤ Review and migrate courses from physical form to online form by aligning with the academic year and assigning responsibilities to various faculty members. ➤ Revisit and confirm overarching course-specific content, learning goals, and learning achievement assessments in line with the new realities.
Reviewing requirements for exit examinations as well as entrance examinations for the next academic year	<ul style="list-style-type: none"> ➤ Re-assess the academic calendar for delay and non-completion of current cycle, to the start of the next academic cycle. ➤ Review feasibility of final examinations and/or automatic promotions, entrance examinations, new admissions, and the start of the new academic year.
Providing advice and support to graduating students in completing their courses and making the transition to workplaces	<ul style="list-style-type: none"> ➤ Support graduating cohorts in completing their exit examinations to transition to further higher education or join the workplace. ➤ Ensure awarding of degrees and credentials within a specific time period to allow students to seek jobs.
Social assistance to continue higher studies	<ul style="list-style-type: none"> ➤ Review adjustments to scholarships and stipends to allow students to continue education online, particularly for students that lack access to devices and connectivity.
Equity and inclusion	<ul style="list-style-type: none"> ➤ Assess the needs of poor and disadvantaged youth, girls, and children of migrant workers to continue education.

Source: Asian Development Bank.

The shift to online learning is easier for adult learners who can be autonomous in charting their learning and knowledge development. The switch to online classes has thus been made extensively in most countries, by building on previous momentum and leveraging on the capacities of available tertiary institutions.

Box 8 outlines the rapid shift to online learning in Armenia, which foretells the possibility of continued adoption of online learning.

BOX 8

COVID-19 Ushers in Online Higher Education in Armenia

On March 2020, Armenia's education institutions closed down and switched to distance learning, despite this not being a common practice even after several measures by the government to implement provision of online courses and distance learning for higher and post-graduate education since 2010. This time, however, Armenia's educational system quickly rose up to the call for creativity and innovation.

During the coronavirus disease (COVID-19) crisis, the Government of Armenia ordered education institutions to ensure continuity of studies through remote delivery of education. The government and universities introduced a mixture of online, remote, distance, and digital learning modes through a new educational TV channel called Hybrid Edu, which uses Zoom, Moodle, Blackboard, Google Hangouts, and WhatsApp, including integrating materials from massive open online courses via Coursera. The measures may aim for short-term results, but these opened innovative pathways toward the future of education in Armenia. It provided the universities the opportunity to assess their current capacities and potentials, and brought forth critical partnerships in education.

For example, in technical and vocational education and training, the National Centre for Educational Technology Development collaborated with the nongovernment organization National Network for Distance Learning so that teachers from technical colleges and craftsmanship schools can continue training in the use of digital tools and in developing digital content.

Sources: European Training Foundation. 2020. EU neighbours: coping with COVID-19 in education and training. 6 April. <https://www.etf.europa.eu/en/news-and-events/news/eu-neighbours-coping-COVID-19-19-education-and-training>; T.L. Gharibyan. 2020. How COVID-19 is sending Armenian education online. *European Association for International Education*. 26 May. <https://www.eaie.org/blog/COVID-19-online-education-armenia.html>; World Bank. 2020. TVET Systems' response to COVID-19: Challenges and Opportunities. 14 May 2020. <http://documents.worldbank.org/curated/en/930861589486276271/TVET-Systems-response-to-COVID-19-Challenges-and-Opportunities>.

Recovery Phase

The reopening of higher education institutions will call for a new normal approach to education. For instance, admissions to new academic year courses may need to be deferred or offered in a compressed time schedule. Universities may need to consider partially continuing online learning to help students catch up. The entry of foreign students is expected to be moderated considerably, which may require domestic tertiary institutions to provide backup options for these students. Faculty members would need to polish their pedagogical tools further and consider new methods of interacting with students. Table 10 seeks to capture key elements of actions to be taken during the recovery phase.

**Table 10: Higher Education Recovery Phase:
Areas of Intervention and Actions for Consideration**

Areas of Intervention	Illustrative Actions to Be Taken
Strengthening national and institutional capacities for adopting online learning as a norm rather than exception	<ul style="list-style-type: none"> ➔ Institutions to curate open-source digital learning solutions and adopt appropriate learning management software to formalize the teaching and learning process online. ➔ Administrators and faculties need to revise pedagogical methods in higher education to blend classroom learning with continued e-learning modules to establish a combined online and off-line learning system.
Establishing adequate mechanisms for regulation and accreditation of learning that has dual or multiple modalities	<ul style="list-style-type: none"> ➔ Develop quality assurance mechanisms and quality benchmarks for online learning offered by tertiary institutions as well as stand-alone e-learning platforms. ➔ Develop licensing or accreditation mechanisms for private sector players to offer courses on a suite of subjects and domains, including new and emerging ones, with appropriate levels of certification paired with assessment parameters. ➔ Develop mechanisms to audit the quality of courses offered across different e-learning platforms and to assess student learning experiences online.
Regulatory mechanisms to enable all universities to offer online education	<ul style="list-style-type: none"> ➔ Assess the road map for tertiary institutions to expand their capacities to offer online courses. ➔ Put in place guidelines and criteria on how universities can blend physical and online classes.
Ensuring research continuity	<ul style="list-style-type: none"> ➔ Enable university research leaders to move their research to remote platforms and digital modes. ➔ Explore and invest in technology and networks to pursue research on digital platforms with virtual laboratories and simulators.

Source: Asian Development Bank.

The pandemic has caused major disruptions to student mobility and international cooperation programs. Tertiary institutions in advanced countries that rely significantly on the inflow of foreign students are facing a possible crisis as these students have returned or are returning home due to COVID-19, with weak sentiments for overseas education in the coming year. At the same time, domestic students also face challenges in continuing education. Box 9 outlines potential pivot areas that will be considered for domestic students by universities as they grapple with uncertainty in the resumption of tertiary studies in the immediate aftermath of COVID-19.

BOX 9

COVID-19 Relief Package for Higher Education Students in Australia

In Australia, the Federal Education Ministry's higher education relief package focused on domestic students. It includes funding for new short courses for the unemployed, a guaranteed \$18 billion for domestic students regardless of enrollment numbers, and \$100 million worth of fees and regulatory costs that will be waived to assist universities and private tertiary education providers.

The Government of Australia's approach is to reduce enrollment fees and remotely deliver diplomas and graduate certificates in nursing, teaching, health, information technology, and science that would be provided by universities and private tertiary institutions. This plan is meant to help Australians who have lost their jobs or are looking to re-train to use their time studying in areas considered as national priorities. The 20,000 institutions offering these short courses, for the first time, will offset university losses from international students, and provide a revenue stream for universities and private providers to assist their financial stability.

The government's \$18 billion budget in 2020 for domestic students to enroll in universities will be available regardless of any decline in enrollments. Universities and the broader tertiary sector have an important role to retrain and reskill Australians to help the country emerge from the pandemic, particularly in terms of assisting those who have lost jobs to re-enter the workforce with enhanced knowledge and skills.

Source: C. Duffy. 2020. Government announces coronavirus relief package for higher education with focus on domestic students. ABC News. 11 April. <https://www.abc.net.au/news/2020-04-12/government-announces-coronavirus-higher-education-relief-package/12142752>.

Rejuvenation Phase

Tertiary education may change significantly after COVID-19. For adult learners, there is far greater potential for adopting digital platforms for self-paced and autonomous learning than for young children in schools. With large-scale application of online and digital platforms, tertiary enrollments could well go past the tipping point than possible with conventional delivery. With the right strategies, this would help produce more skilled workers necessary for knowledge-based economies, provided sufficient numbers graduate from school to become eligible for tertiary education.

Tertiary institutions will need to transform course offerings as well as mode of delivery with the acceleration of digitalization of economies due to COVID-19, on top of already growing deployment of disruptive technologies emerging from the Fourth Industrial Revolution or Industry 4.0. The online space will only expand further with higher demand for new digital skills associated with big data, blockchain, artificial intelligence, virtual reality, etc. University research is also expected to pivot to more frontier areas of technological capacities. Table 11 outlines actions that can be initiated to prepare for these transformational trends.

The rejuvenation phase provides the opportunity to re-examine old models and adopt technology solutions to influence all aspects of education delivery, teaching and learning, and assessment and credentials. The proliferation of technologies is also leading to a reduction of costs and possible public-private partnerships that can further assist in their deployment even in less-resourced environments. However, to make education and learning really benefit from these technologies, it is critical to envision thematic areas that focus on substantial gains.

**Table 11: Higher Education Rejuvenation Phase:
Areas of Intervention and Actions for Consideration**

Areas of intervention	Illustrative Actions to Be Taken
Augmenting the overall technological capabilities of universities and tertiary institutions	<ul style="list-style-type: none"> ➤ Reassess the need to shift the emphasis from brick-and-mortar infrastructure of large university campuses to blended online formats, including access issues for students to digital domains. ➤ Assess the potential for transformation of institutions through the application of disruptive technologies such as artificial intelligence, big data, machine learning, blockchain, and augmented or virtual reality. ➤ Plan for digital learning centers at community level with the required infrastructure for learners to access courses offered through universities and other modalities.
Embracing innovation and change	<ul style="list-style-type: none"> ➤ Assess the feasibility of large-scale application of online and digital platforms for university education to help tertiary enrollments go past the tipping points defined by conventional delivery.
Revising research and development in universities in the context of virtualization of education	<ul style="list-style-type: none"> ➤ Assess the scope and feasibility of moving research into online platforms for remote collaborations among scholars. ➤ Provide support to research fellows and use virtual laboratories and virtual research spaces in the context of globalization.
Addressing competitiveness of university graduates and labor market returns from tertiary education	<ul style="list-style-type: none"> ➤ With growing pressure on labor markets, consider how tertiary institutions can make their courses relevant to job market requirements. ➤ For international students, encourage virtual education experience and credentials that add weight in job markets.
Envisioning new credentials and degrees from higher education	<ul style="list-style-type: none"> ➤ Develop new guidelines for awarding of microcredentials, stackable credentials, digital badges, and other new methods for award of degrees and credentials to new courses and study programs.

Source: Asian Development Bank.

Learning assessment using digital solutions is one such theme. The sudden closure of education institutions and shift to online learning has raised the need to also conduct assessment and exams online. Concerns have been raised in doing this due to lack of access to devices and connectivity for all students, and security and reliability of students taking online assessment and examinations. In particular, high-stakes entrance and exit examinations have been in the spotlight with governments exploring controversial policy measures, for example, the A-level and General Certificate of Secondary Education (GCSE) results in the United Kingdom.

Since high-stake examinations can signal entry into higher levels of learning or professional education and training in highly competitive environments, the alternative to physical and highly controlled examinations is fraught with challenges. A majority of countries have canceled or postponed such examinations, while a smaller number are proceeding to conduct them.¹³ Officials in developing member countries are evaluating moving toward online assessments and examinations.

There are three points for consideration regarding online assessment and examinations:

- 1 Using online assessment to track student learning, particularly through formative assessment, can help to “universalize” learning assessment. Most countries undertake national assessment of learning in periodic years, covering some grades and some subjects. Deploying big data to monitor student learning with real-time feedback for teachers will help raise quality.

¹³ UNESCO. 2020. COVID-19: A glance of national coping strategies on high-stakes examinations and assessments.

- 2 Using online assessment as a way to strengthen “soft” skills and creativity skills can help students acquire digital skills and a digital mindset that are becoming increasingly more important for future job markets.
- 3 Online assessment alone will not raise the quality of learning. It is well known that poor learning outcomes have been plaguing education systems, specifically in low-income and developing countries. Learning assessments could be used to shape the pathway to steadily improving performance of students on learning achievement. Digital tools can provide a much better understanding of the trajectory of student learning through real-time information while enabling personalized learning.

These considerations require a completely new way of thinking around testing and assessment of student learning. Focus on academic achievements and memorization, rather than knowledge application, needs to be overturned. The variety of digital tools should be tapped for pedagogical innovation and improve learning assessment. Box 10 outlines pointers on how to re-think assessment and examinations to steer positive changes in the education process.

BOX 10

Rethinking Examinations in Higher Education after COVID-19

The coronavirus disease (COVID-19) is making education systems rethink the traditional model of examination in higher education. High-stakes final examinations often come with high levels of pressure and stress among students. Digital and online environments offer numerous alternative ways to measure student learning. Online assessment frameworks can be based on quizzes, forum discussions, blog posts, portfolios, etc.

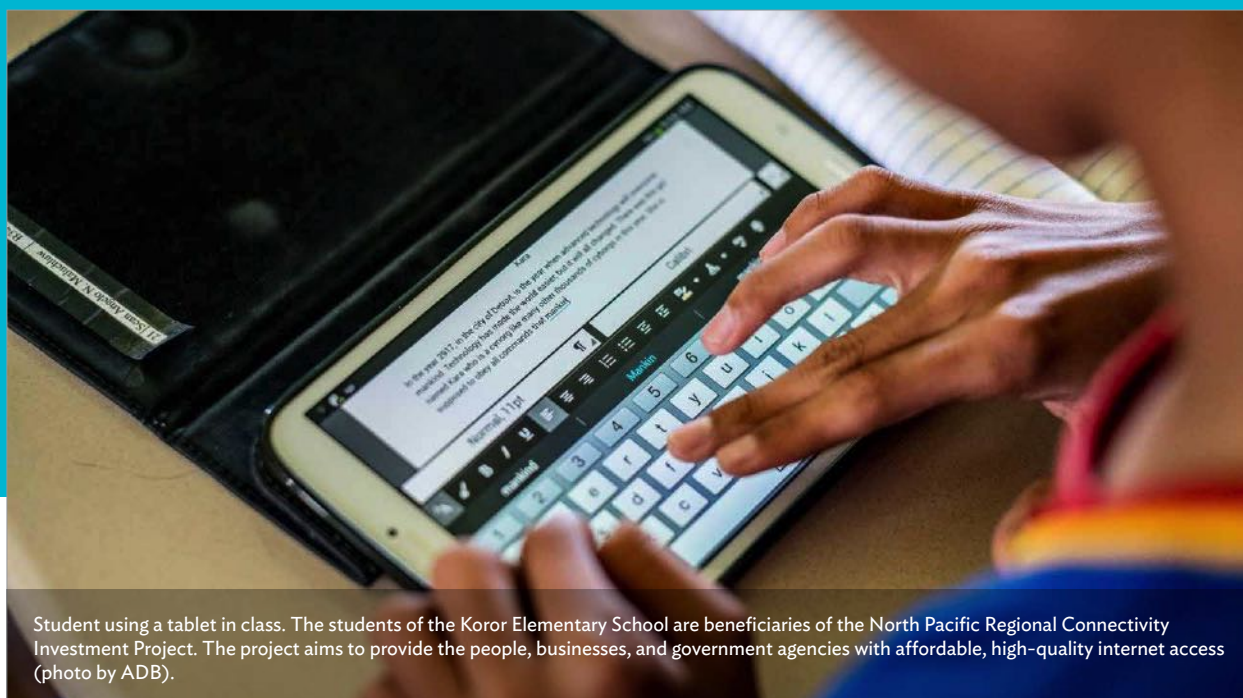
The shift to online education and assessment, arising from disruptions to school-based education, has called into question the traditional model of assessment through high-stakes final examinations. The great reliance on summative and exit examinations, which determine advancement to next levels of study, has brought a lot of hardship to education administrators and students on how to plan next steps due to the current pandemic.

Online teaching can implement diverse instructional approaches, which, in turn, creates new opportunities for continuous assessment of students throughout the academic year. Many instructors who started delivering online courses well before COVID-19 happened took advantage of these new conditions by administering a variety of assignments and tests on a regular basis.

Several methods can be used to assess students regularly such as timed quizzes, asynchronous forum discussions, semester-long projects with intermediate milestones, portfolios, peer evaluations, etc. While these methods are well suited for online course delivery, they can also bring about important benefits for face-to-face courses. In the longer run, the scoring processes could also be facilitated using algorithms, artificial intelligence-powered systems, or even peer assessment. In contrast to one-time final examinations, these technologies allow for different measurement methods, enabling assessment and certification of broader sets of knowledge and skills, and providing regular feedback to students on their learning and regular assessment throughout courses.

These different methods are also more suited to test for higher-order cognitive capacities as well as knowledge application rather than memorization. Testing for such higher-order attainments is in tune with expected future trends where “learning to learn” would be more important than learning and mastering a group of summative knowledge domains.

Source: OECD. 2020. Remote online exams in higher education during the COVID-19 crisis. *OECD Education Policy Perspectives*. No. 6. Paris: OECD Publishing. <https://doi.org/10.1787/f53e2177-en>.



Student using a tablet in class. The students of the Koror Elementary School are beneficiaries of the North Pacific Regional Connectivity Investment Project. The project aims to provide the people, businesses, and government agencies with affordable, high-quality internet access (photo by ADB).

3 Emergence of a New Normal

COVID-19 is putting pressure on education and training systems to adapt to the crisis and respond in a timely way. Meanwhile, it also presents a unique opportunity to completely re-imagine education and training to upgrade systems and processes from the standpoint of (i) new and cutting-edge technology adoption; (ii) new and diverse options to pursue education with matching quality assurance; (iii) new and transformational approaches to pedagogy, teacher training, and classroom processes; and (iv) new platforms for linkages with market forces and responding to emerging needs.

Shaping New Pathways for Education

Analysts predict that a post-pandemic new normal will inevitably carry forward some of the strategies undertaken during COVID-19 and/or reflect new approaches and tools that are developed to strengthen the resilience of education systems to future crises. There are many dimensions to a new normal. Some of the trends were already taking shape, but COVID-19 has accelerated the transformation with a sense of urgency.

There is no doubt that technology is instrumental to the new normal. Even prior to the pandemic, the emergence of advanced and disruptive technologies and the transition to Industry 4.0 have highlighted the growing importance of digital technology for education institutions. The implication is that digital skills are required and that education systems could become more digitally powered. However, in a post-pandemic world with

considerable pressures on budgets, there is a need to first protect budgetary allocations to education and then leverage and mobilize additional funds needed for the digital transformation.

This guidance note advocates use of advanced technologies for education and training. However, it is important to keep in mind that digital technologies alone cannot solve deeply ingrained problems, particularly around poor learning. Thus, using technology solutions to improve the quality of education through improved learning should be at the center of a digital strategy. Technology is an enabler, not necessarily an end by itself, although digital skills now serve as foundational skills required of everyone.

The underlying premise of a new normal is that there are opportunities to go into new directions with the right resources and strengthened capacity. Deliberate and conscious policy measures will enable education systems to ‘rejuvenate’ from disruptions due to COVID-19 and into the new normal.

Leveraging on Education Technology

The very first aspect of the new normal concerns leveraging on the rise of education technology or EdTech—a relatively new term as previously referred to as ICT in education. Globally, the reliance on online classes and other technology-based options has been a distinct and visible response to COVID-19, although EdTech has been on the rise even prior to the pandemic. EdTech is associated with online learning, personalized learning, and machine-based learning, and is overtaking previous generations of technologies such as smart boards and distance learning through ICT in education.

A key feature of these new technologies is that they tend to function in real-time or online and interactive in teaching and learning. The private sector is a major driving force in the growth of EdTech, using discretionary private consumption rather than public spending. It is also observable that tech giants are making headway into public schools to support greater use of digital tools. While a larger commercial interest may also be at stake, it is also apparent that corporate foundations are helping the digital transformation of education institutions to increase the number of tech-savvy graduates who enter the workforce. It is estimated that 60% of classrooms in the United States (US) use Google Classroom. Investments in EdTech have been increasing substantially even prior to COVID-19. According to Metaari, which tracks private investments in learning technology, investments in EdTech companies reached \$16 billion in 2018 and \$18 billion in 2019, more than the cumulative investments in this segment over the past 20 years (1998–2017).¹⁴ Scale has become important with the rise of EdTech “unicorn” start-up companies. By 2025, about 100 EdTech unicorns are expected in the market.¹⁵ Most of the unicorns are in the US and in the People’s Republic of China, with India emerging as a rising star with five unicorns attracting over \$100 million each in investment in 2019.

Keeping Pace with Education Technology

In terms of global investments, according to Metaari, new investments in EdTech companies are now moving primarily to AI-based learning, mixed-reality learning (AR/VR), game-based learning, cognitive learning, location-based learning (location intelligence), and educational bots (both physical and virtual combined). In the global marketplace, some products, such as video materials and digital references, are already considered “legacy” or outdated products, although many developing countries are considering investing in them.

According to HolonIQ, investments in advanced technologies rise significantly from 2018 to 2025: investments in AR/VR will rise from \$1.8 billion to \$12.6 billion, AI from \$800,000 to \$6.1 billion, and robotics from \$1.3 billion

¹⁴ Metaari. 2020. *The 2019 Global Learning Technology Investment Patterns: Another Record Shattering Year*. <https://markets.businessinsider.com/news/stocks/2019-global-edtech-investments-reach-a-staggering-18-66-billion-1028800669#>

¹⁵ A unicorn is typically a tech start-up company that has reached a market valuation of \$1 billion.

to \$3.1 billion. Much of these investments are through the private sector and mostly through the business-to-commerce (B2C) model targeting students and parents directly, largely circumventing the school system. It is critically important for governments to harness the power of advanced technologies and make them available in public school systems.

A corollary in the rise of EdTech is that it can be expensive and calls for sufficient budget allocations. Globally, the share of public budget allocation to EdTech is estimated at 3%, with far lower share in developing countries that allocate most of their budgets to operating expenses such as salaries with very little left for development, which applies to the education sector.

Taking Education Technology to Poor Environments

Under the new normal, advocates of EdTech are enthusiastic about its reach to low-income or poor households. EdTech will influence all aspects of education and training as well job matching and employment services. The implication is that first, adequate investments must be made in EdTech to allow equal opportunity. COVID-19 has put the spotlight on the digital divide—between urban and rural, and rich and poor. Unless there is equal access to connectivity and devices, EdTech cannot fulfill its potential. While connectivity and use of the right devices is an initial challenge, it is also important to track equal use of these resources—by girls and students from low-income households.

However, devices alone are insufficient as has been demonstrated in the past. A second implication is that advanced technologies tend to trend out fast. Governments would find it extremely hard to keep up with the fast-changing new technologies. Technology as a service is a more suitable arrangement for governments as there is no need to invest hardware and software—similar to Amazon Web Services or what Khan Academy has been offering to school districts in the US. There are also critical capacity issues in providing the pedagogical leadership in moving to tech-enabled education and training.

Lastly, COVID-19 has moved the technology discourse to households. Until now, governments were mostly considering providing schools with computers and other technologies in schools. But it has become apparent that if individualized and self-learning needs to be developed to cope with disruptions caused by COVID-19, students need access to connectivity, devices, as well as a conducive learning environment at home.

In a post-pandemic world, governments need to consider diverse partnerships to extend connectivity and access to devices to all students, and to make online education more accessible. Education institutions must also strengthen and enhance their capacity to prepare and deliver content via online platforms, especially when disruptions occur. To ensure gender equality, it is imperative that the needs of girls and women are addressed and are given equal access to education and continuous learning, as they are among groups most at risk of dropping out.

Strengthening Focus on Lifelong Education

Under the new normal, an extended life cycle approach to education will be important. This stems from the growing importance of skills upgrade and reskilling, as occupations change at a much faster rate than before. Many universities in the US are already revamping their continuing education offerings to address dropouts, particularly students who are employed.

Digital skills will become even more pervasive. This would require schools to re-think curriculum design for digital skills. Universities will redefine the cost parameters of face-to-face versus online education, as they look to acquire resources in order to offer more courses online. Big data will be applied to aid in decision making and management functions, calling for investments in IT infrastructure for education institutions.

Reimagining Education and Training after COVID-19

Even prior to COVID-19, there were calls for a new model for education delivery. Key drivers include (i) the exponential rise of disruptive technology, (ii) the need to match the learning behavior of so-called Millennials or “digital natives,” and (iii) the shorter shelf life of skills and unpredictable labor markets. The geometric progression in new technologies, the open and unconventional learning behavior of Millennials, the complex and fast-obsolete set of soft and technical skills needed in the market, and increasingly uncertain labor markets spell the need for an agile and “evolutionary” approach to education and training delivery.

Traditional approaches that take years to plan and introduce new courses and conduct and analyze learning assessment data and teacher preparation, need to give way to new models that include digital and real-time strategies. International agencies and domestic stakeholders need to deploy new approaches whose impact can be readily measured.

The current crisis presents an opportunity to deploy new digital approaches on a scale previously not considered feasible. COVID-19 is providing the impetus for policy makers to consider new approaches in making long-term decisions for the education sector. Table 12 outlines the impetus to online learning beyond COVID-19.

Table 12: The Impetus to Online Learning Beyond COVID-19

COVID-19 Impetus	Post-COVID-19 Directions
<ul style="list-style-type: none"> ➤ Unplanned and sudden closure of schools made online learning the main response mechanism, along with radio and TV. ➤ An enormous spike in demand from governments and parents to use online platforms due to COVID-19 was observed. ➤ Private sector companies became major players benefiting from household spending on online learning and coaching. ➤ Role of parents suddenly became more important with learning shifting entirely to home-based education delivery. 	<ul style="list-style-type: none"> ➤ Digital platforms will redefine the balance between physical and remote learning even after educational institutions resume physical classes. ➤ COVID-19 likely to help accelerate adoption of online education platforms. ➤ Public sector schools and institutions expected to become possible customers of private sector online teaching and learning platforms. ➤ Parents and students, even in less-resourced environments, will seek to access digital solutions to teaching, coaching, and personalized learning.

COVID-19 = coronavirus disease.

Source: Asian Development Bank.

Scaling Up Universal Access through Digital Strategies

The integration of advanced digital technologies that improve the efficiency of education delivery such as blended learning, and that enhance the quality of individual learning such as adaptive learning technologies, is essential to future-proof education systems. While cost and capacity issues will continue to restrict large-scale adoption by developing countries, these technologies are already being used in education systems by private companies and even in households. Governments need to explore cost-effective models and approaches to incorporate advanced technologies in education delivery and the learning process.

Education administrators need to consider “universal” coverage of digital strategies to ensure that no child is left behind. Digital platforms for learning and training need to become accessible and support school-based learning, and also address the needs of vulnerable students. Digital skills and digital content in the curriculum need to be expanded in K-12 (primary and secondary level), TVET, and higher education to meet the demand for tech-savvy

workers. Digital strategies also need to be inclusive and provide access to students with disabilities, girls, ethnic minorities, students in poor environments, and those requiring use of minority and/or local languages.

Digital strategies also need to consider education administration and management. Teacher training on digital technologies can help strengthen delivery and quality of education. Public-private partnerships, e.g., partnerships with telecom companies for connectivity, can help bridge the digital divide to allow for universal access to education.

Deploying Digital Solutions to Monitor and Improve Student Learning

Using big data, digital strategies will enable better monitoring and assessment of student learning at all levels. Even prior to COVID-19, developing countries have been grappling with the problem of poor quality of learning. Big data can help to track student learning data at scale and in real-time, while so far, most initiatives to track student learning have been sample-based and periodic over the years, covering a few grades at a time. Digital technologies can thus be game-changing in providing tools to track learning at scale and hence contribute to improving learning quality at scale. Given the widespread concerns around learning deficits, digital strategies can be powerful in tracking metrics for improving learning at all levels. Digital strategies can help set minimum standards to monitor the delivery and quality of K-12, TVET, and higher education.

Digital solutions can assist with personalized learning, monitoring learning progress within a group, and applying remedial measures where learning attainment is below par. The goal is to provide real-time information and feedback for timely action; thus, education management information systems and teacher information management systems need to be repositioned with real-time features to monitor. Given that countries have invested substantially in various computer-based tools for education management, there is a need to undertake a thorough assessment of the costs and benefits of using digital technologies. Considerable financial and human resources may need to be considered.

Promoting Model Education Institutions

Building institutions of excellence with state-of-the-art facilities can help spur innovation and bring about education reforms at a country level. Developing such centers of excellence and innovation can inspire other institutions to upgrade and improve the quality of education.

Since digital strategies may well be implemented beyond COVID-19, building model education institutions can provide leadership in the adoption of online and digital learning. It is likely that more educational and training institutions will want to go completely virtual, while more traditional institutions will be seeking to expand their digital offerings to supplement and complement physical classes. Virtual learning requires technical capacity and new types of blended learning to enable such transformation. Digital centers of excellence can provide the model on how education delivery and teaching and learning experience in virtual environments can best be structured to ensure holistic education and training. This can include methodologies such as

- instructional design;
- teacher and instruction training and professional development;
- virtual laboratories and science laboratories;
- online TVET programs;
- quality assurance of training programs, teachers, and virtual institutions;
- learning accreditation; and
- optimal blended learning strategies for traditional education institutions.

Ensuring That Learning is Central to Education

An important area that policy makers cannot afford to neglect in the context of the adoption of EdTech is quality of learning. Compared to the gains made in universalizing access to elementary education and substantial progress in increasing access to other levels of education, the pace of improvement in learning outcomes has been slow. To convert impressive gains in access and enrollment into long-term gains for individuals, societies, and economies, there is a critical need to address lags and deficits in learning outcomes. COVID-19 recovery strategies for education thus need to ensure that raising the quality of learning is the ultimate goal and recognized as the key underlying motive for the application of EdTech.

Six overarching priority actions are recommended when exploring digital strategies to address COVID-19 to ensure focus on learning:

- 1 Sustain uninterrupted learning through multiple channels depending on the country availability: online, mobile phones, TV/radio, and printed materials. COVID-19 will not be the only disruption to education going forward, but it has been the most disruptive with far-reaching implications on blended learning. Education systems also need to deal with natural disasters, climate events, conflict, and other disruptions that may occur in the future. Thus, recovery strategies need to ensure that high quality of learning is sustained and that education systems are resilient. This should push education systems to develop blended learning models with matching pedagogical approaches and assessment procedures that can withstand disruptions to regular schooling and coursework within the physical premises of education institutions.
- 2 Revamp teacher training and support teachers to cope with requirements in new learning environments, through medium- to long-term professional development to integrate the use of digital tools in traditional teaching and learning practices. Teacher training models have largely relied on a cascade approach, which often dilutes the quality of training. Digital tools can transform teacher training by linking training with improved teaching practices and enhanced student learning. With the right digital tools, teachers can provide an improved learning experience in the classroom. The capacity of teachers as mentors and advisers can be supported through more effective practices enabled by digital technologies. The delivery of teacher training and its monitoring at the classroom level allows for continuous improvement to classroom practices by teachers and student participation in learning.
- 3 Develop high-quality digital content in partnership with national and global institutions drawing on regional and global standards. It is important to partner with institutions to draw on innovative practices and apply them locally. Development of high-quality digital content and digital tools to transform learning assessment can help to address learning gaps, including those arising from the closure of education institutions. The use of digital content, however, requires articulating clear policies toward assessment, and examination and certification.
- 4 Ensure equal learning opportunity for students who lack access to devices, connectivity, and a favorable learning environment at home through adequate social protection measures and other mechanisms. As blended learning is likely to be adopted moving forward beyond COVID-19, bridging the digital divide is crucial to ensure equal access to high-quality learning. Education systems have predominantly focused on equity in access and participation; EdTech can further scale up equity in learning. Aside from scholarships to encourage participation of vulnerable groups, there is a need to bridge learning gaps in language, digital, and science-based attainments. Technology tools can help to diagnose such gaps, identify student groups or segments that need specific attention, and improve the teaching and learning experience for these students.
- 5 Articulate clear policies toward assessments and examinations, certifications, and transition to higher levels of education, while formulating new approaches to testing and examination. Continuous real-time formative assessment tools will help orient teaching and learning toward “higher order” learning such as creative thinking, collaboration, problem solving, applying skills to a specific context, and so on. This requires articulating clear policies toward assessments and examinations and targeting students who are lagging behind to achieve desired levels of learning.

- 6 Provide for innovative financing arrangements and partnerships to support innovations and pilot new approaches and invest in capacity building through twinning arrangements between institutions to draw on lessons learned from other countries to facilitate scaling up deployment of new technologies to improve learning. The anticipated decline in economic growth due to disruptions caused by COVID-19 may reduce public expenditure on education and related social services (unless policies are in place to protect education from budget cuts). Enhancing digital capacity for education requires additional resources, such as digital infrastructure for schools, broadband connectivity, etc. This calls for additional efforts toward domestic and international resource mobilization, innovative financing partnerships, and strong social safety net adjustment programs.

Safeguarding Budgets for Education and Leveraging on Additional Financing

With a 6-month containment period, the potential economic impact of COVID-19 on Asia and the Pacific is estimated at \$2.5 trillion (9.3% of the regional gross domestic product), with the region accounting for 30% of the overall decline in global output.¹⁶ Thus, COVID-19 will impact budgets and expenditures, including education.

The Global Education Monitoring Report and reports by the Education Commission have highlighted that in most low- and middle-income countries, education has been already grossly underfinanced even prior to COVID-19. The Education Commission had called for increases in domestic resources, foreign aid, and private and philanthropic efforts. The commission's Learning Generation report estimates that yearly spending on education in low- and middle-income countries increased from \$1.25 trillion to nearly \$3 trillion from 2015 to 2030.

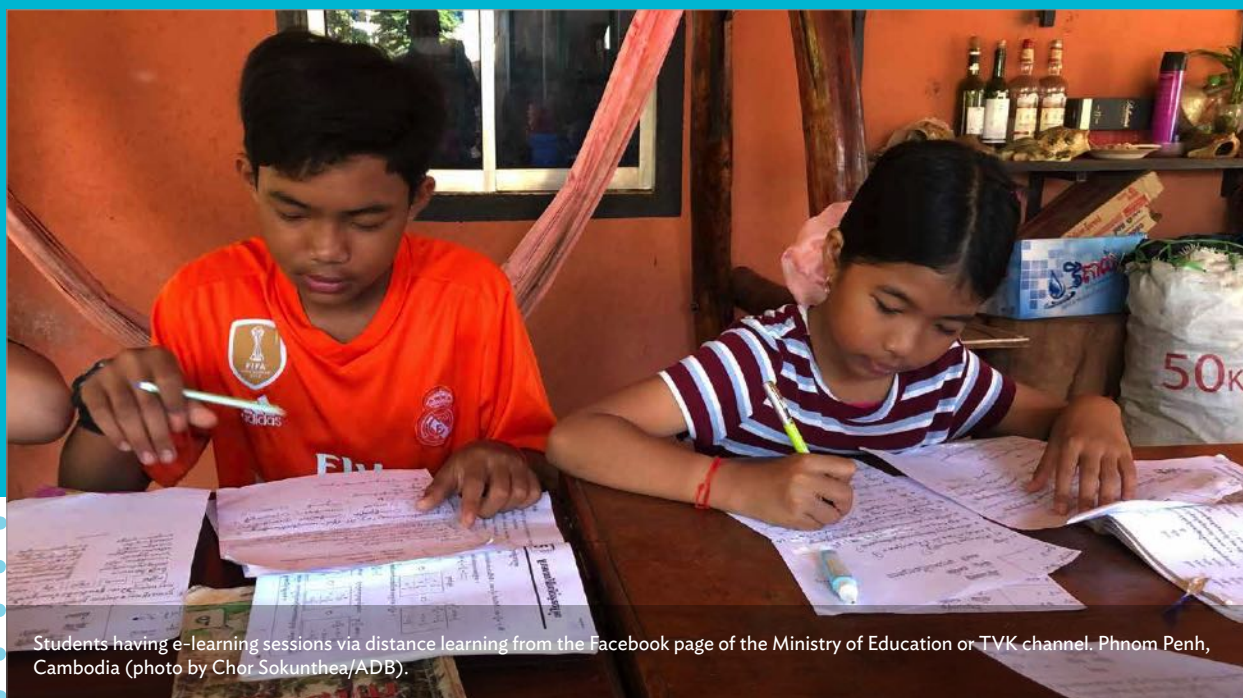
In financing COVID-19 response, forecasts highlight that many countries will likely find it extremely challenging to fully protect their education budgets over the next 2 years.¹⁷ Three major sources of funding for education—government budgets, household spending, and international financing partnerships—are all likely to be affected due to the compressed fiscal space, job market disruptions, and potential increase in poverty levels. It is also critical to ensure that the funding crunch does not fall disproportionately on the most vulnerable students, as the pandemic is likely to most heavily impact girls and children from poor households. Without active policy responses to sustain stipends, scholarships, school feeding, and other social protection measures for education, students from poorer households are likely to drop out or face very high disparities in learning outcomes.

As international partners roll out funding to countries as emergency response to COVID-19 and for public expenditure support programs, it is critical to have sufficient allocation for education to help keep students in school. Thus, COVID-19 response packages should have structured financing for social safety nets that will facilitate remote learning, reopening education institutions with safety measures, and support for measures to raise the quality of learning.

Beyond protecting education budgets, there is also a need to consider additional resource allocations to provide long-term directions for the improvement of education systems. Adequate financing should be ensured for online learning, digital solutions in education, and innovation required to make education relevant to future needs. While fiscal compression will be a real constraint, governments and international partners need to design innovative programs with continued financing to support long-term development and improvement of the education sector. This calls for innovative financing models, cross-sector support, leveraging resources for workplace-based learning, private sector participation, and other similar efforts.

¹⁶ ADB. 2020. An Updated Assessment of the Economic Impact of COVID-19. *Policy Briefs*. No. 133. Manila.

¹⁷ World Bank. 2020. The Impact of the COVID-19 Pandemic on Education Financing. *Finance Brief*. Washington, DC.



Students having e-learning sessions via distance learning from the Facebook page of the Ministry of Education or TVK channel, Phnom Penh, Cambodia (photo by Chor Sokunthea/ADB).

4 Afterword

Even as countries and governments continue to cope with COVID-19 and its impact on education in the short term, longer-term and far-reaching strategies need to be formulated to address different dimensions of education delivery. Digital strategies should be implemented right away. Table 13 outlines potential areas of investments by stakeholders in ramping up digital solutions for education and training.

Table 13: Education Technology Opportunities and Applications

K-12

- Introduction of coding and advanced digital and science, technology, engineering, and mathematics (STEM) curriculum in secondary schools
- Introduction to artificial intelligence (AI) and use of augmented reality and virtual reality (AR/VR) for immersive learning for secondary schools
- Tech-enabled assistive devices for students with disability
- Use of AR/VR tools for training of trainers to deal with disability
- AI-based platforms to assess aptitude and career progression advice

TVET

- Curation and delivery of advanced digital skills such as data science, big data, AI, and machine learning
- Real-time and AI-powered job matching platforms
- Introduce new qualification frameworks with micro credentials taking into account short bursts of upskilling and reskilling, going beyond traditional degrees to online credentials
- Digital skills upgrading and reskilling to help migrant workers
- Blended learning platforms established for learning continuity and upskilling

Higher Education

- Fully online university option to scale up tertiary education
- Specially curated online courses in a variety of digital skills covering basic, intermediate, and advanced levels
- Digital platforms for lifelong learning with stackable credentials, nano degrees, micro masters degrees, etc.
- Blockchain for degrees and micro credentials
- Advanced virtual research labs and digital science capabilities
- Real-time and AI-powered job matching platforms

Source: Asian Development Bank.

This guidance note presents an initial set of issues and suggestions to initiate a discussion on transformational changes in education. Further analytical work and discussion are needed to take them forward. Continued engagement and joint action with international and national partners are welcome.

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COVID-19 and Education in Asia and the Pacific

Guidance Note

This guidance note underscores the potential of education technology (EdTech) solutions in transforming learning, teaching, and training systems during and after the coronavirus disease (COVID-19) pandemic. Since the COVID-19 outbreak, governments have been coping with and responding to the challenges posed by the closure of education institutions while guidelines from international agencies seek to address the disruptions and responses. Drawing from and reinforcing the key principles of these courses of action, the guidance note also provides suggestions and pointers that stakeholders in developing countries can consider for a long-term road map to improve quality, relevance, and inclusion in education. It is one of a series produced by the Asian Development Bank for key sectors and thematic areas.

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