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HIGH-QUALITY TECHNICAL ASSISTANCE FOR RESULTS



TECHNICAL SUPPORT FOR THE DEVELOPMENT OF A REMOTE LEARNING AND DIGITAL SKILLS STRATEGY FOR THE INDONESIAN MINISTRY OF EDUCATION AND CULTURE

Final Report (Draft)

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We are grateful to Christopher Agass, Karlina Abung, Rita Damayanti, and Ratih Sari from the Digital Access Programme Team of the UK Embassy in Indonesia, for their guidance during this technical support for the development of a remote learning and digital literacy strategy.

The team also thanks the Ministry of Education, Culture, Research and Technology (MoECRT) for guidance and fruitful discussions during the inception phase of this assignment. In particular, we would like to thank the Head of the Bureau of Cooperation and Public Relations in charge, Mr Hendarman, and his team, and the Director General of Basic Education Mr Jumeri, and his team, and for their support and guidance. The report also benefited from discussions with Minister of Education Special Staff, Ms Fiona Handayani; Director General of Teacher and Educational Staff, Mr Iwan Syahril; Director General of Vocational Education, Mr Wikan Sakarinto; Director of Basic Education Teacher and Educational Staff, Mr Rachmadi Widiarto; and Head in Charge of *Pusat Data dan Informasi* (Pusdatin, the Centre of Data and Information), Mr Hasan Chabibie, and his team. We also thank the staff of the Directorate for Special Education.

Further, we appreciate the insights received on connectivity and community-based initiatives from the Director of Public and Government Service of *Badan Aksesibilitas Telekomunikasi dan Informasi* (BAKTI, the Telecommunication and Information Accessibility Agency) of the Ministry of Communication and Information, Mr Danny Januar; and the Head of the Directorate of Development of Socio-Culture and Village and Rural Environment, Ms Anastuti. Substantial inputs were also received from the local governments (West Java Province, DKI Jakarta Province, Sukabumi Province, and Pangkajene Kepulauan District), DAP pilot project implementers (the Common Room Network Foundation and Institut KAPAL Perempuan), schools, and communities in the research sites.

We would also like to extend our gratitude to the key stakeholders in MoECRT who attended the review meeting held on 24 June 2021, for their invaluable feedback, which aided us in preparing the final report.

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This assessment is being carried out by HEART, a consortium of: Oxford Policy Management, EDT (Education Development Trust), IDS (Institute of Development Studies), HERA, WEDC, University of Leeds and LSTM (Liverpool School of Tropical Medicine), AGUA Consult, Mannion Daniels, Open University, Wise Development, Nutrition Works and supported by the Foreign, Commonwealth and Development Office. This report was managed by Oxford Policy Management.

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Executive summary

Overview of the study

The COVID-19 pandemic has accelerated and scaled up the use of technology for education across Indonesia. Due to the closure of schools, in Indonesia and globally, distance or remote learning has been one of the main options for teaching and learning activities over the last year. Remote learning is defined as a learning process that happens in a non-traditional classroom setting. Remote learning may occur in many different settings as regards time and place; this includes online learning and blended learning (a combination between online and offline learning). Remote learning allows learners and the source of information (teacher, instructor, lecturer) to be separated physically. As remote learning requires connectivity and the utilisation of information and communication technology (ICT) tools, digital literacy is crucial. Apart from its benefits in a remote learning context, digital literacy also endows digital skills – defined as the ability to understand, manage, and integrate information through digital devices and networked technology in economic and social life.

The Digital Access Programme (DAP)¹ in Indonesia is designed to support digital inclusion in the country, including in the education sector. It aims to promote the development, validation, and roll-out of innovative and inclusive models of basic connectivity, digital skills, and locally relevant digital content and services for underserved communities. These priorities have become particularly relevant with the spread of the COVID-19 pandemic, which has highlighted the widening digital divide in Indonesia, as schools have increasingly adapted to online ways of learning.

The main objective of this study is to provide in-depth research, analytical support, and recommendations to the Ministry of Education, Culture, Research and Technology (MoECRT) and other key partners on the state of remote learning, connectivity, digital literacy, and local digital capacity in the country, in order to build digital inclusion across Indonesia's regions. This study has two key interrelated components: Component A, which focuses on supporting MoECRT to develop a remote learning and digital skills strategy; and Component B, which is a review of DAP pilot projects involving community-based connectivity in two remote locations. Insights from the analysis of the national-level framework and strategies for remote learning conducted for this study can be applied to initiatives adopted by sub-national governments and the communities. Likewise, the good practices and lessons learned from the DAP pilot projects can also be used to inform policies at national and sub-national level.

In this study, the research team applied a qualitative method of data collection and analysis through a desk review of legal frameworks and models for remote learning based on international and national good practices; and consultation meetings with key stakeholders (national and sub-national government institutions, pilot project implementers, and schools) to obtain information about the implementation of remote learning and digital literacy that is taking place in the country. The data collection took place at both the national and sub-national level and targeted urban, suburban, and remote areas to compare the delivery of remote learning and digital literacy development in different circumstances. In regard to the selection of research sites, Kasepuhan Ciptagelar (Sukabumi District, West Java), and Sabutung Island (Pangkep District, South Sulawesi) were chosen due to the location of DAP pilot projects and to represent remote areas, while DKI Jakarta was chosen to represent vibrant and urban areas.

¹ The Prosperity Fund's DAP is a partnership between the Foreign, Commonwealth and Development Office (FCDO) and the Department for Digital, Culture, Media and Sport of the United Kingdom Government. The programme aims to catalyse more inclusive, affordable, safe, and secure digital access for disadvantaged communities in Kenya, Nigeria, South Africa, Brazil, and Indonesia.

Key findings

Strategic directions and programme implementation. The Government of Indonesia (Gol) has set a regulatory framework for remote learning and digital literacy, as part of the national agenda, including regulations developed prior to the COVID-19 pandemic. In the light of the *Merdeka Belajar* ('emancipated learning') policy, the Gol aims to give more space to key education actors – school, teachers, and students – to innovate and to learn more independently and creatively (MoECRT, 2020c). Remote learning is currently being implemented at the national and sub-national levels to ensure learning continues. Some key interventions include the following:

- The Gol is working to expand internet services and accelerate the IT infrastructure and ecosystem, in order to reinforce digitalisation. Palapa Rings, Satria Multifunction Satellites, and Base Transceiver Stations are being constructed in villages to provide internet access for all and to fill the connectivity gap between urban and rural areas.
- To improve digital skills, the *Program Literasi Digital Nasional* (National Programme for Digital Literacy) has been introduced, involving many initiatives, such as the following: establishing the *LiterasiDigital.id* web portal, which serves as a digital literature platform for enhancing digital skills, which has been established through *Siberkreasi* under *Kementerian Komunikasi dan Informasi* (the Ministry of Communication and Information, MoCI); establishing the *School of Influencer*, a movement that allows youth to create positive and creative content; developing *StopHoax.id*, a tool for identifying and reporting hoaxes; as well as providing training on ICT skills under various ministries (i.e. *PemBATIK* for teachers and *Jong Kreatif Academy* for senior high school students in remote areas).
- Joint Minister Stipulations that were first issued in August 2020 have undergone a number of changes to promote remote learning to aid in disease prevention and mitigation. The most recent Joint Minister Stipulations were issued in March 2021. Policies have been adjusted to respond to the circumstances of the COVID-19 pandemic, focusing on what actually works, including mitigating learning loss. These policies cover: national guidance on *Belajar dari Rumah* (learning from home), including for students with special needs; the simplification of the curriculum; guidance on vocational high schools to undertake limited offline practical works; the provision of learning materials and educational technology tools (i.e. *Rumah Belajar* and *Televisi Republik Indonesia* (TVRI, Indonesian state television) programmes hosted by MoECRT); an internet quota subsidy for students and teachers (*Kuota Belajar*); and an affirmative approach for disadvantaged areas or populations (i.e. *BOS Afirmasi*, *BOS Kinerja*, *Guru Kunjung*, and *Guru Berbagi*).
- Potential learning losses are also being acknowledged and mitigated through simplification of the curriculum and personalised learning for students in the remote learning context. The government has announced the re-opening of schools, with limited face-to-face learning. Even though a guideline on school re-opening has been provided, there are still some concerns regarding some aspects of health and safety.
- There is a consensus among key stakeholders that multi-stakeholder collaboration is needed among ministries, relevant institutions, and local governments to resolve remote learning challenges and connectivity issues, including mitigating learning loss, providing guidance to parents, and developing teachers' pedagogical and digital skills.

Some good practices in remote learning and digital literacy are being applied. Technology is offering learning opportunities, and teachers and students are creatively utilising educational technology (EdTech) and the internet as a source of information and tools.

- Teachers and students have been using EdTech in teaching and learning. Online meeting platforms that are typically used include Zoom, Google Meet, and Google Classroom. Schools

provide access to this EdTech (school-funded), though it is limited. WhatsApp is also seen by teachers, students, and parents as a 'mandatory' tool for sharing materials and home assignments, submitting work, and for discussion. This finding is backed by a recent study by MoECRT (2021) that shows that teachers and students who received a data quota subsidy employed more varieties of EdTech platforms and apps.

- When engaged in learning remotely, students independently look for knowledge from various sources online. They are more exposed to digital skills through learning by doing. Teachers and students are aware of various learning tools and sources of materials; however, limited digital skills and limited exposure to these tools reduces the level of utilisation, particularly for students and teachers in non-urban areas.
- The role of teachers remains critical in a remote learning context. Teachers creatively package/repackage teaching and learning resources to be delivered in an online and blended mode, using various online platforms and digital media. In situations where online learning cannot be fully implemented, teachers deliver teaching in a blended learning format.
- As in general education, most vocational education institutions have also been implementing distance online learning. However, online practical work is challenging. Therefore, regulation in this area has been flexed to allow for face-to-face work and internships for vocational education.

A few challenges, as well as room for improvement, were noted by the study. This includes uneven distribution of the internet infrastructure, inequity of access to connectivity, and a lack of ownership of technology, particularly for underserved communities.

- Some factors that underline the challenges are the following: (i) Indonesia's geographical makeup, which makes it costly to build and invest in infrastructure, especially in the country's island and mountainous areas; (ii) as optical fibre is expensive, Indonesia relies on wireless internet, and there are many unserved areas; (iii) the coverage and speed of internet services differ across providers and location; and (iv) there are problems with electricity access to support internet infrastructure.
- Other challenges encountered by families include the following: (i) the ability to pay for internet access and own devices, such as smartphones and laptop, varies across households, with low-income households finding this challenging; and (ii) without attention and monitoring by parents or caregivers, students can become disengaged when working from home.
- Despite the heavy focus on the importance of remote learning, which is facilitated by online platforms and technology, there has been a limited focus on digital literacy and enhancing teachers' digital skills. Teachers – especially older teachers and teachers in non-urban areas, still need improvement in their digital skills for innovation in teaching.

Lessons from the DAP pilot projects, which have demonstrated an innovative and demand-driven community-based connectivity model, include the following.

- Connectivity is the backbone of remote learning, but the populations in island and mountainous areas are vulnerable and underserved since they have limited connectivity and ownership of adequate ICT devices.
- Community radio is the best possible option for people who reside in these areas as regards accessing information. Radio is also an option that can be used to support implementation of teaching and learning in remote areas, by delivering pre-developed content in the form of recorded podcasts or live broadcasts by teachers.
- Community-based internet is increasingly seen as a sound model of internet provision, for a number of reasons. First, it provides connectivity to students who have not received the internet data quota from MoECRT and ensures their continued learning. Second, it supports

communities to promote their locality (including their cultural values) to the wider public. Third, it enhances the livelihood of community members. Fourth, it offers an alternate way to enhance connectivity, being built, managed, and used by community members. Fifth, it is used for information exchange, remote learning, and other non-formal training that can improve communities' livelihoods, which is particularly relevant in the circumstances of the COVID-19 pandemic.

Recommendations

For policymakers

On remote learning and digital literacy strategy:

1. **MoECRT and sub-national education offices should work to sustain the current agile/flexible policy and strategic directions at national and sub-national level.** The national government has continuously adjusted its policies and strategic directions in response to the dynamic of remote learning during the pandemic. This should be continued.
2. **To mitigate learning loss and enhance the learning environment, MoECRT should optimise remote learning by designing courses for different modalities: online, blended, and offline learning.** This will prepare the education system to make use of the e-learning approach beyond the pandemic. Ideally preceded by curriculum mapping or review, a more structured form of curriculum delivery will need to be implemented, in order to provide options for educators, based on their specific needs and conditions. Structured open courseware or a learning management system can be used to host learning interactions in schools, and for hosting downloadable resources. There should be incentives for using this structured approach in schools managed by sub-national governments.
 - a. *Enabling factors:* Some considerations that need to be factored in might include connectivity, digital skills and literacy, and available learning resources. The design of different scenarios or approaches to remote learning will be useful beyond the pandemic, so that teachers can continue enhancing their instruction through e-learning in or beyond the classroom walls (e.g. flipped classroom strategy use).
 - b. *Effective instruction in learning through the use of digitalised learning resources:* The adaptation of printed materials into digital learning resources might be needed in many cases. Further, online learning can be enriched by converting pdf-based reading materials into more interactive resources.
 - c. *EdTech use:* Appropriate technology should be used in different modalities: while high-tech applications can be opted for in urban areas, lower-tech apps and means can be used in environments with limited or no connectivity.
 - d. *Personalised learning:* Students learn at different paces and using different styles, with no single or combination of visuals, audio, reading, or kinaesthetic approach working best for all. To engage students, and more importantly to mitigate further learning loss, personalised learning should be applied, as an imperative building block of the education system.
 - e. *National Assessment:* Indonesia's national assessment can serve as a tool to monitor the progress of students' learning upon their return to face-to-face learning

in schools, to mitigate possible learning loss. Consider tracking students who are vulnerable to drop-out from school in the national assessment.

- f. *Integration of online safety in the curriculum:* So far, no online safety programme has been mainstreamed in Indonesian schooling. This gap should be filled.
3. **MoECRT and sub-national governments should focus on equipping educators – teachers and educational staff – with pedagogical and digital skills and literacy.** A few steps might be considered:
- a. *Digital skills development:* Lay out the foundations of digital skills and literacy for teachers. The *PemBATIK* programme needs to be scaled up to reach all teachers, offering them trainings and mentorship in using technology at different levels of competencies. The training can also be repackaged to offer refresher and advanced courses for more advanced users of technology.
 - b. *Strengthen programme synergies:* The *PemBATIK* programme framework and its training curriculum can also be used to strengthen the *Guru Penggerak* programme, to provide teachers with foundational skills in using technology for teaching and learning.
4. **Teacher communities of practice are a strong vehicle for teacher improvement, including developing their digital skills and literacy. MoECRT, along with sub-national governments, should reflect on the importance of teacher communities of practice through the role of *Kelompok Kerja Guru (KKGs)*, *Musyawarah Guru Mata Pelajaran (MGMPs)*, *Guru Berbagi*, and *Guru Belajar* forums.** There may be a need for MoECRT to put together a more integrated and inclusive programme to support teacher communities of practice through online, blended, and face-to-face platforms in urban, suburban, rural, and remote areas.
5. **MoECRT and sub-national governments, along with communities (parents) – should increase awareness of the risks of children being online.** This should be closely tied with the National Literacy Movement, which should integrate online safety and risks in the curriculum.
6. **MoECRT and sub-national governments should focus on supporting parents, possibly through coordinating parent support groups.** Parents' role as 'co-teachers' at home has increased significantly during the remote learning process. They have become the teachers that students can interact with directly. Therefore, providing strong support for parents is an imperative element in remote learning. This will be particularly useful for parents of younger children at the early childhood and primary education level, who are less independent in their learning.
- a. *Academic support:* Scale up the effort to develop subject matter-based guide books/tutorials for parents, to help them guide their children in learning. While MoECRT has developed modules on literacy and numeracy for early childhood education and primary education for parents, parent support groups can foster experience exchange among parents and convey practical guidance from educators. The development of modules for parents will also be beneficial for other subjects.
 - b. *Psychosocial support:* This support can be given by school counsellors and local governments through parent help desks in schools or school chat groups. Useful resources can be developed and forums for experience sharing among peer parents can also facilitate rich discussions around co-teaching their children at home and parenting, to help parents cope with the circumstances encountered during the pandemic.

7. **MoECRT and local governments should consider scaling up computer adaptive testing (CAT) as a diagnostic tool to assess potential learning loss that students may experience.** CAT allows results to be retrieved promptly right after the test, so schools and teachers can decide on the support needed by students in different contexts. Item banks can be pulled from those developed by *Pusat Asesmen dan Pembelajaran* (Pusmenjar, the Centre for Assessment and Learning) at the MoECRT, or developed from scratch, as needed. Good practice in the use of CAT in remote schools shared by the KIAT Guru programme can be considered for replication or adaptation.
8. **To enhance technical vocational education and training (TVET), the MoECRT Directorate General of Vocational Education can consider the following:**
 - a. Innovative mechanisms to deliver TVET. This could include using blended learning modules, using simulators (for courses such as welding, driving, or construction-related trades) or using virtual reality/augmented reality to deliver TVET programmes. Delivery of courses through these channels can enhance the quality and relevance of TVET programmes. With the expansion of connectivity, such initiatives can also be rapidly scaled up. Such mechanisms will also be helpful for upskilling and reskilling programmes.
 - b. The MoECRT Directorate General of Vocational Education can consider innovative mechanisms to ensure online assessment and certification of skills and TVET programmes. This will not only reduce the backlog in assessments and certifications during lockdown, but will also ensure that learning continues.
 - c. The Directorate General of Vocational Education can also conduct online job fairs, to connect trainees to jobs (part-time or full-time). This will ensure that those who undergo formal vocational training have access to career counselling and mentorship support online, and can assist individuals in job searches (and help match the right job with the right individual), as individuals transition from school to work. This step will also help mitigate some of the livelihoods-related challenges which are likely to emerge as the COVID-19 pandemic subsides.
9. **Broader outreach can also be conducted to share insights and lessons learnt with wider key stakeholders:** i) Sharing with national policymakers, such as MoECRT, MoCI, and *Kementerian Desa, Pembangunan Daerah Tertinggal, dan Transmigrasi* (Kemendes, the Ministry of Village, Underdeveloped Regions and Transmigration, MoV). This can be done through publications, knowledge sharing, and events. ii) Sharing with other relevant non-government institutions that focus on inclusive connectivity for education. iii) Learning from and adapting international good practices to address specific challenges in the Indonesian context. The paragraphs below provide an overview of some of these international good practices.

Learning from international good practices

Many countries have implemented innovations in remote learning and digital literacy, including when identifying students who are left behind and mitigating educational impact arising from remote learning. Countries have also prepared different programmes for school re-opening. Anticipating a worsening situation in regard to the COVID-19 pandemic in the future, countries have increased their investment in remote learning to prepare for other school closures: for example, identifying hard-to-reach communities, reviewing materials/content for blended (in-school and virtual learning) learning, and continuing to utilise remote learning platforms in offline teaching.



Some countries in Africa, including a pilot United Nations Children's Fund (UNICEF) pilot project in Uganda, have adopted a 'teaching at the right level' approach which focuses on individual assessment of children's literacy and numeracy skills, grouping children by ability level rather than age or

grade, and providing innovative activities relating to reading and mathematics. Viet Nam targets ethnic minorities for special measures and acceleration in remote learning. This approach is being carried out by MoECRT and diagnostic tool for student assessment is being designed.



The United Arab Emirates and other countries (like Singapore, Pakistan, the Netherlands, and Hungary) provide remedial programmes for students who are impacted by and cannot cope with remote learning. Other countries adjust the school calendar, shorten holiday times, and add class time when schools re-open.



Countries like Honduras, the Cayman Islands, and Afghanistan assess students' learning during school closure as part of preparations for school re-opening in order to diagnose, and design education to cater for, students' needs. This approach has been implemented by Indonesia and is likely to continue, in the form of personalised learning assessments.



Some Latin America and African countries monitor attendance, absenteeism, and drop-out as a strategy to bridge the transition from remote learning to school return. This strategy is deemed to be important as it maps students who are impacted by the pandemic, cannot follow remote learning, and thus are at risk of not returning to school.



Among the millions of students impacted by the pandemic, it is critical to identify and reach out to vulnerable students who are at risk of staying out-of-school. Brazil is one of the countries that tracks students through a participative approach, involving schools and communities (in the School Active Search programme).



The International Labour Organization (ILO) and International Telecommunications Union (ITU) Digital Skills Campaign introduces demand-driven digital skills curricula in education, apprenticeships, and other youth skills development programmes, enhances the quality of teaching and training in digital skills, builds links between digital skills training providers and employers to foster job placement, and delivers or funds digital skills development programmes for youth, including for young women. The Generation Unlimited (Gen-U) Movement is a global multi-sector partnership addressing three main issues: connectivity, digital skills, and job opportunities. In response to schools closing during the COVID-19 pandemic, a task force was set up to connect all schools and learners to the internet, to scale up online and remote learning (both for general education and TVET), to generate entrepreneurship, and to support youth as change-makers. The Gen-U Movement is promoted by multi-sector stakeholders and acts as a platform for knowledge sharing and the potential adoption of ideas. In regard to its flagship programmes in job creation, upskilling, and reskilling, and strengthening the national training system (*Sistem Pelatihan Kerja Nasional, Sislakernas*), Indonesia could consider incorporating certain promising ideas into these programmes, such as remedial learning within personalised technology-supported platforms, remote learning and work (to expand access to remote learning and work opportunities for youth), and digital connectivity and skills for youth.

On connectivity:

1. **At the national level, coordination among MoECRT, MoCI, and MoV should be strengthened to accelerate connectivity provision in rural and remote areas.** The number of remote schools which are connected may need to be increased due to the nationwide adoption of a remote learning mode. Respective to the village fund window, villages can prioritise connectivity programme where needed. Through village funds, villages can procure facilities, or they can use the resources for maintenance.

2. **Continue the legacy of practices applied during the COVID-19 pandemic as regards the establishment of an umbrella agreement on quota data pricing and the disbursement strategy involving MoECRT and telecommunications companies.** In the longer term beyond the pandemic, this strategy may also be undertaken at sub-national level, whereby local governments can work on arrangements to reduce quota data pricing when purchases reach economies of scale.
3. **Learning from the Component B pilot projects supported by the DAP, FCDO, and the UK Embassy, the following approaches can be considered:**
 - a. Community-based connectivity can increase access to remote learning. While the *Kuota Belajar* data package subsidy has been disbursed, the needs related to remote learning are sometimes greater than the data quota allocated. The challenges in accessing *Kuota Belajar* (e.g. *Kuota Belajar* quota disbursement delays, failure to confirm phone numbers) mean that a demand-driven approach may be most suitable for parents and students wishing to get connected.
 - b. Both national and sub-national governments should adapt the innovative approach of community-based connectivity. Community-based internet implemented in Kasepuhan, Ciptagelar, and Sukabumi is a demand-driven initiative which has been able to provide good access to online learning. The community radio in Sabutung island can also be considered when other connections are not possible. *Community funding is also a powerful resource for more sustainable connectivity*: this has been modelled by West Java Digital Services, through collaboration with Village-Owned Enterprises or *Badan Usaha Milik Desa* (Bumdes), and in the community-based connectivity project in Kasepuhan Ciptagelar.
4. **District governments should consider shifting ownership of connectivity facility assets to villages.** This will allow villages to directly manage and maintain the connectivity facility (e.g. VSAT towers and signal transmitters) using the available village funds.
5. **It is hoped that collaboration will continue to take place between MoECRT and the DAP. As a continuing effort to pilot community-based connectivity, the DAP's community network project will expand shortly to more regions of Indonesia.** School connectivity will be prioritised more going forward. Also, the DAP is now working with the ITU, who have experience and specialism in the area of school connectivity, both from a regulatory design and implementation angle.

The paragraph below highlights some insights from Brazil's practices to improve connectivity which can be applied to the Indonesian context.

Some insights from Brazil



School connectivity. 70% of Brazil's 155,000 schools are currently connected, although 58% are limited to a speed of 2 megabits per second (Mbps). Around 19% of rural schools in the Amazon need radio to be able to access information. In December 2020, the **UK and the Brazilian Government signed a memorandum of understanding on accelerating digital transformation** and innovation in public services delivery in the country, from now to March 2023. Drawing on the case of Brazil, Indonesia's National Digital Literacy Programme, the country may benefit from an inclusion programme to cater to the needs of marginalised groups such as those residing in remote and underdeveloped areas – both for formal and non-formal education. Such a programme can also provide support for women and girls who are at risk of being left behind in digital skills development programmes.

For educators

1. **Establish a strong online presence while delivering online and blended learning to ensure students' engagement and learning.** While the curriculum is adjusted based on the needs as regards teaching and learning circumstances, it is important to also make sure that each theme/topic and session is effective.
2. **Continue to create and adapt lesson plans that incorporate a teaching strategy for remote learning.** Many educators have shared their adaptation of lesson plans through the *Guru Berbagi* website as a starting point, and more plans can be drawn from existing learning resources and books to fit online and blended learning. The role of school supervisors in terms of providing quality assurance of lesson plans developed by teachers can be strengthened.
3. **Make use of various tools and apps to make teaching and learning more engaging and to promote higher-order thinking.** With adequate planning in lesson plans, various online/digital learning tools can be incorporated in learning sessions.
4. **Online training methodologies should continue to be used for upskilling and reskilling TVET educators,** to enable them to continuously upgrade their digital skills and remain up to date with rapidly changing technologies.
5. **Educators must not only be trained on digital skills and the application of these skills in the classroom, they also need to be trained on how to ensure data security and privacy.** Training on these aspects needs to be included in any digital literacy skills training programme for educators.

The paragraph below highlights some insights from the UK which can be applied to the Indonesian context.

Some insights from the UK



In order to benefit disadvantaged students, MoECRT's *Guru Kunjung* and ICT in education research and education programmes, implemented by *Pusat Data dan Informasi* (Pusdatin, the Centre of Data and Information), should refer to and adopt useful practices from the **UK's National Tutoring Programme and EdTech Research and Development (R&D) Programme**, respectively. The approach taken by the **UK's Department for Education to embed an online safety programme into the national curriculum** may be adapted and delivered for education at all levels in Indonesia. This should be closely tied with the National Digital Literacy Movement. Guidance on online safety will also be beneficial for parents and teachers as they seek to support children's learning.

For pilot project implementers

1. **Continue with the continuous reflective monitoring and evaluation, in order to learn from the experience and to make further improvements.**
 - a. Common Room Network: Continue to develop national guidelines and a practical guidebook on community-based internet, in collaboration with MoV and MoCI. In order to learn from the pilot project for replication in other areas, consider conducting an impact evaluation study. This should include baseline and endline data collection in the project sites.
 - a. Institut KAPAL Perempuan: Address challenges to sustaining and disseminating the approach:
 - Frequency set up: The radio broadcast encountered challenges in obtaining an official permit, due to the frequency's proximity to the airport's radio frequency. A permit for changing the frequency has been granted by MoCI,

but only for six months. Resolving the frequency issue by exploring the merging of the Community Radio of Sipurennu in Sabutung Island with Suara Pangkep, run by Pangkep district, is one solution. If possible, the remote learning radio broadcasts can be converted into offline digital-based podcasts and distributed through home visits by teachers.

- Collaboration with *Radio Republik Indonesia* (Republic of Indonesia Radio, RRI): The remote learning programme offers a good approach for remote learning in remote areas, and can potentially be broadcast nationally in cooperation with RRI.

2. **The Common Room Network and Institut KAPAL Perempuan, as project implementers, should disseminate their efforts more widely to policymakers at sub-national government level, particularly where the project sites are located.**

- a. The Common Room Network has reached out to other communities in Sukabumi and received good responses in regard to replication (e.g. Ciracap subdistrict). A partnership with Sukabumi or neighbouring districts in West Java Province should be explored, to mainstream community-based connectivity.
- b. Likewise, despite the challenge in obtaining a radio permit, the experience of using community radio as a means to facilitate learning should be shared with Pangkep district and the South Sulawesi government.

3. **Continue using the rural ICT camp and other dissemination efforts to share experiences with wider key stakeholders at international, national, and sub-national levels.** This includes relevant international communities, policymakers (such as MoECRT, MoCI, and MoV), and sub-national governments, as well as non-government institutions and communities.

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List of abbreviations

APJII	<i>Asosiasi Penyelenggara Jasa Internet Indonesia</i> ; Indonesian Internet Service Providers Association
BAKTI	<i>Badan Aksesibilitas Telekomunikasi dan Informasi</i> ; Telecommunication and Information Accessibility Agency
Bappenas	<i>Badan Perencanaan dan Pembangunan Nasional</i> ; Ministry of National Planning
BDR	<i>Belajar dari Rumah</i> ; Learning from home – a remote learning concept during COVID-19 introduced by MoECRT
BNSP	<i>Badan Nasional Sertifikasi Profesi</i> ; National Professional Certification Board
BOS	<i>Biaya Operasional Sekolah</i>
BPS	<i>Badan Pusat Statistik</i> ; Indonesia's Statistics Bureau
CAT	Computer adaptive testing
COVID-19	Corona Virus 2019 Disease
DAP	Digital Access Programme
DfE	Department for Education (UK)
EdTech	Educational technology
FCDO	Foreign Commonwealth and Development Office (UK)
FGD	Focus group discussion
Gol	Government of Indonesia
ICT	Information and communication technology
ICT-CFT	ICT Competency Framework For Teachers
IDR	Indonesian rupees
ILO	International Labour Organization
ITU	International Telecommunications Union
KII	Key informant interview
KKG	Kelompok Kerja Guru
KPAI	<i>Komisi Perlindungan Anak Indonesia</i> ; Indonesian Child Protection Commission
LKP	<i>Lembaga Kursus dan Pelatihan</i> ; Non-formal Courses and Training Institutions
MGMP	<i>Musyawarah Guru Mata Pelajaran</i>

MoCI	<i>Kementerian Komunikasi dan Informasi (Kemkominfo)</i> ; Ministry of Communication and Information
MoECRT	<i>Kementerian Pendidikan, Kebudayaan, Riset dan Teknologi (Kemdikbudristek)</i> ; Ministry of Education, Culture, Research and Technology
MoF	<i>Kementerian Keuangan (Kemenkeu)</i> ; Ministry of Finance
MoH	<i>Kementerian Kesehatan (Kemenkes)</i> ; Ministry of Health
MOOC	Massive open online courses
MoRA	<i>Kementerian Agama (Kemenag)</i> ; Ministry of Religious Affairs
MoRTHE	<i>Kementerian Riset, Teknologi dan Pendidikan Tinggi (Kemendikbudristek)</i> ; Ministry of Research, Technology and Higher Education
MoV	<i>Kementerian Desa, Pembangunan Daerah Tertinggal, dan Transmigrasi (Kemendes)</i> ; Ministry of Village, Underdeveloped Regions and Transmigration
OECD	The Organisation for Economic Co-operation and Development
OPM	Oxford Policy Management
Pangkep	Pangkajene dan Kepulauan District in South Sulawesi (DAP pilot project location)
PembaTIK	<i>Pembuatan Bahan Ajar Berbasis Teknologi Informasi dan Komunikasi</i> ; Making Teaching Materials Based on ICT
PJJ	<i>Pembelajaran Jarak Jauh</i> ; remote or distance learning (in the Indonesian context)
PISA	Programme for International Student Assessment
Pusdatin	<i>Pusat Data dan Informasi</i> ; Centre of Data and Information
Puskurbuk	<i>Pusat Kurikulum dan Perbukuan</i> ; Centre for Curriculum and Books
Pusmenjar	<i>Pusat Asesmen dan Pembelajaran</i> ; Centre for Assessment and Learning
R&D	Research and development
Renstra	<i>Rencana Strategis</i> ; strategic plan
RRI	<i>Radio Republik Indonesia</i> ; Indonesia's state radio station
Sislatkernas	<i>Sistem Pelatihan Kerja Nasional</i> ; National Training System
SMA	<i>Sekolah Menengah Atas</i>
TVET	Technical vocational education and training
TVRI	<i>Televisi Republik Indonesia</i> ; Indonesia's State Television Station
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organization

UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
USO	Universal Service Obligation

1 Introduction

The UK's DAP aims to promote the development, validation, and roll-out of innovative and inclusive models of basic connectivity, digital skills, and locally relevant digital content and services for underserved communities. The Study on a Remote Learning and Digital Literacy Strategy, which is reported on here, is a collaboration between the DAP and MoECRT that seeks to observe Indonesia's current situation in developing a national remote learning strategy and enhancing digital literacy. The main objectives of the study are to provide in-depth research, analytical support, and inputs to MoECRT and other key stakeholders on the state of connectivity, digital literacy, and local capacity in order to bring about digital and education inclusion in Indonesia. This study has two components: Component A focuses on conducting research to provide inputs for the development of a remote learning and digital skills strategy; Component B is a thorough review of DAP pilot projects in two locations, in Sabutung Island and Kasepuhan Ciptagelar.

1.1 About this study

Remote learning and digital skills have become critical since the outbreak of the COVID-19 pandemic. The closure of schools has pushed the education systems of the world to turn to alternate ways of learning, using online, TV radio broadcast, and print media, affecting over 1 billion students worldwide. There are opportunities and challenges in continuing education service provision in this manner. Countries need to cope fast, taking emergency response measures, although initially in an *ad hoc* manner. Technology can bring new learning opportunities, and there are extensive options within online environments. However, there may be losses in learning where learning goals within existing curriculum frameworks are not fully accomplished.

The Gol has prioritised education and has taken a number of measures to ensure effective remote learning, putting digital literacy in the spotlight. Moving beyond overcoming the challenges to teaching and learning during the COVID-19 pandemic, a remote learning and digital literacy strategy for Indonesia will need to be positioned to attain medium-term and longer-term education development goals.

The DAP is a UK Government Prosperity Fund partnership between the UK FCDO and the UK Department for Digital, Culture, Media and Sport covering five countries: Brazil, Nigeria, Indonesia, Kenya, and South Africa. The programme aims to support inclusive, affordable, but also safe, digital access for underserved communities to increase the basis of a digital tech economy for opening up skilled jobs and opportunities for local government. The programme aims to promote the development, validation, and roll-out of innovative and inclusive models of basic connectivity, digital skills, and locally relevant digital content and services for underserved communities. These priorities have become particularly relevant with the spread of the COVID-19 pandemic, which has highlighted the widening digital divide in Indonesia, as schools and workplaces have increasingly adapted to online ways of working. Addressing this challenge is an urgent policy priority for the Gol.

1.2 Objectives of the study

The goal of this exercise is to provide in-depth research, analytical support, and advice to MoECRT and other key partners on the state of connectivity, digital literacy, and local digital capacity nationally, and how it relates to delivering inclusive educational content (for both formal and non-formal pathways) in different regions in Indonesia.

This assignment has two key components, which are detailed below:

- **Component A** is the key focus of the study and aims to support MoECRT to create a remote learning and digital skills strategy. This task comprises an in-depth review of the current framework and existing capacity; identification of challenges and bottlenecks in the implementation of ongoing programmes and strategies at the national and sub-national level in urban, suburban, and rural areas (e.g. districts in West Java, South Sulawesi, and the province of DKI Jakarta); and identifying the principles of good practices or innovations which can be applied to increase capacity and ensure better access to, and relevance of, digital skills and remote learning programmes.
- **Component B** is a research uptake component and applies insights from Component A to inform the implementation of the following two specific pilot projects:
 - i) The Indigenous Community Networks Platform and Technology Hub for Rural Innovation: This pilot programme is being conducted in Kasepuhan Ciptagelar village in Sukabumi District, West Java Province, and is implemented by the Common Room Network. This programme comprises the following activities/components:
 - a. *Desa Siaga*, a COVID-19 pandemic preparedness and resilience initiative;
 - b. development of a training centre and media lab; and
 - c. organising a rural ICT boot camp.
 - ii) DAP pilot: This initiative is being conducted in Sabutung Island, South Sulawesi. This pilot programme is being implemented with support from the Medco Foundation and is designed to allow the community in Sabutung Island to make sound use of digital technologies (e.g. internet, community TV, and radio) for primary and secondary school students during the COVID-19 pandemic, as well as for community-based women's empowerment.

Component A and Component B of the study are interrelated. Insights from an analysis of the national-level framework and strategies can be applied to initiatives adopted by sub-national governments and communities. Likewise, the good practices and lessons learned from the pilot projects in Component B can also be used to inform policies at national and sub-national level.

1.3 Scope of the work

The terms of reference for the study require that the technical support team should do the following:

- Review key literature in order to provide an overview of international best practices and models of remote learning and e-learning tools, with a focus on those that can be adapted to the Indonesian context, especially for marginalised communities (e.g. low-income households, women, persons with disabilities).
- Review the implementation of two pilots on: i) an Indigenous Community Networks Platform and Technology Hub for Rural Innovation; and ii) a Digital Access Pilot Programme for remote learning and women's empowerment.
- Conduct a stakeholder mapping exercise to identify key stakeholders in the digital skills ecosystem in Indonesia, at the national and state levels.
- Prepare an in-depth research design and plan for stakeholder engagement, to answer key research questions.
- Provide technical advice, guidance, and support for initiating and drafting a strategic remote learning and digital literacy strategy, in close collaboration with MoECRT and other key government, private sector, and civil society stakeholders. This will incorporate possible regional/local-level pilots initially, so liaison with local governments will be important.

- Preparation of a report, summarising the key research findings and preparing a set of focused policy recommendations and a draft digital skills strategy for MoECRT.

Aligned with the terms of reference, the objectives of this study are two-fold:

- Review the status quo, including further identification of stakeholders both for Components A and B, current strategic direction, policy framework, and programme implementation.
- Using a participative approach, provide technical support for stakeholder engagement through:
 - discussions on strategy development on remote learning and digital literacy;
 - based on the discussions, formulating priority policy actions for further planning; and
 - developing written documents as stated in the terms of reference to inform policy discussions (knowledge to policy), including: i) a draft remote learning and digital literacy strategy draft; ii) policy briefs based on the findings from Component B.

1.4 Deviation from the terms of reference

The terms of reference mention that this study aims to provide in-depth research and technical support to MoECRT and other key partners on the state of remote learning delivery and digital literacy development across regions in Indonesia. Our initial research design for the study took this into account. During the inception phase, based on feedback from the DAP team and MoECRT, it emerged that there was a need to emphasise a few topics of interest: TVET, special education, and the schools re-opening. Therefore, we also included interviews with key stakeholders, such as representatives of MoECRT units and school stakeholders, on: (i) the implementation of, and challenges during, remote learning in vocational high schools, special schools, and inclusive schools; and (ii) the readiness of teachers, parents, and students for school re-opening.

In ensuring the uptake of the research results, recommendations, and discussions, the research team also proposed a series of webinars for MoECRT, teachers, relevant ministries, and local governments, as part of the dissemination activities. The study underwent a no-cost extension from 31 May to 30 June 2021 to accommodate this need.

1.5 Report structure

The remaining chapters of the report are structured as follows.

- Chapter 2 provides overview of the Indonesian context, and explains the concepts of remote learning and digital literacy.
- Chapter 3 describes the methodology of the study.
- Chapters 4,5 and 6 present the findings of this study, including Component A and Component B.
- Chapter 7 highlights some international best practices and their relevance to Indonesia.
- Chapter 8 proposes next steps and recommendations for developing a remote learning and digital literacy strategy.

Additional materials are included in annexes, as follows:

- Annex A provides a list of the stakeholders consulted; and
- Annex B provides a timeline of the activities conducted as part of this study.

2 Overview of Indonesia's context and of the concepts of remote learning and digital literacy

Indonesia's education system is one of the largest in the world, with around 445,000 education institutions, 3 million students, and over 50 million students. Most of these education stakeholders are managed under MoECRT. Remote or distance learning, known as *Pembelajaran Jarak Jauh* (PJJ), is not a novelty in Indonesia: it was introduced back in the 1950s for teacher professional development schemes. Since then, remote learning has evolved along with the development of technology and innovation in teaching-learning. Today, remote learning has become still more relevant due to the school closures in response to the COVID-19 pandemic. The GoI has taken several steps to prepare remote learning delivery, especially providing a nationwide guidance for *Belajar dari Rumah* (learning from home). Since remote learning practices require adaptation of technology, digital literacy is deemed important as a foundation. With many actors involved in the topics of remote learning and digital literacy, the development of a remote learning and digital literacy strategy is crucial in order to establish an enabling environment.

2.1 Demographic and socioeconomic profile

The Indonesian archipelago consists of 16,000 islands and covers an area of 1 million square kilometres. With 271 million inhabitants, Indonesia is the fourth most populous country in the world (BPS, 2020a). It is projected that Indonesia's population will reach 300 million by 2035 and that the country will experience a 'demographic bonus' in which the productive-age population is higher than the non-productive-age population (Bappenas, Statistics Indonesia, and United Nations Population Fund (UNFPA), 2013). In 2020, more than half of the Indonesia population lived in urban areas and this number is estimated to increase over the next few years (BPS, 2020c). The urban population (which accounts for more than 50% of the total Indonesian population) has more opportunities in formal jobs than the rural population, which still relies on employment in the informal sector (BPS, 2020d).

Indonesia has enjoyed positive development for the last two decades. Some key achievements noted are a decline in the poverty rate, better access to water and sanitation, and an improved Human Development Index (Doorn, 2020; BPS, 2020a). In 2020, the key sectoral contributors to Indonesia's gross domestic product were the manufacturing, agriculture/forestry/fishery, and trade sectors (BPS, 2020b). However, the COVID-19 pandemic which hit the world in January/February 2020 has put Indonesia's progress at risk in both the short and long term. Between 2019 and 2020, the unemployment rate increased from 5.2% to 7% and about 1.3 million people are now vulnerable to falling below the poverty line (BPS, 2020e, SMERU, 2020). Although there has been a decline in some economic sectors, such as transportation/warehouse and accommodation/food and beverages, the information and technology sector, which is associated with digital economy activities, has recorded positive growth (Jakarta Post, 2020).

2.2 Indonesia's education system

2.2.1 An overview

Under the 2003 National Education Law, Indonesia's education system comprises three main pathways: formal, non-formal, and informal education. Formal education is an education pathway that is structured and tiered, and consists of basic education, secondary education, and higher education. Non-formal education is an education pathway that is outside of formal education, and comprises equivalency education, as well as TVET. Equivalency education (*Pendidikan Kesetaraan*) offers out-of-school children and adults the opportunity to enrol in non-formal education and to earn an education certificate that is equal to that obtained in the formal education

pathway. Informal education consists of family and community education. Informal education is not tied to any structured programme and is driven by communities and families.

Special education and special service education are embedded in the education service provision at every education level. Defined in Government Regulation No. 17/2010 on Education Service Delivery, special education is offered to students with learning difficulties due to physical, emotional, mental, and social disabilities. Special service education is provided in the form of affirmation programmes for students in remote or underdeveloped regions, i.e. regions categorised as 3T² regions; indigenous communities; or communities affected by disasters and economic incapacity. Governance of special service education is distributed to both provincial and district/municipality governments. Special schools – or *Sekolah Luar Biasa* – account for 85% of special education institutions and their management is overseen by the provincial governments. On the other hand, arrangements for inclusive schools occur within general education implementation, from general primary to senior secondary schools.

The Gol's commitment to education service provision for students with disabilities is enhanced through a number of programmes. The goal is to provide equity of access and quality education to students with special needs. To achieve this goal, the overarching strategy for inclusive education 2019–2024 (*Rencana Induk Pengembangan Pendidikan Inklusif Tingkat Nasional Tahun 2019–2024*) has been developed. By 2024, it is expected that an inclusive culture will be embraced by all schools and that education will be carried out by all local governments.³ Currently, MoECRT is focusing on developing a strategy for special education and ensuring the accuracy of data for special education delivery. In terms of education quality, MoECRT is targeting that the number of special schools that utilise ICT for teaching and learning to improve learning outcomes will increase by 9% by the end of 2024. Along with other programmes for general education, special education is also included in the *Sekolah Penggerak* and *Guru Penggerak* programmes that seek to benefit schools and teacher improvement.

Skills development in Indonesia is a key policy priority within the current administration. Skills development is implemented by reference to a number of laws and regulations (Law No. 20/2003 on the National Education System, and Law No. 13/2003 on Labour), by three main ministries: MoECRT, *Kementerian Agama (Kemenag)* (Ministry of Religious Affairs, MoRA), and *Kementerian Ketenagakerjaan* (Ministry of Manpower). The basis of TVET implementation is *Sislatkernas*, established through Government Regulation No. 31/2006. *Sislatkernas* regulates the development of competency standards and a qualification framework, and their adoption in curricula and the teaching and learning process, as well as a certification process and recognition – engaging all relevant technical ministries and agencies.

The education system in Indonesia is summarised in Table 1.

² 3T (*Tertinggal, Terluar, dan Terdepan*) areas are underdeveloped, outermost (border), and remote areas, as classified by MoV.

³ Inclusive education has been institutionalised through the issuance of MoNE Regulation No. 70/2009 on Inclusive Education for Students with Different Ability and with Special Potential and Talents.

Table 1: Indonesia’s education and TVET system

Type	Stage		Providers	Institutions	Authority
Formal education	Nine years of compulsory education		Primary school	Sekolah Dasar and Madrasah Ibtidaiyah	MoECRT and MoRA
			Lower-secondary school	Sekolah Menengah Pertama and Madrasah Tsanawiyah	
	Pre-primary education	General	Early childhood education and development centre	Day care centres, playgroups, kindergartens, Islamic kindergartens	MoECRT and MoRA
	Primary education	General	Primary school	Sekolah Dasar and Madrasah Ibtidaiyah	
	Secondary school	General	Lower-secondary school	Sekolah Menengah Pertama and Madrasah Tsanawiyah	
		Vocational	Upper-secondary school	Sekolah Menengah Atas (SMA) and Madrasah Aliyah	
	Pre-professional high school and Madrasah Aliyah Kejuruan				
	Higher education	General and vocational	Higher education institution	Academy	MoECRT
				Polytechnic	
				University	
Institute					
Non-formal education	Equivalency education	General	Non-formal education institution	Pusat Kegiatan Belajar Masyarakat	MoECRT
	Training	Vocational	Training centre	Lembaga Kursus dan Pelatihan (LKP) (non-formal courses and training institutions)	MoECRT and Ministry of Manpower
				Balai Latihan Kerja	
				Lembaga Pelatihan Kerja	
			Training institutions, under line ministries	Various	

Source: Adapted from World Bank (2021a)

There are about 218,234 schools and 2,775 higher education institutions managed by MoECRT, while MoRA manages around 82,418 madrasahs (BPS, 2020j; MoECRT, 2021e; MoRA, 2021). TVET is provided by means of formal and non-formal pathways. It is estimated that there were 29,241 TVET institutions in Indonesia in 2019, including those of MoECRT. (UNESCO, 2013; UNESCO, 2020b).

2.2.2 Education services delivery

Education service delivery is decentralised following Law No. 23/2014 on Local Government that governs the division of authority, roles, and responsibilities between national and sub-national

governments. The central government is responsible for policy formulation, development of national guidelines, and allocation of the national budget, while sub-national governments are in charge of policy issuance for implementation at the local level. Sub-national governments comprise provincial governments and district governments – whose education management functions are run by education offices under coordination of MoECRT and education regional offices under the management of MoRA. In relation to this, sub-national governments have authority to manage education resources (Kristiansen and Pratikno, 2006). To strengthen community-based support to education service delivery, Law No. 6/2014 on Villages also allows for budget allocation to the educational attainment of villages’ school-aged children.

Table 2 summarises education management roles and responsibilities based on these respective laws.

Table 2: Summary of government stakeholder roles and responsibilities

Level of government	Relevant institution	Role and responsibility
National	MoECRT MoRA	<ul style="list-style-type: none"> National education management, planning, R&D, standardisation, quality; assurance for education service delivery at all levels Higher education service delivery MoRA specifically manages religious schools
Provincial	Provincial education offices	<ul style="list-style-type: none"> Secondary education service delivery (SMAs, SMKs) and special education Coordination of district education service delivery Coordination of, and issuing permits for, establishment of non-formal courses
District	District education offices	<ul style="list-style-type: none"> Primary education service delivery (SDs, SMPs); Non-formal education/training service delivery (LKPs) Coordination of village-level initiatives for education and training Oversee and manage non-formal courses and training – both public and privately owned institutions
Village	Village government	<ul style="list-style-type: none"> Oversee community-based education and development attainment of village school-aged children Based on village community meetings (<i>musyawarah desa</i>), allocate budget for education service delivery support (including for individual students, families, and community-based education and training services at village level)

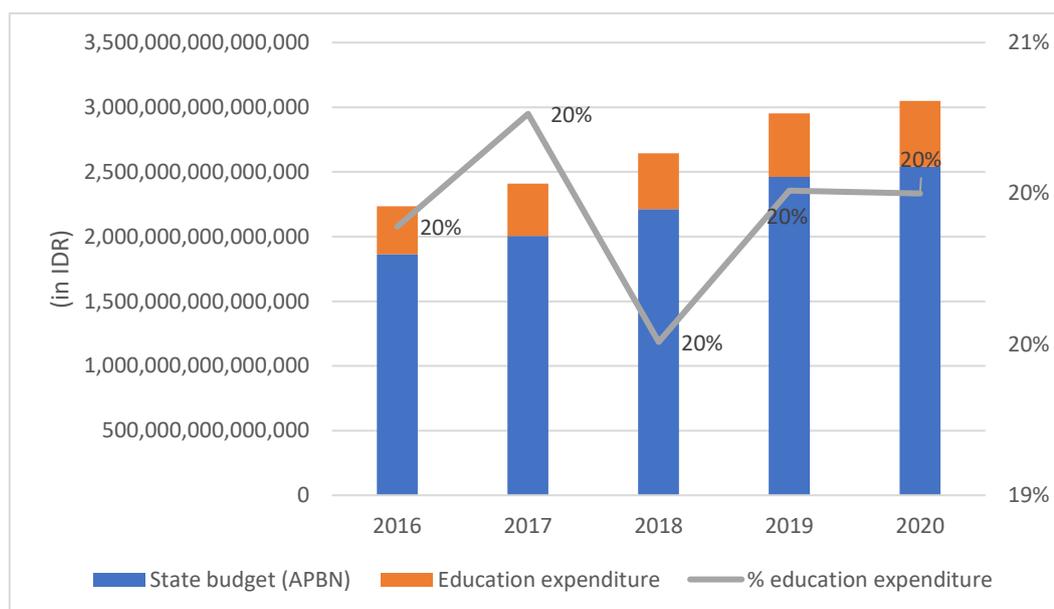
Source: Authors’ compilation

2.2.3 Educational attainment

The achievement of universal basic education is a key policy priority for the GoI. Achieving universal basic education is believed to spur economic growth and improve living standards in developing countries (Suryadarma *et al.*, 2006). As mandated in the 2003 National Education Law, a minimum 20% of total expenditure should be dedicated for education. An improved education system, and specifically the provision of universal access to basic education, has been a priority of the GoI. The government has committed to providing basic education for all children by ensuring priority is given to education spending. For the last four years, public spending for education has risen, reaching 20% of total expenditure (Ministry of Finance (MoF), 2020) (see Figure 1).

Since 2005, the GoI has launched school operational assistance programmes: *Biaya Operasional Sekolah* (BOS) for all primary to secondary school students, and *Biaya Operasional Pendidikan Anak Usia Dini* for all early children in early childhood education and development. The GoI also introduced the Indonesia Smart Programme (*Program Indonesia Pintar*, PIP), a cash assistance programme for students from poor households. These programmes aim to support the achievement of 12 years of education and to expand enrolment in pre-primary school, as mandated in Government Regulation No. 47/2008 on Basic Education and MoECRT Regulation No. 19/2016 on PIP. Since 2019, as an affirmative action to address the needs of remote schools in disadvantaged areas and serving disadvantaged populations, additional school assistance programmes – *BOS Afirmasi* and *BOS Kinerja* – have been put into effect.

Figure 1: Education expenditure in Indonesia



Source: MoF (2020)

Although the country has introduced nine years of universal education, education attainment remains low, particularly in some provinces. BPS data show that the average years of schooling in some Indonesian provinces, especially in Papua and Nusa Tenggara provinces, are consistently below the national average for the last three years. By 2019, average years of schooling in rural areas were also lower than in urban areas, at 7.48 and 9.73 years, respectively. This trend has not changed much since 2017 (BPS 2020f; BPS 2020g).

Based on international benchmarks, Indonesia’s educational performance is weak. The Programme for International Student Assessment (PISA) 2018 results show that if compared to PISA scores in 2000, reading and maths scores have decreased (Kompas, 2019).⁴ The Trends in International Mathematics and Science Study (TIMSS) results in 2015 also show a similar pattern; Indonesia ranked 44 out of 49 countries (TIMSS, 2015).⁵

Despite the country’s literacy programme, some parts of eastern Indonesia still have a relatively high percentage of illiterate adults if compared to the national illiteracy rate of 4%. It is notable that

⁴ PISA is an international assessment that aims to evaluate how well 15-year-old students are prepared for life, by measuring student performance in secondary education, especially in three main areas: mathematics, science, and literacy.

⁵ TIMSS is a series of international assessments of the mathematics and science knowledge of students around the world.

12% and 22% of adults in Nusa Tenggara Barat and Papua are still illiterate, mostly those aged 45 and older.

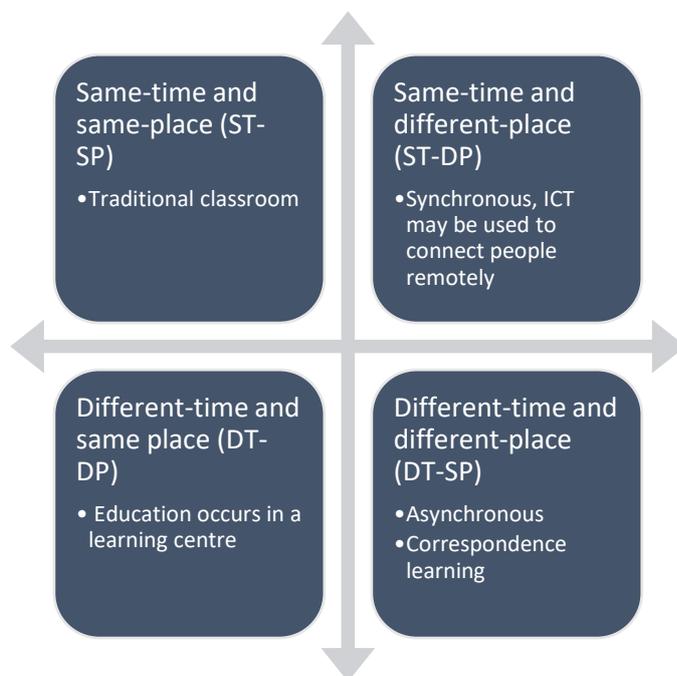
2.3 Remote learning and digital literacy

2.3.1 Defining remote learning and digital literacy

In this section, we define some of the key concepts used in this research to guide the review process for Components A and B, as well as for the development of the remote learning and digital skills strategy.

Remote learning. Remote learning, also known as distance learning, is defined as ‘learning that occurs when the learner and the instructor, or source of information, are separated physically and hence cannot meet in a traditional classroom setting – it includes “online learning” as well as lower-tech remote learning options (e.g. TV, radio, mail)’ (UNESCO, 2020a). Remote learning falls into a wider scheme of approach and practices, as shown by Coldeway’s quadrant (see the figure below).

Figure 2: Coldeway’s quadrant



Source: Coldeway (in Simmonson *et al.*, 2012)

Digital literacy is defined as ‘the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital devices and networked technologies for participation in economic and social life. It includes competences that are variously referred to as computer literacy, ICT literacy, information literacy, and media literacy’ (UNESCO, 2018a).

An adaptation of the DigComp 2.1 framework has been used by the United Nations Educational, Scientific and Cultural Organization (UNESCO) to measure digital skills and digital literacy (see

Table 3).

Table 3: Framework to measure digital skills and digital literacy

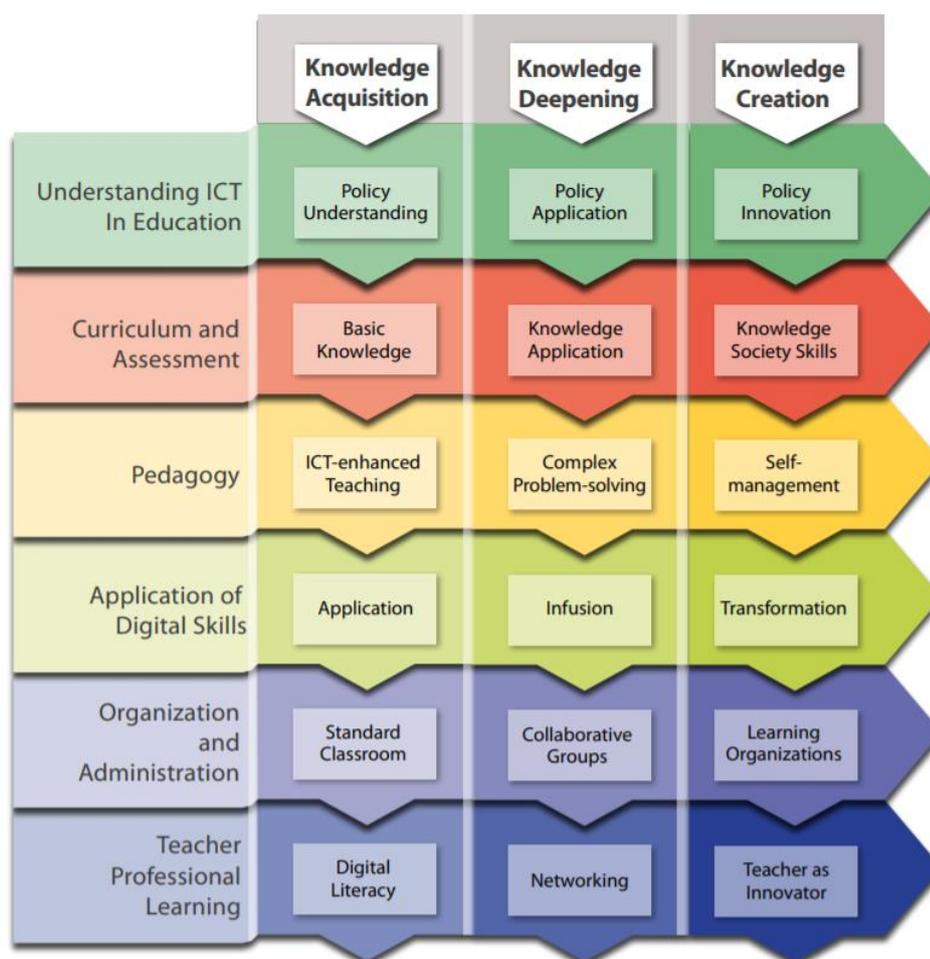
Competence area	Competences
0. Hardware and software operations**	0.1 Physical operations of digital technologies** 0.2 Identifying data, information, and digital content to operate digital technologies**
1. Information and data literacy	1.1 Browsing, searching, and filtering data, information, and digital content 1.2 Evaluating data, information, and digital content 1.3 Managing data, information, and digital content
2. Communication and collaboration	2.1 Interacting through digital technologies 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 2.5 Netiquette 2.6 Managing digital identity
3. Digital content creation	3.1 Developing digital content 3.2 Integrating and re-elaborating digital content 3.3 Copyright and licences 3.4 Programming
4. Safety	4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being 4.4 Protecting the environment
5. Problem-solving	5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively using digital technologies 5.4 Identifying digital competence gaps 5.5 Computational thinking**
6. Career-related competences	6.1 Operating specialised digital technologies for a particular field**

Note: Except for those indicated by **, the competence areas and competences in this table are identical to those in the DigComp 2.1 framework.

Source: UNESCO (2018b), p. 22

The above framework has not been yet been adapted and is potentially be used by the GoI to measure digital skills and digital literacy among students and the general public. However, earlier in the development, MoECRT (2012) adopted the first version of 2011 UNESCO’s Information Communication Technology Competency Framework for Teachers (ICT-CFT), which was used as a reference for the PembataTIK programme. The framework has evolved and been updated based on recent developments and to emphasise inclusivity in education (see Figure 3).

Figure 3: UNESCO’s generic ICT-CFT matrix



Source: UNESCO (2018c)

2.3.2 The dynamic of remote learning

In the Indonesian context, remote or distance learning, referred to as PJJ, is not a novelty. Remote learning was first initiated in the 1950s for teacher professional development using correspondence and analogue technologies, including radios and televisions (MoRTHE, 2018). In the early years of the development of remote learning or distance learning programmes, correspondent courses for teachers using paper and pencil media were also initiated. The approach has evolved with the development of technology. In the 1970s, the Department of Education (now MoECRT) developed centres for the development of education technologies and relay hubs at provincial level. Remote learning was advanced and institutionalised with the opening of Open Junior Secondary Schools (*SMP Terbuka*) in 1979, and the establishment of the Open University in 1984. Mixed technologies combining paper and pencil as well as electronic-based media were used.

Significant changes were experienced with the use of the internet, allowing easier correspondence and dissemination of online materials for students. In 2005, Indonesia acknowledged the importance of open-source materials development. By 2007, *Jejaring Pendidikan Nasional (Jardiknas)*, Indonesia’s Wide Area Network for education, was established to provide connectivity access to sub-national education offices and selected schools, allowing them to retrieve available education materials over the network. Law No. 11/2008 on Information and Electronic Transactions was issued in 2008, setting the ground and mindset for even wider provision of information and

technology use by the public. In the education sector, the provision of both online- and offline-based technology equipment and teaching resources to schools continued until 2013.

To date, remote learning is regulated for primary, secondary, and higher education levels through MoECRT regulations No. 119/ 2014 and No. 109/2013, respectively. The regulations also apply to for TVET and special education, with no differentiation/specialisation made. These regulations provide a basis for remote teaching and learning for schools or specific subject matters – through online and offline interactions using ICT or other media. The current trend for teaching-learning is heading towards digital using massive open online course (MOOC) platforms and making use of OER (Kompas, 2021a). Using MOOC, MoECRT, offers online trainings for teachers, students, and educators to utilise ICT in education, such as digital classroom development, digital learning media, interactive learning media, and instructional videos (SEAMEO, 2020).

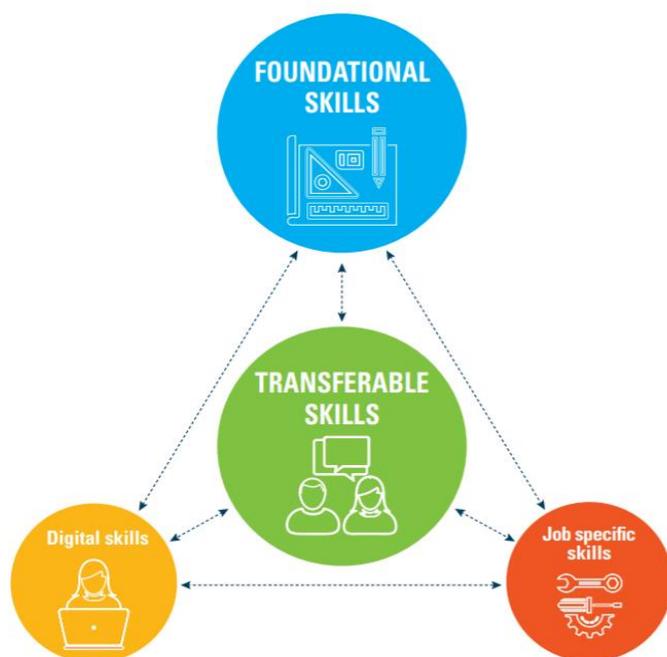
After COVID-19 hit, teaching and learning were forced to adapt: schools were closed and teaching and learning were moved to BDR (learning from home). Remote learning can be delivered in three ways: online, off-network (offline), and blended. Online remote learning specifically combines ICT and internet-based technology, while offline remote learning is implemented through television broadcasts, radio broadcasts, self-study modules, printed materials, and learning media from objects in the surrounding environment. Blended is a combination of online and offline remote learning.

2.3.3 Digital skills and literacy development

In recent years there has been a growing consensus that digital skills are key skills that it is important for all learners to acquire. For example, UNICEF's Global Framework on Skills (Figure 4) identifies four sets of skills needed to become a lifelong learner and to face global challenges in the twenty-first century (UNICEF, 2019). These skills are interrelated and help children and adolescents achieve success in school, life, and work. They are described below:

1. **Foundational skills**, covers literacy and numeracy, which are essential skills.
2. **Transferable skills** – broadly known as life skills, soft skills, or twenty-first century skills – allow individuals to navigate their own personal and professional growth. Some examples include problem-solving, negotiation, communication, and empathy.
3. **Digital skills** are seen to be important in understanding and utilising technology so as to be more productive.
4. **Job-specific skills**, also known as vocational and technical skills, are skills associated with specific occupations.

Figure 4: Global Framework on Skills



Source: UNICEF (2019, p, 2)

While basic literacy and numeracy make up the foundational skills, cross-cutting skills (such as ICT skills) that enable lifelong learning are also important. Academic skills associated with subject areas, life skills (i.e. problem-solving, creative thinking), behavioural skills (i.e. communication, organisational skills, leadership), and technical skills are all valued in the labour market (Gropello *et al.*, 2011; Nambiar *et al.*, 2019). The GoI recognises the importance of skills development, especially during the industrial revolution and digital transformation. National policies prioritise job-oriented training, with a focus on internships and apprenticeships, including upskilling and reskilling (CMEA, 2017; World Bank, 2020a).

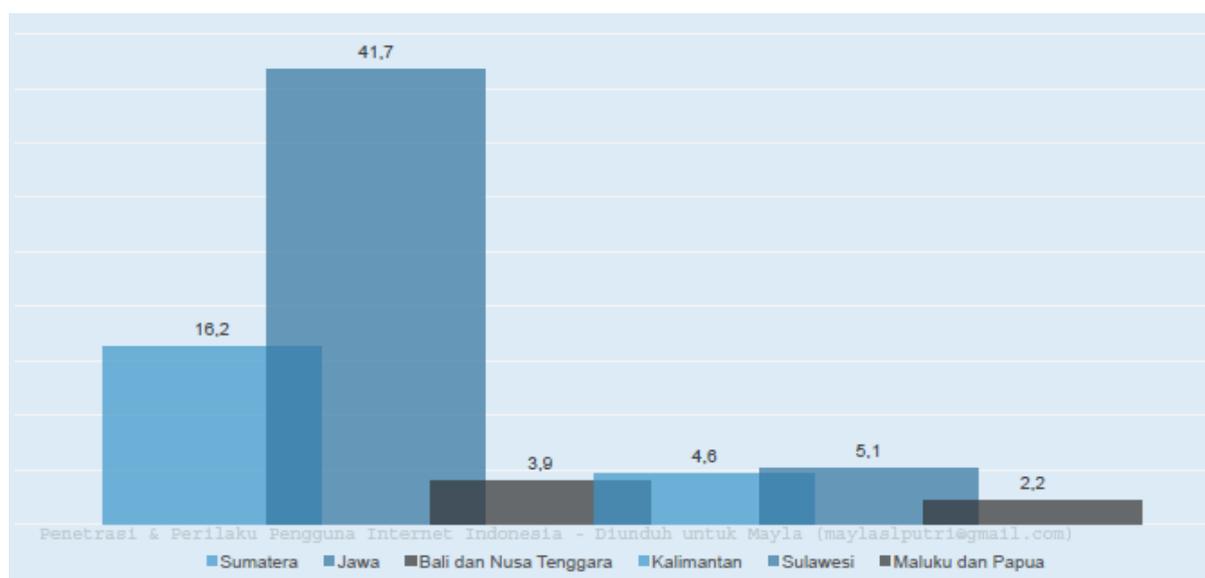
Digital skills can only be optimally used if there is digital literacy. The know-how to operate digital equipment and software, and in-depth understanding of technology and how to apply it, are vital. A simple example would be knowing how to navigate and use a social media platform (e.g. Facebook, Twitter, etc.): knowing what specific information needs to be shared with the public and when requires further thinking. Within the education context, digital skills and literacy are put into the framework of twenty-first century skills: digital/ICT literacy is seen as a foundational skill, along with literacy, numeracy, and cultural literacy (among others). These foundational skills contribute to how learners act in addressing complex issues within the four competencies: critical thinking, creativity, communication, and collaboration (World Economic Forum, 2015). It is also argued that digital skills should not be taught in a vacuum – rather, they should be taught in meaningful contexts (Bali, 2020).

Digital literacy in Indonesia has been mainstreamed through two avenues. Firstly, MoECRT started the *Gerakan Literasi Nasional* (GLN) (National Literacy Movement) in 2016. Digital literacy is seen as a life skill that involves the ability to use ICT equipment, as well as the competency to socialise, to learn, to think critically, and to build a strong character (MoECRT, 2017). The National Literacy Movement addresses challenges in literacy (reading and writing), numeracy, digital literacy, scientific literacy, financial literacy, and civic literacy. Programmes under the movement are applied for three groups of beneficiaries: schools, families, and communities. Secondly, MoCI, has initiated the *Gerakan Literasi Digital Nasional* (National Digital Literacy Movement), together with the Indonesian Digital Literacy Community. This joint initiative of *Siberkreasi* is implementing a

stop-hoax programme and digital content development in collaboration with MoECRT. MoCI also aims to provide a 4G network and internet infrastructure to most villages (79,000) by 2022 (MoCI, 2021).

Digital literacy varies across Indonesian provinces. 84% of Indonesia’s population are digitally literate, overall. The highest percentage of adults aged 15–24 with digital literacy skills is in DKI Yogyakarta Province (98%), while the lowest is in Papua (33%) (BPS 2020c; BPS 2020d). This variation is a direct consequence of internet penetration, for which the rate is higher in Java than in other Indonesian regions. APJII (2020) revealed that between 2019 and 2020, 73.7% of Indonesia’s population used the internet, and internet penetration in Java was 41%, which is the highest of all regions (see Figure 5).⁶

Figure 5: Internet penetration rate in Indonesia



Source: APJII, 2020, p. 28

A key finding in a recent UNICEF-funded study on skills for the future in Indonesia (conducted by Oxford Policy Management (OPM)) was that teachers, students, parents, employers, and government officials in three provinces in Indonesia emphasised that digital skills are key skills that adolescents need to develop to maximise their potential in the future (Nambiar *et al.*, 2019). While all study respondents highlighted the importance of digital skills, it was observed that respondents in different regions had different definitions/understandings of what ‘digital skills’ constitutes. For example, in big cities like Jakarta and Semarang, coding, programming, and developing creative content are considered ‘digital skills’, which respondents believed young people need to acquire in the twenty-first century. In Sorong, on the other hand, ‘using the computer’ and ‘searching the internet’ were the key digital skills that adolescents sought to acquire. Teachers also see technology as a tool to support their teaching skills; however, they feel that students are better equipped than teachers in using technology and in operating devices. Hence, teachers in the study were keen to receive more professional development training in digital skills. The UNICEF study also found that many adolescents, especially girls and children in disadvantaged areas, felt that they lacked digital skills and were keen to acquire these skills. These findings highlight the fact that there is a strong aspirational value attached to acquiring digital skills in Indonesia.

A World Bank rapid assessment of digital literacy for the digital economy (World Bank, 2018a) revealed a mismatch between the digital skills of Indonesia’s graduates and what the industry

⁶ An internet user is every individual who is connected to the internet, either using a smartphone or a PC. Internet penetration is the proportion of internet users in a certain population.

requires. Tan and Kang (2016) noted that ICT workers are in short supply, and that Indonesia would need 9 million skilled and semi-skilled ICT workers between 2015 and 2030. Industry emphasises the demand for more complex digital skills for employability, not only specialist/technical skills but also complementary skills (embedded in soft skills, such as communication).

2.3.4 Remote learning and digital literacy during the COVID-19 pandemic

The COVID-19 pandemic pushed governments across the world to take physical distancing measures, including school closures, which affected nearly 1 billion students worldwide. Hence, distance or remote learning has been one of the main options for teaching and learning activities over the last seven months, in Indonesia and globally. With the COVID-19 outbreak in March 2020, all teaching and learning activities in Indonesia were delivered through the Learning from Home scheme, with remote learning initiated across 640,000 education institutions, covering over 62 million Indonesian students – both from formal and non-formal education pathways (MoECRT, 2020a). The Gol took several steps in this regard: preparing just-in-time regulations, connectivity provision, and a curriculum emergency response to ensure that learning would continue, despite the pandemic (see Table 4).

Table 4: COVID-19 mitigation regulations

Regulations	Issues addressed
MoECRT	
MoECRT Circular No. 3/2020 on COVID-19 Prevention	<ul style="list-style-type: none"> Initial guidance on COVID-19 exposure prevention and general guidance for schools to start learning from home approach
MoECRT Circular No. 4/2020 on Learning from Home	<ul style="list-style-type: none"> Cancellation of national examinations Emphasis on learning from home Flexibility on curriculum implementation Implementation of health protocols for new student selection and enrolment Implementation of learning that focuses on life skills and students' interests and conditions Adding health usable goods to the list of BOS allowable items
MoECRT Regulation No. 24/2020 on BOS Afirmasi and BOS Kinerja Guidance	<ul style="list-style-type: none"> <i>BOS Afirmasi</i> and <i>BOS Kinerja</i> focused on special regions (i.e. remote areas, areas with indigenous peoples, border areas, areas experiencing natural disasters or social disasters, and areas of emergency) <i>BOS Afirmasi</i> is a programme for primary and secondary schools in special regions <i>BOS Kinerja</i> is provided to schools in special region with good performance in providing education services, as a stimulus
MoECRT Circular No. 15/2020 on Learning from Home Guidelines	<ul style="list-style-type: none"> Detailed guidance for teachers, students, and parents on remote learning implementation – including the step-by-step process that needs to be carried out by teachers, students, and parents List of options for learning modality, learning platforms, and resources, as well as partner education technology service providers
MoECRT Regulation No. 19/2020 on BOS Guidelines Revision	<ul style="list-style-type: none"> Usage of BOS fund for internet connectivity, paid online app subscription, and health consumable goods that will support health protocols implementation in schools

<p>Guideline on Teaching and Learning for the Second Semester of Academic Year 2020/21</p>	<ul style="list-style-type: none"> • Allowed green zone schools to re-open (face-to-face learning) • Gives authority for re-opening schools in all risk zones to sub-national governments
<p>MoECRT Regulation No. 50/2020</p>	<ul style="list-style-type: none"> • Both face-to-face and online practical work/internship are now possible for TVET and Special High Schools (SMA-LB) students, as agreed between the schools, students, and employers • Students engaged in internships and practical work for industry are entitled to receive transport fees and allowances or other forms of incentive, as a token of appreciation
<p>MoECRT Decree No. 719/0/2020 on Guidelines for Curriculum during Special Conditions</p>	<ul style="list-style-type: none"> • School has the flexibility to choose: (i) the national curriculum, with simplification of core competencies based on MoECRT provision; or (ii) managing curriculum simplification independently • Teaching and learning are delivered in a contextual and meaningful manner using a variety of strategies according to needs • Diagnostics Assessment is applied to provide a personalised approach for students
<p>MoECRT Circular No. 1/2021 on the Exemption of National and Equivalency Examinations and Implementation of School Examinations during the COVID-19 Pandemic</p>	<ul style="list-style-type: none"> • During the COVID-19 outbreak, the national and equivalency examinations are no longer applied as graduation requirements and criteria to enter higher education level • Examinations are held by schools and students are assessed based on their portfolio (i.e. rapport, homework, academic/non-academic achievement, and/or attitudes) • Vocational high school students still have the opportunity to take a competency test
<p>MoHA</p>	
<p>MoHA Instruction No. 14/2021 on the Extension of Micro Social Limitation at Village and Community Level</p>	<ul style="list-style-type: none"> • In this most recent regulation, issued in June 2021, schools considered in the red zone where COVID-19 cases are high need to conduct remote (online) learning and close school facilities. This arrangement is to be implemented for the next academic year (2021/22)
<p>BNSP</p>	
<p>National Professional Certification Agency or BNSP Circular No. 337/BNSP/IV/2020</p>	<ul style="list-style-type: none"> • Online/remote professional certification by professional certification agencies
<p>MoV</p>	
<p>MoV Regulation No. 13/2020 on Village Fund Use Guidelines</p>	<ul style="list-style-type: none"> • Aims to ensure village empowerment to achieve village Sustainable Development Goals • Allows the use of village funds for connectivity infrastructure development, and upgrading and maintenance of infrastructure during the COVID-19 pandemic
<p>Joint Stipulations</p>	
<p>Revised Joint Stipulation of Four Ministers on Teaching and Learning Guidelines during the COVID-19 Pandemic: MoECRT Stipulation No. 03/KB/2021 MoRA Stipulation No. 384 Year 2021 MoH No. HK.01.08/Menkes/4242/2021</p>	<ul style="list-style-type: none"> • To anticipate the start of academic year 2021/22 in July 2021, there is the possibility of school re-opening for limited face-to-face learning, while adhering to strict health protocols • Parents or guardians have the right to choose for their children to undertake limited face-to-face learning or to continue remote learning

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- A checklist of technical preconditions has to be fulfilled before limited face-to-face learning is implemented (i.e. health behaviour, water and sanitation facilities, classrooms with physical distancing, rotation of students, transportation to school, blended learning)
- Monitoring of possible COVID-19 cases in schools and surrounding communities is carried out by education offices and COVID-19 mitigation task force, in coordination with health services
- Under the school leadership, parents can be involved in COVID-19 mitigation task forces

Source: Authors' compilation from Gol laws and regulations

3 Methodology

This study employs a qualitative approach for the analytical work, supported by Indonesian statistics relevant to the topic of study. Research questions were developed in consultation with the DAP and MoECRT. The initial mapping identified the actors and support system relevant to remote learning and digital literacy. The research questions cover the policy framework, programme implementation, human resources capacity and development, infrastructure and facilities, inclusivity, and review of the pilot projects. The study followed a systematic process in regard to the development of a research framework, to ensure that data collection and analysis were rigorous. Ethical principles were carefully adhered to, following the highest standards of research ethics.

3.1 Research process

The research plan covers several steps. It started with a kick-off with MoECRT, an inception phase, and consultation meetings with key stakeholders. The engagement with the DAP and MoECRT helped develop and clarify the research questions and to finalise the research plan. Maxwell (2014) argues that qualitative research works with the universe of meanings, motives, aspirations, beliefs, values, and attitudes, which allows for a deeper understanding of processes and phenomena. In order to provide in-depth and illustrative information, we applied a qualitative method in this study.

Data collection and analysis involved the following steps:

- a comprehensive review of the research plan to develop the research questions, and to aid in the selection of the research sites, schools, and key informants;
- development of a clear research framework, adopting informal observation, desk review, focus groups, in-depth interviews, and case studies;
- discussion and interview notes in the Indonesian language and transforming these into debrief notes, following the analytical framework (per research question or topic) in English; and
- triangulation of findings against different sources and across researchers, to reduce bias.

The research team undertook systematic data collection and analysis to ensure unbiased and robust data and information.

3.2 Data collection method

Components A and B were conducted simultaneously. A combination of methods was employed to gather useful information and analysis. The data collection matrix is provided in Table 5. Data collection was conducted virtually.

Table 5: Data collection methods

Data collection methods	Data types	Objectives	Analytical methods	Data
Informal observation	Qualitative (observation, text)	Capturing the context in which a certain observation occurs.	Content and thematic analysis	Observation notes
Desk review	Qualitative (texts)	Document review to include a review of the following: <ul style="list-style-type: none"> current policies, guidelines, and other documentation on implementation of Indonesia’s remote learning and digital education programmes documents on resources allocated to remote learning and digital literacy strategies (digital education) education statistics and other survey/ study findings international best practices on remote learning and digital literacy strategies 	Content and thematic analysis Stakeholders analysis/mapping	Desk review Graphs Table
Focus group discussions (FGDs)	Qualitative (texts)	FGDs were held with government and non-government stakeholders	Content and thematic analysis	FGD notes
Semi-structured key informant interviews (KIs)	Qualitative (texts)	Semi-structured interviews were conducted with key informants if key informants were not able to join FGDs for any reason (e.g. the information was sensitive or the FGD schedule did not suit with key informant)	Content and thematic analysis	Interview notes

3.3 Selection of research site and stakeholders

The study was conducted at the national and sub-national level. Data collection with governments, both at national and sub-national levels, provided deep insights on the country’s policies and strategies on remote learning. Detailed conversations with key non-governmental actors – for example, school children, parents, and/or the beneficiaries of the pilot projects – provided further information on service delivery and its challenges, from various perspectives.

Component A focused on remote learning and digital skills strategy development. Component B required the team to conduct data collection in two pilot project locations and one selected research site to provide greater insights regarding remote learning and digital literacy across Indonesia. Data collection at the national and sub-national level provided insights for both components.

The data collection components of Components A and B focused on a defined group of stakeholders, which made up the sampling structure. The sampling strategy identified and targeted appropriate key stakeholders relevant to the research interest. A list of stakeholders was drawn up based on the evidence and consultations with the DAP and MoECRT. A list of the stakeholders consulted is provided in Annex 2.

The research sites were selected purposively based on our research questions. Data collection took place at the national level and sub-national level (West Java, South Sulawesi, and DKI Jakarta).

Table 6: Key criteria used for selecting research sites

Region	Key criteria	Topic of interest and methods
National level	The ministries and technical units under ministries relevant to remote learning practices and digital literacy were approached.	<p>KII or FGD to:</p> <ul style="list-style-type: none"> frame the context and to understand remote learning and digital skills policies and programmes; understand the learning materials and the assessment of ICT in education; and frame the context of ICT-based teaching and learning, as well as IT infrastructure and service delivery.
West Java (Kasepuhan Ciptagelar, Ciracap Subdistrict, and Sukabumi District)	<p>Kasepuhan Ciptagelar is one of the pilot projects supported by the DAP. This project deploys local internet infrastructure in Cileungsing and Cirendang villages (two isolated villages located on the southern border of the Kasepuhan Ciptagelar region – one an indigenous village or <i>desa adat</i> and the other a non-indigenous village or <i>desa non-adat</i>), engages in the production and distribution of public education materials, provides logistics and technical support, and engages in monitoring of the development of a training centre and media lab, and the rural ICT camp 2020.</p> <p>Data collection also took place in the neighbouring subdistrict, Ciracap Subdistrict, since that subdistrict is adapting the community-based internet project from Kasepuhan Ciptagelar.</p>	<p>KII or FGD to:</p> <ul style="list-style-type: none"> frame the context and to understand remote learning and digital skills policies and programmes; frame the context of remote learning in remote and indigenous areas; and learn from rural innovation pilot projects (i.e. success stories, challenges, future plans).
South Sulawesi (Sabutung Island and Pangkep District)	As one of the pilot projects of the DAP, this project develops inclusive technology through community radio to minimise the risk of the COVID-19 pandemic for women and children in remote island/mountainous areas, applying gender and plurality principles. The community radio targets education, health, and socioeconomic aspects, such as providing tutorials for school children with no smartphone or internet access, a	<p>KII or FGD to:</p> <ul style="list-style-type: none"> frame the context and to understand remote learning and digital skills policies and programmes; frame the context of remote learning in island and remote areas; and

	marketing/promotion programme for women’s empowerment and enterprises, health education during COVID-19, and reproduction issues (including early marriage). This location was chosen due to the lack of digital access in this area: people face limitations with the network and still rely on old devices.	<ul style="list-style-type: none"> learn from the community radio pilot project (i.e. success stories, challenges, future plans).
DKI Jakarta (North Jakarta)	<p>Besides being the capital city of Indonesia, DKI Jakarta is a vibrant city and the centre of economic activity. The city attracts people from across Indonesia and is thus diverse. As it experiences the fastest growth in technology, and despite the city’s digital infrastructure, there is a gap between people living in the urban and suburban areas of the city as regards the utilisation of technology and digital skills.</p> <p>North Jakarta was selected due to its location in the suburbs of Central Jakarta and the striking variations in social and economy activities.</p>	<p>KII or FGD to:</p> <ul style="list-style-type: none"> frame the context and to understand remote learning and digital skills policies and programmes; frame the context of remote learning in urban areas; and learn from pilot of school re-opening (i.e. readiness, challenges, future plans).

3.4 Research questions

In reference to the analytical framework, the research questions, which cover both Component A and Component B of the study, are listed below. Additional research questions were embedded in the initial design to accommodate the need for information and the dynamic process of data collection.

Table 7: Key research questions

Main themes		Research questions	
General review questions (Components A and B)			
1	Current policy framework and strategic directions	1.1	<p>Policies and strategic directions</p> <ol style="list-style-type: none"> What is the policy context? How are the current remote learning and digital strategies set at national and sub-national levels? How do these strategies support the achievement of overall education goals in Indonesia, primarily in supporting students’/learners’ learning outcomes – both for formal and non-normal education pathways? What is the policy framework for, and the implementation of, village development programmes that focus on empowering rural communities, education, inclusiveness, and digital literacy? What is the regulatory framework regarding the existence of an 'umbrella agreement' to increase school, teacher, and student access to the internet through several possible schemes: zero rating, unbanning VOIP, increasing data caps, community-based internet (public hotspots), SMS and call centre support, etc.)?
			1.2

			2. How are existing remote learning and digital literacy programmes being governed?
		1.3	<p>National and sub-national governments</p> <ol style="list-style-type: none"> 1. What is the nature of the interplay among different education stakeholders at national, sub-national, and community levels to ensure programmes are successful? 2. What is the role of village governments in supporting the implementation of learning from home or remote learning? 3. What are the challenges of local governments in implementing remote learning and increasing digital literacy? How does the sub-national government in Jakarta address this challenge? 4. Are there any parentships with the private sector on the digital literacy and remote learning strategy?
		1.4	<p>Funding</p> <ol style="list-style-type: none"> 1. How are these remote learning and digital literacy programmes are funded? 2. As it currently stands, incentives are given for face-to-face sessions in many forms. Should there be incentives for stakeholders (institutions or individuals) implementing remote learning?
2	Programme implementation	2.1	<p>General management</p> <ol style="list-style-type: none"> 1. What current remote learning and digital literacy programmes are there? What have been some of the programmes' achievements? 2. What have been some of the implementation challenges? What are the underlying causes of these challenges? How can these challenges be addressed? 3. What good practices have there been and what lessons have been learned from the pilots under review? 4. What kinds of strategies and action plans (i.e. remote learning, digital literacy strategy, and action plans) could be useful to address specific challenges? 5. How are remote learning and digital literacy programmes monitored and evaluated?
		2.2	<p>Curriculum and content provision and access</p> <ol style="list-style-type: none"> 1. How is the curriculum implemented by means of a remote learning modality? 2. Is there any specific curriculum and content developed for digital skills and literacy development?
		2.3	<p>Teaching and learning process</p> <ol style="list-style-type: none"> 1. What are some of the benefits gained from remote learning? What are some of the challenges? 2. What will be the 'legacy' of the remote learning process during the pandemic that can be taken forward for future practices? 3. How can this inform policy and implementation at both national and sub-national levels?
		2.4	<p>Study and assessment</p> <ol style="list-style-type: none"> 1. How are students assessed when learning takes place remotely? 2. What tools (apps, devices) and methods are used? If multiple ways are employed, which are most effective? 3. How is digital literacy proficiency assessed – for students, teachers, and other administrators? Is there any applicable framework for this?
		2.5	<p>Vocational education</p>

			<ol style="list-style-type: none"> 1. What programmes have been implemented to support remote learning for vocational education? 2. How is practical work carried out during the pandemic for SMKs and LKPs? 3. How is certification carried out during the pandemic?
		2.6	<p>School re-opening</p> <ol style="list-style-type: none"> 1. How have schools prepared for the school re-opening? 2. What are the challenges and lesson learnt during the school re-opening?
3	People: stakeholders and human resources capacity development and awareness	3.1.	<p>Teachers and educational staff</p> <ol style="list-style-type: none"> 1. How are teachers equipped to teach remotely? 2. How are teachers' own skills and literacy improved over time? Is the training/capacity development tied to continuous professional development? 3. What practical strategies can teachers use in adapting the existing curriculum for remote learning in a pandemic context? 4. What is the enhancement/support strategy for teachers who provide services to disadvantaged groups of society (e.g. in 3T areas, children with disabilities) and in formal and non-formal education?
		3.2	<p>Students</p> <ol style="list-style-type: none"> 1. How are students prepared to study remotely/from home? 2. What guidance do they receive? 3. How do teachers mitigate the risks of student learning loss? 4. How do administrators (school principals, teachers, district offices) ensure parental guidance, especially for lower-grade students, and limit the risk of drop-out?
		3.3	<p>Parents and community</p> <ol style="list-style-type: none"> 3. What is the role of parents in remote learning practices? What obstacles do they face? 4. What support do parents need in ensuring their children's learning takes place? 5. What good practice stories can be noted from remote learning during the pandemic? 6. What is the role of school committees and village governments in implementing learning from home?
4	Infrastructure and facilities	4.1	<p>Provision of/access to internet connectivity and digital technology</p> <ol style="list-style-type: none"> 1. How are internet and digital equipment accessed? Do students use their own devices or are there affirmative actions for students who do not have smart phones or other suitable devices?
		4.2	<p>Learning tools and resources</p> <ol style="list-style-type: none"> 1. How are teaching and learning tools and resources developed? 2. How are they structured around the curriculum? 3. How are these materials distributed to be used by teachers and students?
5	Inclusivity and digital security	5.1	<p>Equity of access: gender and students with disability issues</p> <ol style="list-style-type: none"> 1. What is the regulatory framework for remote learning for students with disabilities – before and during the pandemic? 2. What specific measures can be included to ensure access, inclusion (particularly for children belonging to marginalised groups, e.g. remote schools and students with disabilities), and equity?

			<ol style="list-style-type: none"> 3. Do teaching materials for remote learning need to be developed specifically? What steps are needed to adjust the material to ensure the continuity of the learning process? 4. What support is provided to teachers, students, and parents of students at inclusive schools and special schools for the implementation of remote learning? 5. What are the long-term implications if schools re-open?
		5.2	<p>Disadvantaged populations</p> <ol style="list-style-type: none"> 1. How is remote learning implemented for students in remote and border areas? 2. How do stakeholders mitigate the challenge of connectivity access? 3. How can the pilot projects be adapted as alternatives for remote learning delivery in remote areas?
		5.3	<p>Digital security</p> <ol style="list-style-type: none"> 1. Please elaborate on the e-safety strategy and plans, if any. 2. How are individuals' private data and information being protected? 3. How is online safety taught and integrated into the curriculum? 4. How are data archived and protected against any breaches and hacking? 5. How does your institution deal with any online bullying and harm to institutions and individuals, especially students/children?
Component B			
6.	Pilot project	6.1.	<p>Approach, scope, and design</p> <ol style="list-style-type: none"> 1. How would the remote learning and digital strategies being discussed also benefit the design/re-design, as well as the implementation, of the two pilots? 2. What good practices and lessons learned can be noted from the two pilots, to inform the general strategy for remote learning and digital literacy strategy under Component A (MoECRT)? 3. How would the project implementers ensure sustainability of the activities?
Strategy development questions			
7.	Priority policy actions	7.1	<ol style="list-style-type: none"> 1. What are the priority policy actions to be taken to improve the remote learning strategy? 2. What are the priority policy actions to be taken to improve the digital literacy of teachers, students, and (if also applicable) parents. 3. How can these priorities be achieved and who would be the key implementers and stakeholders? 4. What is doable in the short, medium, and longer term?
8.	Beneficiaries	8.1	<ol style="list-style-type: none"> 1. Who would be the main targets/beneficiaries within future priority programmes for remote learning and digital literacy?
9.	Resources	9.1	<ol style="list-style-type: none"> 1. What resources need to be mobilised to achieve the priority policy actions? How? 2. How can the Gol secure funding for these programmes?

3.5 Limitations of the study

Some of the possible limitations of this study are explained in Table 8.

Table 8: Limitations

Possible limitations	Why this is limiting and what we have done to address it
Selection of research sites	The selection of the research sites was based on the evidence and on consultations with the DAP and MoECRT. Two research sites were selected based on the location of the DAP pilot project and one research site was selected to provide additional insights into current conditions. The selection may not represent all regions in Indonesia. This issue was discussed with the DAP team. The findings of this study will therefore be indicative and cannot claim to represent the experiences of other similar communities.
FGD setting	It is important to be aware of differences between the respondents, which may potentially affect the quality and reliability of the information shared, especially during FGDs. To mitigate this risk, respondents were disaggregated by observable characteristics so that each FGD comprised a homogenous group across that characteristic. The research team ensured equal participation from the different respondents during FGDs, and they followed up with respondents who may not have had a chance to voice their views openly in a group setting.
Social desirability	In any qualitative method, there is a risk of respondent bias. To mitigate the risk, the research team took careful steps in selecting respondents, as mentioned in the review principles and ethical issues section. To avoid the tendency of respondents to provide answers in terms of what respondents believe the research team wants to hear (i.e. overemphasising answers), the research team probed the questions from various angles, using multiple data collection tools. The triangulation of the data collected from diverse sources also helped mitigate this risk.
Language barrier	Data collection in areas where only a few people understand the Indonesian language (Bahasa Indonesia) was also a challenge. The data collection instrument was designed in the Indonesian language and data collection was conducted in the Indonesian language. During the data collection, there were times when respondents did not understand the Indonesian language. In this situation, the team sought help from the local facilitators or project implementers to help translate and communicate in the local language. To avoid translation losses, the team probed similar questions several times.

3.6 Review principles and ethical issues

The following principles and ethical issues have guided this study:

- **Be participative and inclusive.** This work was a blend of both research and technical support to MoECRT, as the key stakeholder, therefore the research team has sought to ensure that the material presented through the data analysis and final report contribute to the ongoing continuous improvement of remote learning and digital literacy programmes in Indonesia. We are aware that this is not only a diagnostics exercise and that the focus is also on using the evidence collected through this research to support the creation of new policy frameworks and future programme design.
- **Confidentiality.** The research team was committed to ensuring the confidentiality and anonymity of data sources, unless informants deliberately asked to be identified.
- **Commitment to research ethics.** The research team was committed to following the highest standards of research ethics in the design and implementation of this study.
- **Openness and transparency.** The review process privileged openness and transparency throughout, including sharing draft reports and discussing evidence of findings and recommendations.

OPM is committed to protecting vulnerable people with whom researchers come into contact during the course of their work, whether in the UK or in other countries. OPM has a clear safeguarding policy and principles of practice when it comes to working with children and vulnerable adults. These apply to all OPM staff and any person or agency subcontracted to work with OPM; a copy of this policy can be accessed upon request. In addition to the safeguarding policy the research principles set out in the next subsection were applied when working with children and other respondents.

3.7 Working with children and adults

The research team ensured the sensitive treatment of vulnerable respondents, both children and adults. Research involving children ensured the safety of child participants at all times and ensured that appropriate and fully informed consent was given by the child and his/her caregivers. The research team ensured that the fieldwork maintained high ethical standards so that respondents' expectations were not raised, confidentiality was maintained, and they were never forced to participate or encouraged to speak about subjects that are sensitive. Fieldwork was carried out as far as possible by experienced fieldworkers, with interviews and group discussions conducted in the language, and with seating arrangements, that children and adults felt most comfortable with. If there was a situation where group discussion was not possible for any reason (i.e. unsuitable schedule, sensitive topics, respondents refused to join group discussion), KIIs were organised. The group discussions and interviews were recorded only if the informed consent of participants was given, and transcribed and translated into Indonesia language. For both adults and children, when seeking their participation in the research, the research team ensured that they understood exactly what would be done with the information they provided.

Ensuring informed consent from all respondents is crucial in any piece of field research to ensure that all adult respondents are treated with confidentiality, care, and sensitivity, including ensuring that they understand the purpose of the study and that they can be assured of anonymity where appropriate. This principle guided the data collection for this study.

4 Remote learning, digital skills, and digital literacy review (Component A)

The GoI has put in place a regulatory framework for remote learning and digital literacy as part of the national agenda, including regulations that were put in place prior to the COVID-19 pandemic. Several steps have been taken by the government to support remote learning and to enhance digital skills, such as providing national guidance on learning from home (including for students with special needs), simplification of the curriculum, the provision of learning materials and educational technology tools, an internet quota subsidy for students and teachers, and an affirmative approach for disadvantaged areas or populations. In light of the COVID-19 outbreak, policies were adjusted to respond to the circumstances of the pandemic, focusing on what actually works to mitigate learning loss. Challenges currently exist, particularly in policy implementation. However, significant efforts have been made to include perspectives of a wide range of stakeholders from national, sub-national, and school levels. The private sector and the community are taking part in scaffolding a support system for schools and students. The government recently announced school re-opening, with limited face-to-face learning. Even though guidelines on school re-opening have been provided, there are still some concerns regarding some aspects of health and safety.

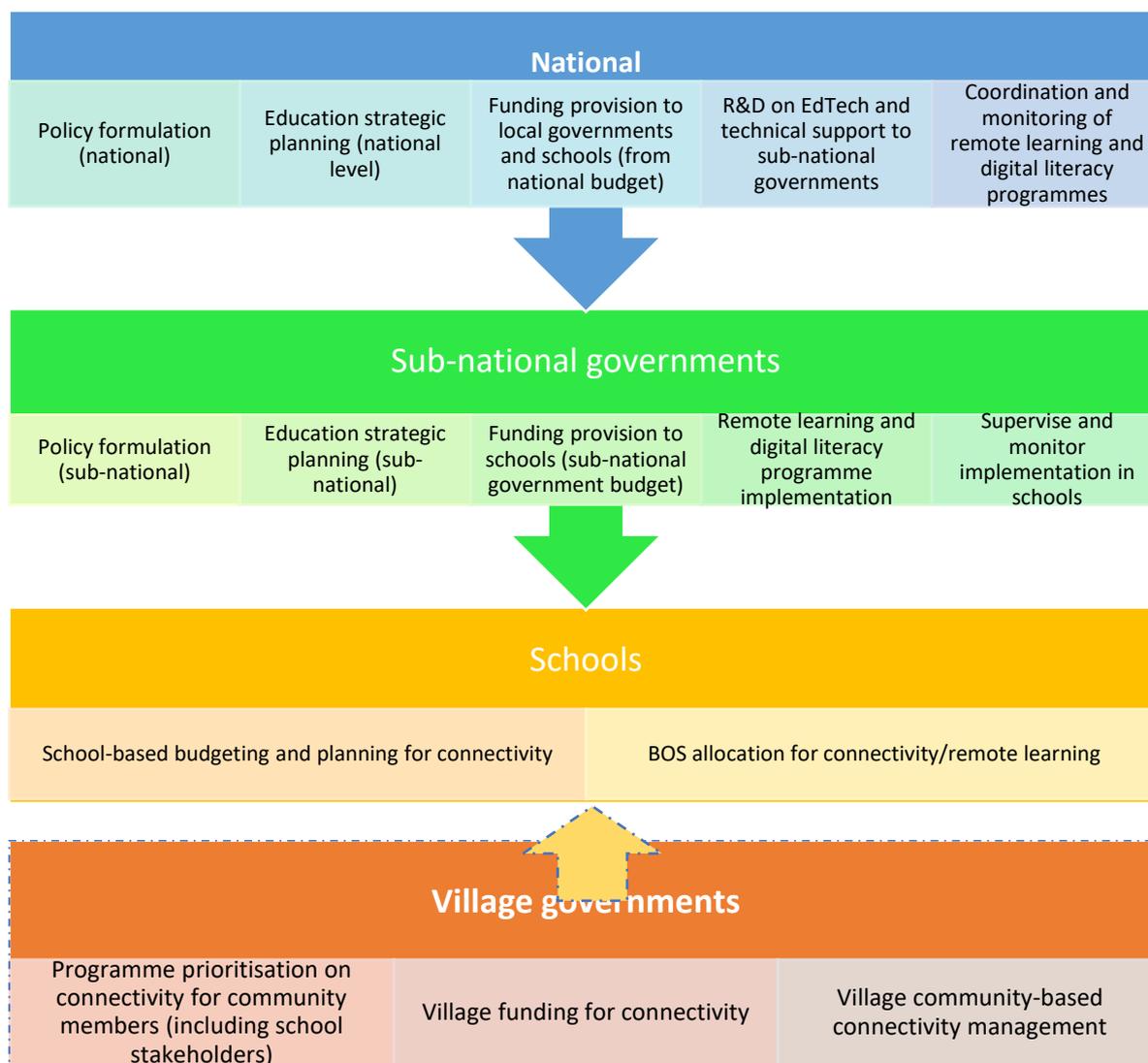
4.1 Policy framework and strategic directions

Indonesia sets its regulatory framework for remote learning and digital literacy as part of its education development agenda. The goals of education development are to improve education access and quality so as to enhance student learning outcomes, to link and match TVET graduates (supply) with the industry (demand), to ensure a higher participation rate in higher education, and to improve the nation's productivity and competitiveness. Since the COVID-19 pandemic, remote learning has become a key mechanism to ensure that education and learning processes continue, across Indonesia.

Within the education service delivery context, roles and responsibilities for remote learning are distributed to national and sub-national governments based on Law No. 23/2014 on Local Government and Law No. 20/2003 on the National Education System. Figure 6 illustrates the flow of remote learning and digital literacy policy formulation, funding mechanisms, and implementation. This reflects the importance of sound coordination between national and local governments. Further, to support remote learning at the village level, Law No. 6/2014 on Villages allows for programme prioritisation for village connectivity to enhance villages' economic development and community welfare. Although this decision to procure connectivity using village funds depends on agreements made by village stakeholders, this funding allocation is a potential resource for the provision of the internet and other forms of access.

Prior to the COVID-19 pandemic, the current government administration had placed an emphasis on human resource development, which was outlined as a priority for the period 2020–24. Digital transformation is deemed to be one vehicle for improving livelihoods and pushing forward economic development. To lay the foundation, the *Merdeka Belajar* (Emancipated Learning) policy was launched to provide high-quality education for all Indonesians. Under this policy, all education units and key actors — schools, teachers, and students — are given more space to innovate, and to learn more independently and creatively (MoECRT, 2020c). Importantly, technology-facilitated learning is considered an important modality to achieve the 'Freedom to learn' policy goal. Ministerial regulations were issued to implement remote learning at basic, secondary, and higher education levels. Pushing from the demand side, Law No. 6/2014 on Villages and MoV Regulation No. 13/2020 on Village Fund Use allow the use of village funds for connectivity provision at the village level for a wide range of users in the community.

Figure 6: The process from policy to implementation regarding the use of technology for remote learning



Source: Authors' analysis

Table 9: Remote learning and digital literacy policies

Policy domains	Level of governance	Regulation number and title	Relevant policy foci
Remote learning	National	Law No. 20/2003 on the National Education Law	Education service delivery is to be provided through several modes, including distance learning.
		RPJMN 2020-2024 – President Regulation No. 18/2020	The Gol's Nawacita vision aims to ensure a supply of skilled human resources with good comprehension of science and technology. Digital transformation is one of the priority programmes, focusing on the digital economy and the use of ICT to improve life skills. Digital literacy strengthening and ICT is to be used for distance learning and e-learning in classrooms.

		Education Strategic Plan (<i>Renstra Pendidikan</i>) 2020–2024 – MoECRT Regulation No. 22/2020	Merdeka Belajar (‘Freedom to Learn’) policy strategies are defined. Digital literacy has become part of GLN, the National Literacy Movement. Strategies for using education technology for teaching and learning, teacher improvement programmes, TVET, and school administration.
		MoECRT Regulation No.24/2012 on Remote Learning for Higher Education	Distance learning can be embedded in subjects taught or study programmes through four schemes: open learning, independent learning, utilising ICT for e-learning, and integrated learning.
		MoECRT Regulation No. 119/2014 on Remote Learning for Basic and Secondary Education	Remote learning for basic and secondary education aims to expand education access and improve education quality and relevance. It is characterised as open education and is supported by the use of ICT or other forms of technology.
	National	MoECRT regulations (issued annually) on BOS Guidelines	BOS is one funding mechanism for schools to procure internet connectivity. BOS Guidelines set out allowable consumable goods to support school operations. For this year, MoECRT Regulations No. 122/2020, BOS can support teachers and students to purchase phones.
		MoECRT regulations (issued annually) on BOS Afirmasi and BOS Kinerja	As part of the government programme on education during COVID-19, MoECRT provided special school assistance schools in special regions.
		MoECRT regulations (issued annually) on Education Special Allocation Fund or DAK (Infrastructure/Facilities)	Schools can also procure digital devices/ICT equipment and networks through the DAK for infrastructure/facilities funding mechanism.
Sub-national	Provincial and district strategic planning (<i>Renstra</i>) documents	In reference to national strategic directions, sub-national governments also set programmes to implement remote learning and digital literacy improvement, as well as ICT-based remote learning.	
	Other relevant documents (e.g. Sub-national School Operational Assistance Guidelines)	Local government school operational assistance (BOP) and other specific activities are funded from sub-national government budgets, to provide short training to teachers – including ICT training – as well as to procure the needed digital devices.	

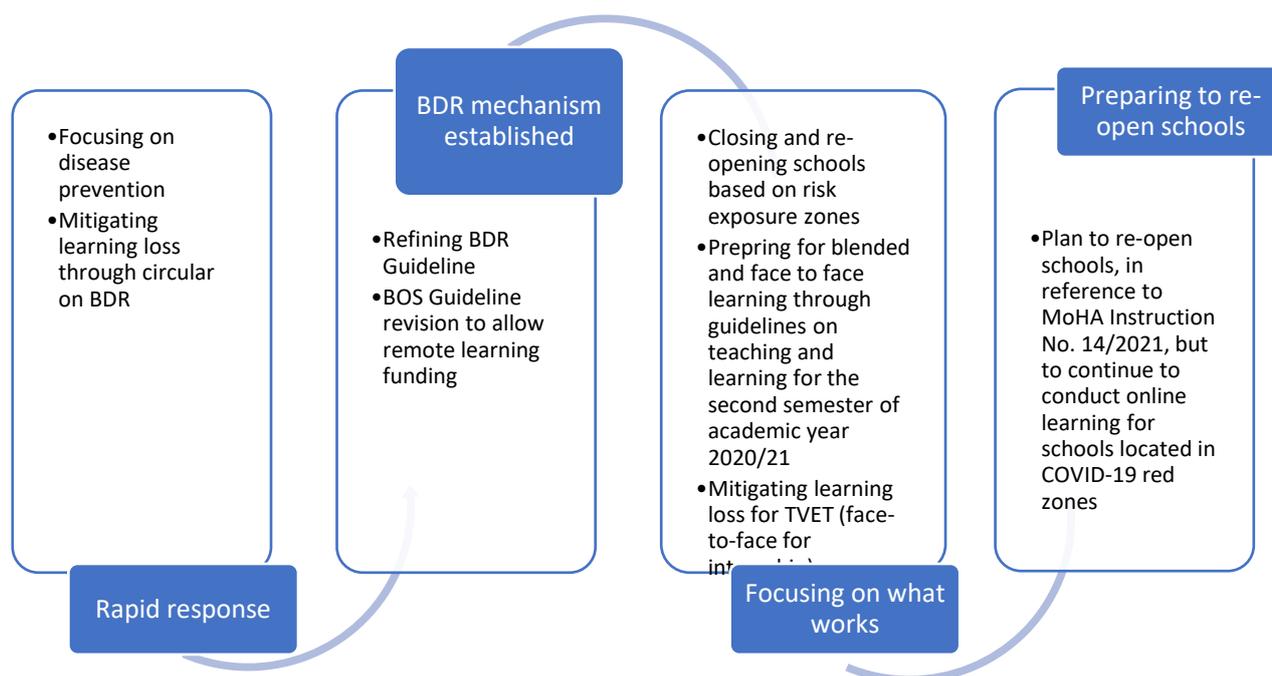
Digital literacy	National	Roadmap of the National Literacy Movement 2017 (GLN)	GLN encompasses the literacy movement at school, family, and community levels through six dimensions of literacy: reading and writing, numeracy, science, digital literacy, financial literacy, and culture and citizenship.
	National	Memorandum of Understanding between MoECRT and MoCI No. 583/M.KOMINFO /HK.03.02/ 8/2015, and No. 06/VIII/NK/2015 on the use of ICT for Education Quality Improvement	The use of Universal Service Obligation (USO) funding to expand schools' internet access, focusing on schools in remote areas.
	National	Government Regulation No. 31/2006 on Sislatkernas	Occupation Map on Literacy Skills by MoCI, based on competency standards and nine levels of the qualification framework.
	Community	N/A	The digital literacy movement has been driven by the digital literacy community, such as the Centre for Digital Society, Relawan TIK, etc.

Source: Authors' compilation

4.2 Continuing learning during the COVID-19 pandemic – policy framework and strategic directions for mitigating learning loss

The COVID-19 pandemic has accelerated and scaled up the use of technology for education across the country. Over the course of a year, during the time of the pandemic, there has been a dynamic policy response to mitigate learning loss (see Figure 7). Table 4 above lists the policies instituted to respond to COVID-19.

Figure 7: Efforts for continuing learning during the COVID-19 pandemic



Source: Authors' analysis

Policy responses have shifted over time from focusing on COVID-19 disease prevention to focusing on remote learning using means that actually work on the ground. COVID-19 cases have fluctuated over time. In regard to policy implementation, the GoI has emphasised that safety comes first. With the rise of the COVID-19 pandemic, and in reference to MoHA Instruction No. 14/2021, online learning is still continuing in schools located in 'red zones' where substantial numbers of COVID-19 cases are still occurring.

When it is considered safe, MoECRT and local governments will consider re-opening schools. The re-opening of schools is being discussed, in order to mitigate learning loss (MoECRT, 2020), as flagged by a World Bank publication that indicates a decline in learning outcomes due to the effects of COVID-19 (World Bank, 2020c). According to optimistic and pessimistic scenarios⁷ it is estimated that Indonesian students' PISA scores will decline by 16 points and 21 points, respectively. With the target to complete teacher vaccination by the end of June 2021, Joint Ministerial Regulations have been revised to accommodate blended learning in combination with face-to-face learning in schools.

Despite the heavy focus during this period on the importance of remote learning – which is mainly facilitated by online platforms and technology use – there has been a limited focus on digital literacy and enhancing the digital skills of teachers, parents, and students – which is a key point that we investigate in later chapters of this report.

According to a recent UNICEF study in 164 countries, several steps are required to mitigate the learning impacts of school closures. Most of the countries surveyed reported re-opening schools to recover lost learning. Some other ways to mitigate learning loss are by implementing one-and-one assessments to identify students' needs (some African countries, Honduras, Cayman Islands), providing remedial programmes (United Arab Emirates, Singapore, the Netherlands), and

⁷ The optimistic scenario assumes six months of closure, while the pessimistic scenario estimates the impact if schools are closed for eight months.

monitoring attendance at school (Eastern and Southern Africa region, and Latin America) (World Bank and UNICEF, 2020).

4.3 Stakeholders mapping, and governance and coordination

Remote learning and digital literacy and skills development programmes are being addressed by a number of key stakeholders at national and sub-national levels, requiring the involvement of both the public and private sectors. Multi-stakeholder collaboration is needed among ministries, relevant institutions, and local governments to resolve remote learning challenges, connectivity issues, and teacher skills development (pedagogical and digital skills).

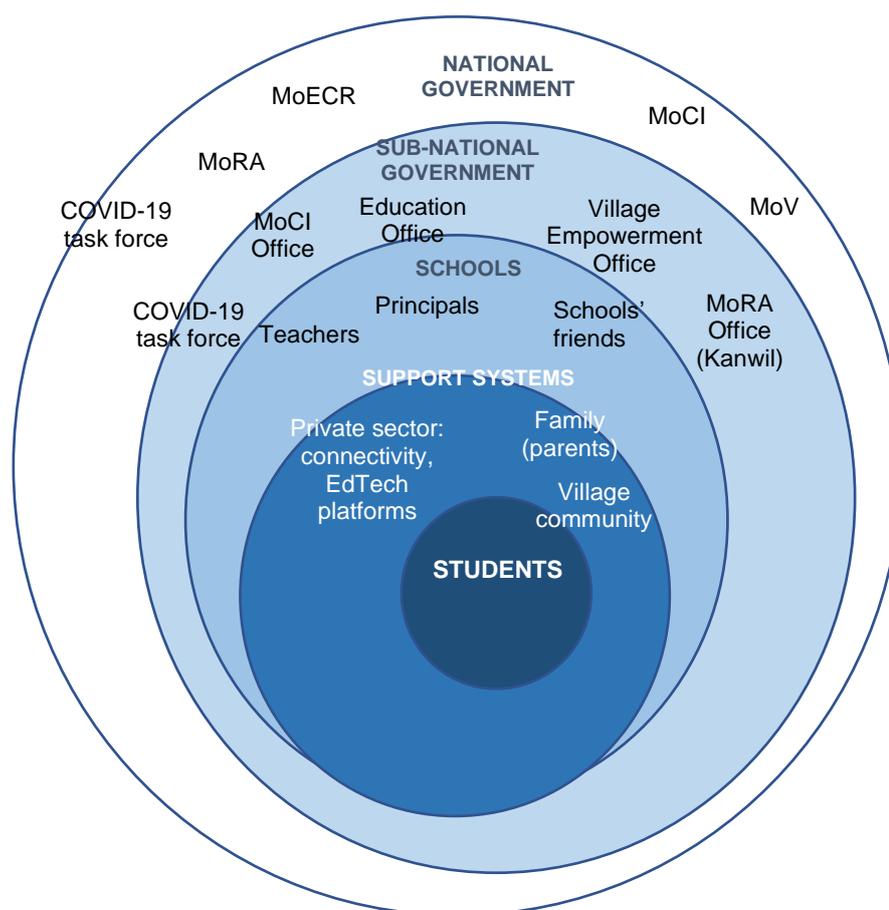
As mentioned above, the management of remote learning falls within the authority of both national and local governments, where the national government issues umbrella regulations and the local governments have authority to manage their schools. At the national level, MoECRT and MoRA provide technical guidance and strategic directions, in collaboration with MoCI and MoV. MoV has a unique position in also ensuring cross-sectoral and cross-ministerial collaboration to support communities in their efforts to implement learning from home activities, particularly in villages categorised as ‘disadvantaged’ and ‘very disadvantaged’. MoV Regulation No. 13/2020 on Village Funds addresses the need of villages to utilise village funds for COVID-19 mitigation. The mechanism for realising this is through a special village meeting (*Musyawah Desa Khusus*, Musdesus) to discuss urgent village affairs and priorities.

These national collaborative efforts are needed to address funding and the issue of access to connectivity. At sub-national levels – in provinces and districts/municipalities – the education programmes are being run by the education offices (*Dinas Pendidikan*), MoRA provincial offices (*Kantor Wilayah* or *Kanwil Agama*), MoCI Offices (*Dinas Kominfo*), and Village Empowerment Offices (*Dinas PMD*). Schools and other forms of education institution (e.g. Islamic boarding schools – *Pesantren*) deliver teaching and learning through principals and teachers. Different from traditional face-to-face learning, remote learning or learning from home needs to be safeguarded by learner support systems. Students – particularly those in lower grades – have reported that their learning is attended and supported by their parents. For students that reside where internet connectivity is available, the private sector also plays a significant role in providing EdTech platforms for learning. Strong collaboration between the public and private sectors is also evident in the use of EdTech company platforms for teaching and learning, and for school administration purposes.

During the pandemic, COVID-19 task forces were formed at national and sub-national levels. In the education sector, the task forces are intended to advocate for compliance with health protocols and to advise local governments on whether to re-open schools or to keep them closed.

Figure 8 presents the enabling environment for remote learning, including key stakeholders and the support system, depicting the parties involved in remote learning and digital skills improvement programmes.

Figure 8: Remote learning and digital literacy stakeholders map



Source: Authors' analysis

4.4 Policy implementation – current remote learning and digital literacy programmes

4.4.1 Remote learning programmes

Remote learning and digital literacy programmes are implemented to support teaching and learning processes, as well as for teachers' continuous professional development. The following online portals are hosted by MoECRT and offer online or downloadable materials for offline learning.

- Rumah Belajar** (Learning House): This learning portal contains interactive learning materials, virtual laboratories, virtual classes, question banks, animated media catalogues, pictures, presentations, videos and audio, and electronic books for students and teachers. The portal also provides access to other ICT-based teaching and learning programmes, such as *Radio Edukasi* and *m-edukasi*. Learning resources are also available for participants of non-formal training and courses in *e-module* and *Kursus Daring*. Rumah Belajar also offers learning resources for special school students through the *Radio Edukasi* platform. These can be accessed at <https://belajar.kemdikbud.go.id/>. Some resources on the Rumah Belajar portal are developed by teachers, with quality assurance steps carried out by MoECRT staff/facilitators.



- **Rumah Belajar for students with disability.** Audio content for the blind is also offered on the Rumah Belajar platform. It is also broadcast on the *Radio Edukasi* programme, which is accessible through digital and analogue platforms.
- MoECRT partners with TVRI to broadcast an educational television programme under the BDR scheme, as an alternative learning avenue for students, teachers, and parents. This programme showcases educational lessons (starting from early childhood and extending to secondary education), guidance shows for parents and teachers, and cultural programmes on weekends.
- **Akun Pembelajaran.** This is an electronic account published by MoECRT and specifically owned by students, educators, and education personnel, which allows them to access electronic-based learning materials during remote learning. Users of the account automatically gain access to materials provided in G Suite for Education, which are used broadly. The same account can be used to access materials provided by MoECRT, as well as various materials outside of the Google ecosystem. *Akun Pembelajaran* is available at www.belajar.id/
- **TV Edukasi.** TVE or Televisi Edukasi is a television station that has been established since 2004 and that is specifically intended to disseminate information in, and function as a medium for, community learning. During the pandemic, TVE was accessed either through cable TV, streaming, or smartphones. MoECRT, through Pusdatin, supports remote learning by providing learning video content in TVE. Since May 2020, Pusdatin has been collaborating with local TV stations under the Over-The-Top scheme to expand coverage of this channel and redistribution of educational content, especially in disadvantaged areas. TVE is available at <https://tve.kemdikbud.go.id/>
- **Radio Suara Edukasi.** Since January 2009, *Radio Suara Edukasi* has been established by MoECRT as an alternative learning resource. There have been some strategies to broaden the output of this radio station: for example, it provides services such as podcasts, livestreaming, and terrestrial channels. The livestreaming of this radio can be accessed through <http://voiceedukasi.kemdikbud.go.id>
- **Teacher improvement programmes.** Managed by the Directorate General of Teachers and Education Personnel, a number of programmes have been developed to facilitate blended learning for teachers. These programmes are hosted on various websites, and include the following:
 - **Guru Penggerak** ('Teachers as Drivers'): This programme uses blended learning for teacher training and coaching to transform conventional teaching methods into a holistic and student-centred approach. The programme can be accessed at <https://sekolah.penggerak.kemdikbud.go.id/gurupenggerak/>.
 - **Guru Berbagi** ('Teacher Shares'): This programme, which has the hashtag #darimanasaja, is a platform for sharing good practice, which enables collaboration and knowledge sharing among government stakeholders, teachers, community members, and education practitioners to bring about innovative and applicable teaching activities and teaching materials for distance learning. Teachers are able to share their resources, including their lesson plans. 8,542 lesson plans, 81 videos, and 278 articles have been shared. The programme is located at <https://guruberbagi.kemdikbud.go.id/>.
 - **Teacher continuous professional development tools.** Led by 14 Teacher and Education Staff Education and Training Centres (P4TKs), teachers can attend online training to

improve their subject matter knowledge and skills, including TVET. Among others, teacher continuous professional development online content in specific subjects can be accessed at <https://didamba.p4tkipa.net/> for science teachers, <http://p4tkmatematika.kemdikbud.go.id/ett/> for maths teachers, and <https://etraining-p4tktkplb.kemdikbud.go.id/> for kindergarten and special education teachers.

- o **Special education teachers.** In an effort to increase the number of teachers for inclusive education, the Directorate provides online training for teachers who facilitate students with special needs that are attending regular schools.
- **Guru Kunjung ('Visiting Teachers') for affirmative action.** This programme was first initiated by MoRA to support students in remote areas. Through this programme, teachers visit homes and public facilities with limited numbers of students, in study groups. During the pandemic period, in compliance with health protocols, *Guru Kunjung* has also been implemented by MoECRT to serve disadvantaged students who are constrained by issues with internet networks and unavailability of devices.
- **seTARA Programme.** As part of the work of Directorate of Basic and Secondary Education, equivalency education is also offered by means of an online platform at <http://setara.kemdikbud.go.id/kesetaraan>. The programme comprises online sessions for the primary education package (*Paket A*), the junior secondary education package (*Paket B*), and the senior secondary education package (*Paket C*).
- **AKSI.** *Asesmen Kompetensi Siswa Indonesia*, or AKSI, is a PISA-like assessment developed by the Centre for Education Assessment at MoECRT. The platform at <http://aksi.puspendik.kemdikbud.go.id/> also provides practice questions for students, in online and offline modes.
- **Bersama Hadapi Korona Portal** ('Together Encountering Corona (COVID-19 Pandemic)', available at <https://bersamahadapikorona.kemdikbud.go.id/> is a portal that hosts and offers learning resources that are relevant to preventing COVID-19, learning resources for remote learning purposes, rules and regulations that have been put in place, and a list of EdTech partners offering programmes for teaching and learning. All content accessed through this portal can make use of the internet data packages provided through the [Kuota Belajar](#) programme.
- **IT-relevant reforms for assessment:**
 - o **KIAT Guru programme.** Initiated first by the Vice President's Poverty Alleviation Office, KIAT Guru's community-based approach to increasing the quality of education is now starting to be integrated into MoECRT's programme (<http://kiatguru.kemdikbud.go.id/kiatguru/public/>). A pilot of the *Test Cepat* feature of the KIAT Guru App was deemed successful to trial CAT. Teachers in remote areas were able to assess their students' state of learning and address the need for improvements (MoECRT, 2020b; MoECRT 2020k).

4.4.2 Digital skills programmes

The acceleration of the national digital transformation is a focus of the GoI. This specifically relates to the development of digitalised human resources. Recently, the President has launched the *Program Literasi Digital Nasional*, the National Digital Literacy Programme. Besides exploring the potential of the digital economy, the presence of digital literacy programmes can improve citizens'

digital knowledge, to allow them to filter hoaxes and avoid the negative impacts of the internet. Digital skills development in Indonesia has been introduced through many initiatives.⁸

- **This National Digital Literacy Programme will be implemented through *Siberkreasi***, the national digital literacy movement that was established in 2017 by MoCI. The *Siberkreasi* platform provides various sources of information to enhance knowledge and digital skills, for example: LiterasiDigital.id, a web portal which provides digital literature; School of Influencer, a movement for youth to create positive and creative content; and StopHoax.id, a tool to identify and report hoaxes. In 2021, it is planned that the National Digital Literacy Programme will hold 20,000 trainings, based on modules and curricula targeting the four pillars of digital literacy: digital ethics, digital safety, digital skills, and digital culture. Details of *Siberkreasi* programmes are available at www.siberkreasi.id/.
- ***PembaTIK* or *Pembelajaran Berbasis TIK* or *PembaTIK* (ICT-based Learning)** provides competency-based training for teachers to enable them to create teaching materials by utilising ICT so that learning is designed and carried out in a more innovative way. The training refers to the UNESCO ICT-CFT framework, which is categorised into four levels: literacy, implementation, creation, and sharing. The programme is available at https://simpatik.belajar.kemdikbud.go.id/user/pembatik_2020. Relevant to this programme, online training is carried out for teachers in eastern Indonesia, particularly those in Papua and West Papua. These teachers are given training on ICT know-how and literacy, as well as education content development.

The digital skills and literacy programmes would benefit from a more systemic approach. Some programmes are in need of scaling up. For example, *PemBATIK* and other digital literacy initiatives have not been scaled up to reach a critical mass of educators in schools. In 2020, only 13,000 teachers were trained to use and integrate ICT in their teaching. MoECRT targets 70,000 teachers participating in *PembaTIK* in 2021. Some district governments are also reducing (if not eliminating altogether) the budget for digital skills development for teachers (e.g. Pangkep District and Sukabumi District).

Digital skills and literacy development needs for the education sector are being addressed by other relevant ministries. MoECRT, MoCI and their sub-national offices continue to conduct ICT training programmes for the public, including teachers and students: for example, the *Jong Kreatif Academy* for senior high school students in remote areas. In collaboration with the Village Empowerment Office, MoCI Office in West Java is aiming to establish digital villages. In doing so, it is focusing on providing training digital skills and literacy to ICT volunteers, village government office staff, and appointed village movers, called *Patriot Desa*. To address education delivery needs, the West Java government is also partnering with EdTech companies. Previously, in 2019, MoCI also provided Teaching Fellowships to train teachers in ICT skills and digital literacy. They are currently developing digital skills and literacy modules which can potentially be inserted into the education curriculum.

4.5 Provision of access to the internet and to digital technology

4.5.1 Digital skills programmes

Provision of access by the GoI. The GoI has been focusing on overcoming connectivity challenges during the COVID-19 pandemic. MoECRT has rolled out a national internet programme

⁸ Disclaimer: There have been many initiatives on digital literacy dan digital skills development in Indonesia, both from public/private sector and public-private partnership, that have not been covered in this report. Please note that the digital-related programmed mentioned in this report are only a few and directly related to remote learning.

for students and teachers, called *Kuota Belajar*, and a series of national guidelines for *Belajar dari Rumah* (Learning from Home). To support learning from home, students and honorary teachers are provided with free internet quotas. To bridge the challenge of personal digital device ownership (such as smartphones and computers), educational TV and radio programmes are broadcast in cooperation with the national television and radio station, TVRI and RRI. Learning resources are available at the Rumah Belajar online platform, and through the TV Edukasi and Radio Edukasi programmes. Furthermore, a simplified curriculum for emergency circumstances is applied. Modules are being developed particularly to address the needs of students at lower grades in primary schools.

In the last three years, MoECRT, through Pusdatin, has prepared a local server in each school so learning material can be accessed from the school's personal computers. For schools with limited connectivity, Pusdatin has prepared external hard drives containing study materials and content. This option works in areas with low internet availability so that schools can still access semi-online content through the school's local area network. Ideally, this system should synchronise automatically when there is an internet connection; however, this feature is not available at the moment. In addition, by 2023 MoCI plans to connect another 140,000 public services, including village offices, schools, and community health services.

To accelerate the implementation of remote learning in higher education during the pandemic, the Directorate General of Higher Education has prepared Mobile Base Transceiver Station (BTS Mobile) facilities and 5,000 domestic-made Modelling Tablets, which are to be distributed across rural areas or areas that face difficulty in internet access. This programme will be implemented through collaborations between higher education institutions and industry. MoECRT will fully support the process of developing and testing the prototype (Media Indonesia, 2021).

Infrastructure provision challenges. Some challenges have been observed. Uneven distribution of internet infrastructure, inequity of access to connectivity, and a lack of device ownership remain challenges. Qualitative data collection in West Java, South Sulawesi, and DKI Jakarta found that these challenges are more frequently experienced by disadvantaged populations, including people in remote areas and poor households. Factors that underlie the unequal infrastructure and access to the internet include: (1) Indonesia's varied geography, which makes it costly to build and invest in infrastructure; (ii) the ability to pay for internet access varies between households; (iii) because optical fibre is expensive Indonesia relies on wireless internet, but many areas remain blank spots; and (iv) the coverage and speed of internet services differ across providers (CNN, 2020). Besides the actual internet service, the enabling environment also matters. Issues with electricity access are still encountered by 8,522 schools. This may require installing sustainable alternative power sources (green technology) in off-grid areas.

DKI Jakarta offers an example of a good practice local government initiative. Wi-fi connectivity in public areas is provided through the provincial government's JakWiFi programme. Around 9,000 hot spots are installed in Jakarta, particularly in slum areas, as part of the Smart City programme. This benefits students and other education stakeholders engaged in teaching and learning from home. A similar initiative is implemented by Sukabumi District, which has installed 59 hotspots in public areas. Multi-sectoral collaboration in DKI Jakarta through the Large-Scale Social Support for Education programme (*Kolaborasi Sosial Berskala Besar (KSBB) untuk Pendidikan*) fosters private and public support, including from individuals, for schools and students that are in need of communication devices and internet data packages. The platform allows parties to directly contact and coordinate with beneficiaries.

There is room for communities to develop local networks. In the revised MoV Regulation No. 13/2020 regarding priorities for the use of village funds, it is stated that allocations for education in the context of the impact of COVID-19 have been made. Through village funds, village

communities can propose programmes related to the acceleration of village development. The funds can be used to develop internet infrastructure, internet connectivity improvements, radio infrastructure, and maintenance for IT support (if infrastructure already exists). The village funds mechanism involves discussion through the village forum, approval by the village head, inclusion in the village's medium and long-term planning (RPJMDes), and approval by the district government (head of district).

4.5.1 Financing

In relation to financing, four main funding sources can be used to enable remote learning implementation (MoECRT, 2020; MoV, 2020; and West Java Digital Services, 2021).

- **Use of BOS funding.** Schools manage their own internet procurement and are able to use BOS funds to pay for monthly internet subscription. Good private schools subscribe to premium internet services using their own resources. The BOS flex arrangement is a powerful instrument to mobilise funding at the school level, allowing schools to budget for data packages and consumable goods for health and sanitation. USO funding and the counterpart APBN allocation for internet connectivity expansion in remote areas are used to connect crucial public institutions, such as village offices, schools, and community health services.
- **Internet quota subsidy.** MoECRT allocated Indonesian rupees (IDR) 7.2 trillion to subsidise internet quotas for students, teachers, and lecturers from September to December 2020. For the internet quota subsidy from March to May 2021, the Gol issued a budget of IDR 2.6 trillion (Kompas, 2021b). MoECRT is working together with internet service providers to provide internet access to teachers, university lecturers, and students at all levels. The internet quota can only be used to access teaching and learning resources through 173 websites/platforms. See further information at <http://kuota-belajar.kemdikbud.go.id/>. Currently, MoECRT and *Asosiasi Pengusaha Telekomunikasi Seluruh Indonesia* (ATSI) have established framework agreements/contracts on internet data/quota purchases, to agree the pricing. This good practice is allowing MoECRT to review telecom service mapping, statements of requirements from MoECRT, and offers to telecommunication operators, as well as agreeing terms and conditions, including price or cost reductions.
- **USO fund.** The USO fund, managed by BAKTI of MoCI, is being utilised to provide connectivity to ensure access to information, focusing particularly on communities in remote areas. Technology access is being provided through six main programmes: BTSs, Multifunctional Satellites, Digital Ecosystem Development, Broadcasting, Palapa Rings, and Internet Access. From 2015 to 2020, USO has benefited the education sector in 4,430 locations. With the launch of the Satria satellite, it is expected that it will also reach 93,900 schools by 2023. However, there has been no further push for remote learning during the pandemic circumstances, which will require a needs assessment for adjustments.
- **Village funds.** This pot of resources is governed under the Village Law and is self-managed by village leaders. The funds can be used for: a) education development (as stated in Village Sustainable Development Goal #4); and b) economy empowerment through development and upgrading of internet infrastructure and radio infrastructure – including its maintenance. However, community awareness of the possible use of village funds for this purpose is still lacking. Taking lessons from the pilot site in Sukabumi, only three out of 360 villages are using village funds for connectivity. Based on an MoV evaluation of village funds, the utilisation of village funds for digital information between 2015 to 2018 was 0%.
- **Community-based connectivity.** Self-funded by villages and sustained by community members, the DAP pilot projects model good practices in regard to connecting students and educators through community-based internet and community radio in remote areas. See Chapter 6 for detailed information. Community funding is also a powerful source of funding for

more sustainable connectivity – such as has been modelled by West Java Digital Services through collaboration with *Badan Usaha Milik Desa* (Bumdes, Village-Owned Enterprises) and in community-based connectivity in Kasepuhan Ciptagelar.

4.6 Making sense of curriculum implementation, teaching and learning, and assessment

4.6.1 Curriculum

The Centre for Curriculum and Books (Puskurbuk) of MoECRT manages the achievement of curriculum standards through re-packaging curriculum content. Through online, blended, and face-to-face learning, schools are given the option to choose from three available curriculum scenarios

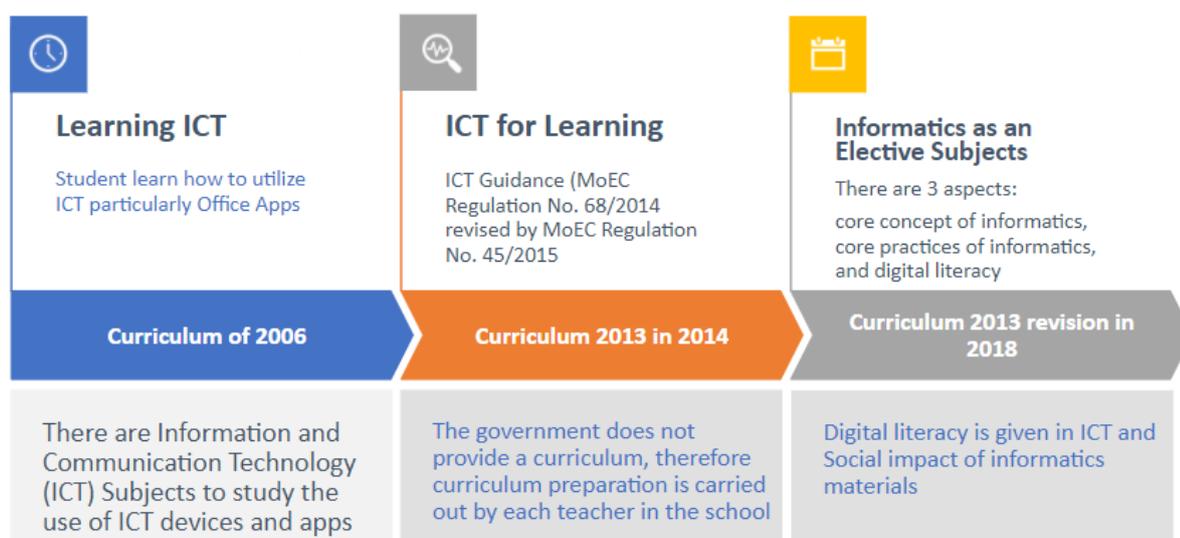
- full K-13 curriculum implementation;
- curriculum in special conditions – a simplified curriculum that focuses on learning that matters most; MoECRT has formed a task team to simplify textbooks and learning resources for elementary students to implement the curriculum in special conditions; and
- schools' own contextualisation/adjustment of the curriculum.

The strategy in curriculum simplification is to reduce the number of basic competencies set in the curriculum documents and to select the essentials. As an example, being guided by Puskurbuk, SMK 12 Jakarta has become one of the pilot schools for curriculum in special conditions development; in one of the subjects, it reduced the number of basic competency items from 27 to 12. In another subject it made the curriculum more compact, with 11 basic competencies reduced to four.

The *Merdeka Belajar* (Emancipated Learning) approach aims to develop a curriculum framework to shape *Pancasila* learners, which allows adjustments to the curriculum to fit the local context. The curriculum framework, modules, and training materials are currently being prepared. The programme will start with teachers, to equip them with an understanding of the *Merdeka Belajar* approach, to grasp the contextualised learning paradigm, and to enable them to provide interventions based on each student's level of achievement/understanding (adaptive learning).

Currently, digital literacy and skills development is offered only as an elective subject. Making ICT skills a compulsory subject is being considered, to address the need for digital skills development among students. As it currently stands, the ICT skills subject for primary and secondary school students is packaged into different themes: ICT for fun for primary schools; introduction to tools and informatics for junior secondary school; and informatics discipline for junior secondary school.

Figure 9: ICT in education progression in the curriculum



Source: MoECRT (2021c)

Thematic-based literacy and numeracy learning resources for primary school students, teachers, and parents were prepared by the Centre for Assessment and Teaching (Pusmenjar) and are available at the *Bersama Hadapi Korona* website. Digital skills and literacy development modules for self-learning or facilitated training are available at this portal, to respond to the various needs of students, teachers, and parents.

A digital security curriculum is part of the *Internet Sehat dan Aman (INSANI)* (Healthy and Safe Internet) programme. This initiative is led by MoCI and is carried out jointly by MoECRT. The programme is implemented through socialisation through roadshows and discussion forums. However, there is not yet any information that the INSANI programme or the digital literacy materials produced by MoECRT are embedded in the national education curriculum, beyond the digital literacy movement. There is room for improvement to adapt digital literacy and cyber security content and modules in the Indonesian curriculum.

4.6.1 Teaching and learning process – focusing on what works

The World Bank's High Frequency (HiFy) Survey (World Bank, 2020c) was conducted to understand the dynamic of learning from home. As addressed by schools, teachers, and students, online- and offline-based remote learning challenges include: i) the availability of communication devices and internet connectivity; ii) the increase in the cost of data packages; iii) a lack of guidance from parents/family members; and iv) difficulties with concentrating. The MoECRT Learning From Home survey (MoECRT, 2020j) also revealed that learning resources, such as books, are also needed to enable students to learn. In terms of teaching and learning, students reported that they lack understanding of the subjects being taught (62%). One study that is carried out by MoECRT, which is still ongoing (the results are awaited), also looks at the impact of being online and being able to access multiple social media on student learning.

Thus, the role of teachers remains critical for learning. Teachers are expected to creatively package/repackage teaching and learning resources to be delivered in online and blended modes, using various online platforms and digital media. Based on the individual interviews conducted in this study, students find it difficult to understand teachers' instructions in materials presented via synchronous sessions and resources shared via social media chats. In rural areas, such as in Sirnarasa, Sukabumi, some students needed to travel far from their homes to find an internet

signal, which means the learning from home strategy does not serve its purpose. For some students who do not own smartphones or laptops, they need to work in groups with their friends.

For the above reason, schools are partially open in Sukabumi District. Sukabumi District education office polling results indicate that most primary schools choose face-to-face learning (58%) over online learning (35%). By contrast, most junior secondary schools opt for online learning (83%) over the face-to-face mode (10%). This is also owing to the fact that learning independence is required in online learning interactions, and lower-grade students still need close guidance from teachers during lessons. In DKI Jakarta, teachers are facilitated by the education office to adapt lesson plans for remote learning integrating ICT. At national level, model lesson plans for online, blended, and offline learning are shared through the *Guru Berbagi* platforms.

TVET faces challenges in regard to holding learning sessions online. The curriculum requires a large proportion of practical work, including internship (60%, as against lectures which account for 40%). MoECRT Regulation No. 50/2020 on Field Practical Work for SMK has been issued to confirm that SMK students can attend face-to-face practical work and internship programmes when and where needed. In the case of SMK 12 Jakarta, practical work for 11th and 12th graders occurs in blended modes, as required by the company, following strict health protocols.

Teaching and learning rely on various apps and EdTech platforms, which are offered by MoECRT and/or by EdTech companies. Based on consultations with teachers and students, a number of apps are actively used for different purposes (see Table 10).

Table 10: EdTech platforms

Purpose	Applications
Synchronous sessions	Google Meet, Zoom
Asynchronous sessions	Radio, Google Classroom, WhatsApp
Discussions, and sharing materials and assignments	WhatsApp
Tutorials	YouTube
Teaching presentations	YouTube, Google Classroom
Quizzes	Google Forms, Kahoot
Learning management system for asynchronous sessions, sharing materials, distribution of assignments, submission of assignments, review of assignments	Google Classroom
Information collection	Web browsers (Google, Safari, or other)
Information and materials reading	Pdf reader applications

Source: Data collection, 2021

4.6.2 Assessment of students in remote learning

In the sample education institutions, national examination is being replaced by national assessment (*Asesmen Nasional*), which is a PISA-like survey, as the education system evaluation. Three components will be overseen: literacy and numeracy, as basic student competencies (through minimum competency assessment or *Asesmen Kompetensi Minimum*); non-cognitive development (through a survey named *Survei Karakter*); as well as the learning environment (through a survey named *Survei Lingkungan Belajar*). The literacy and numeracy assessments are administered for Grades 5, 8, and 11, while learning environment survey is aimed at school principals and teachers. The national assessment is carried out to monitor and evaluate the education system. The assessment is designed to produce accurate information to improve the

quality of teaching and learning, which in turn will improve student learning outcomes. The national assessment provides information for monitoring the quality of education over time and the gaps in service delivery (MoECRT, 2021d).

A challenge has been identified with the learning assessment instrument's validity. Because of the requirement of simplifying the curriculum during the pandemic, some test items developed by the education office in Jakarta for primary school students do not match the materials actually taught. This requires further standardisation or agreement between schools and the education office on the essential topics and materials to be delivered in the respective semester. This is not a problem for higher levels of education, as junior secondary and senior secondary school teachers develop their own assessment instruments for their students.

In the near future, in anticipation of schools re-opening, a diagnostic assessment for students is being developed. This tool will be used to understand the current state of students' learning, to pick up students' learning losses, and to provide intervention accordingly (teaching at the right level). For TVET, SMK graduates' work certification has continued despite the pandemic, through a face-to-face mode, following the health protocol. The KIAT Guru programme, a collaborative initiative between *Tim Nasional Percepatan Pengentasan Kemiskinan* (TNP2K) and the National Team for the Acceleration of Poverty Reduction, has introduced an adaptive test for primary and junior secondary students to understand students' learning outcomes in 2020. Although the original objective of the test is to measure teachers' performance teaching in remote areas, the tool can be adapted and incorporated into the design of assessments in preparation for teaching at the right level. In addition to this, the national assessment can serve as a tool to capture the state of education before and after the pandemic, and also to mitigate learning loss during remote learning. Good practices shared by the KIAT Guru programme in the use of CAT in remote schools can be adapted and applied to the design of future remote learning programmes.

4.6.3 Inclusivity and disadvantaged populations

Students with disability. Remote learning for students with disability is deemed challenging. To help with the process, MoECRT has developed guidelines for the teaching and learning process for special schools (MoECRT, 2020). Along with these guidelines, there are accompanying videos that have been adjusted for students with various types of disability. Additional support is given to parents or care givers through consultation sessions in schools or home visits by teachers. However, there are still limited digital learning resources and educational props available for students with disability. Some resources are available for the blind on Rumah Belajar and other resources for the deaf have also been developed for teachers in special schools, available on the Guru Belajar website, but various digital resources are still needed. In addition, co-teachers (*Guru Pendamping*) for inclusive schools are also still limited. To date, there are around 4,000 co-teachers that can support students with disability who are attending regular schools.

Students in disadvantaged populations. Even before the pandemic, learning was an issue for poor children, who experienced learning deficits (World Bank, 2018b), with their socioeconomic status significantly affecting their learning outcomes (PISA scores). During the pandemic, schools have been more open to face-to-face learning where children are lagging behind – usually in rural areas or in the bottom 40% of socioeconomic status (World Bank, 2021). Some actions are being taken by MoECRT and local governments in this regard:

- As mentioned above, the formal *Guru Kunjung* programme is being implemented to cater to children who cannot attend online and blended remote learning. Informally, home visits by school teachers are carried out in both urban and remote areas to ensure students are learning

in their own homes or in smaller groups. This is particularly important for students who are at risk of dropping out of schools for various reasons (data collection, 2021).

- Close collaboration with the industrial sector has taken place for upskilling and reskilling TVET teachers in remote areas, including: i) upskilling and reskilling teachers and instructors in remote areas (e.g. heavy equipment operation in North Kalimantan); and ii) online training/lessons for teachers by one large national company.

4.6.4 School re-opening

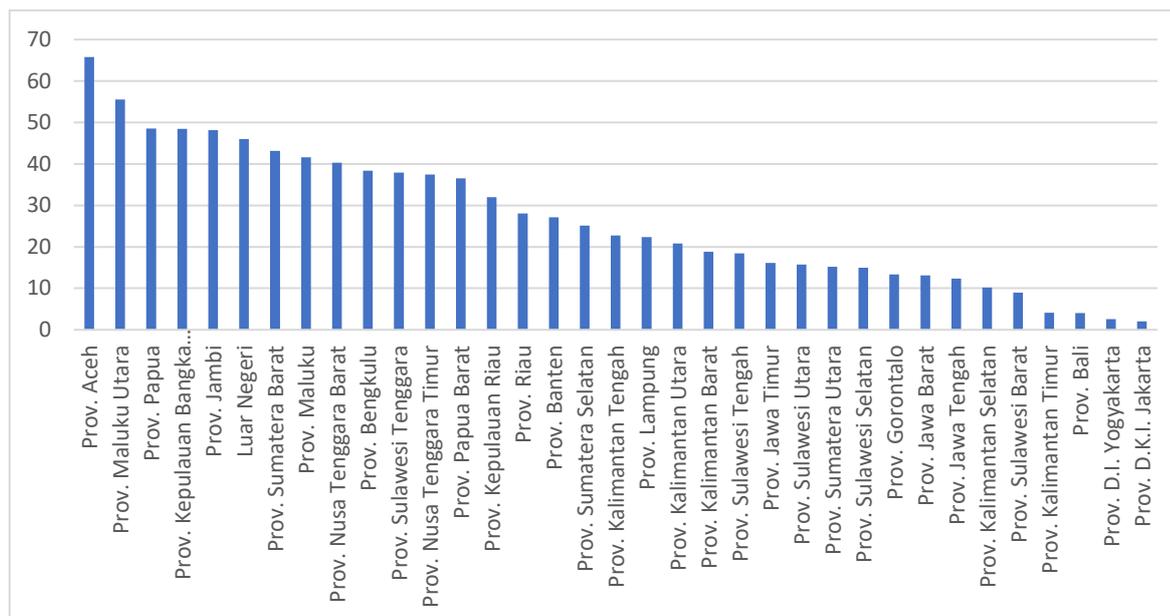
After more than a year of remote learning during COVID-19, MoECRT was planning to re-open schools in July 2021, after educators and students receive vaccination. Based on the revised Joint Minister Stipulations on March 2021 (see Table 4), schools are to implement strict health protocols and students will still undergo blended learning. As a staged process, currently 37,345 schools (20%) have started face-to-face learning (MoECRT, 2021a). Many local governments are undertaking trials in re-opening schools in their regions.

Recently, the GoI announced school re-opening, with limited face-to-face learning, for all education levels. The guidelines for limited face-to-face learning are explained in the 2021 Joint Stipulation of Four Ministers on Teaching and Learning Guidelines during the COVID-19 Pandemic. School re-opening aims to overcome the hindrances of remote learning and to reduce learning loss. Limited face-to-face learning is permitted, up to a maximum of 50% of total capacity. Before it is implemented, schools have to fill out the provided checklist to ensure safety and health. A checklist of technical preconditions has to be fulfilled, covering health behaviour, water and sanitation facilities, classrooms with physical distancing, rotation of students, transportation to school, and the method of blended learning. With this, schools have the opportunity to manage their resources to combine remote learning with face-to-face learning. It is also important to note that, for health and safety reasons, parents or guardians can decide to follow remote or face-to-face learning for their children.

By May 2021, nearly 20% out of 535,705 schools at all levels had implemented face-to-face learning. Thirteen provinces had been doing face-to-face learning in more than 40% of schools. DKI Jakarta is the province with the lowest level of face-to-face learning, while the highest is Nanggroe Aceh Darussalam. There is an indication that schools in the eastern region and some parts of Sumatera Island are more likely to implement face-to-face learning (MoECRT, 2021a).⁹

⁹ The numbers are counted for general schools, vocational schools, and religious schools at the respective education levels.

Figure 10: Percentage of schools with face-to-face learning



Source: MoECRT, 2021a

Among others, the highest percentage of face-to-face learning is at upper-secondary school level, at 30%, with lower-secondary school level at 19%, and primary school at 15% (MoECRT, 2021a). In the research sites, schools are preparing to deliver face-to-face learning. In West Java, the Provincial Education Office has granted permits for 2,800 SMKs/equivalents to deliver face-to-face learning by July 2021 (Kompas, 2021c). In DKI Jakarta, the first batch of 85 schools (from primary to secondary schools) have passed the assessment and delivered face-to-face learning in May 2021 (Liputan6.com, 2021). In South Sulawesi, three upper-secondary schools have officially started face-to-face learning since April 2021.

Teachers, students, and parents are looking forward to face-to-face learning. Their views are summarised in Box 1.

Box 1: Perspective of students, teachers, and parents towards school re-opening

The research team specifically took DKI Jakarta as a research site for the school re-opening case study. Students particularly mentioned difficulty in learning as the main challenge of remote learning. Learning loss and boredom were repeatedly mentioned by students, teachers, and parents as the main reasons why they wanted to resume face-to-face learning. One student said:

To be honest, personally, I really object to remote learning. I can say from 70–80% of my friends, if they are asked whether they understand the materials taught through remote learning, there is high possibility that they do not understand. Maybe today we understand, but tomorrow we will forget. Sometimes, what teacher taught, it is difficult to deeply understand it. Teachers need to explain it more than two times so that we finally understand. (SMK student, male, Jakarta)

This supports the findings from a survey conducted by KPAI in December 2020. Based on responses from 62,448 students in 34 provinces, from primary and secondary schools, including special schools and religious schools, 78% of students strongly hope that school can re-open and conduct face-to-face learning. The difficulty in understanding some subject matters and practical works, boredom, and some domestic violence cases are the main reasons behind students’ hopes for school re-opening (Kompas, 2020b).

In preparing for school re-opening, one of the private schools in DKI Jakarta is preparing a hybrid learning approach: 50% of students will go to school while others will learn from home. In order to provide a real classroom experience, the school plans to set up special cameras and LCD screens so that all classroom moments can be captured by the students at home too. With all students equipped with appropriate devices and internet connectivity, the school has no doubt that all students will be able to follow the teaching and learning activities in a fun way through hybrid learning. All schools interviewed in DKI Jakarta

mentioned that the most important thing is that they prepare the hygiene and sanitation facilities and protocols.

Based on a survey conducted by the Primary School Directorate of MoECRT in December 2020, with 21,730 school principals, measuring school readiness for school re-opening, almost all schools already had toilets, sinks with water and soap, hand sanitiser, and thermometers. However, a few of schools do not have disinfectant tools and facilities for sterilisation. Masks, as one of the most critical pieces of equipment, are challenging for students with hearing impairment. Only 27% of inclusive schools prepare transparent masks. The remaining 73% stated that they have not prepared these for different reasons, such as they are not available in the market/are difficult to find, and schools do not have the budget for this (MoECRT, 2021b).

Despite the preparation of health and safety protocols, risks are still present. 10% of the KPAI survey respondents argued that there is a high chance of COVID-29 clusters in schools, while others emphasised that schools are not ready to adapt to the new situation, including providing health and sanitation facilities. Moreover, teachers also worried that students will gather together during and after school activities. One teacher in Jakarta said:

What we are worried about is, even though only 50% of students are allowed, if we combine 50% of them from each class there will be a lot of students. Just yesterday, I met students at school, they were taking care of school administration. There were only five students, but when they met, they hugged each other. We have warned them as hard as we could. That is one thing that we are still worried about. Maybe it is not just for senior high school, but for all schools if face-to-face learning is allowed. This is something we cannot imagine. (SMA teacher, female, Jakarta)

Despite the urge to re-open more schools in the upcoming academic year of 2021/22, remote and blended learning will still be an apt approach. Face-to-face learning still brings significant risk as a rising number of cases of teachers and students with COVID-19 have been reported because of schools re-opening in a number of regions of Indonesia (Kompas, 2021c). The role of education offices and COVID-19 mitigation task forces in ensuring school compliance with health protocols and monitoring COVID-19 cases in schools will also be crucial (see also Table 4). Parents' involvement should also be strengthened, and is empowered through the issuance of the Joint Minister Stipulations.

5 Key stakeholders: teachers, parents, and students (Component A)

Responding to the study, teachers, parents, and students voiced their experiences regarding the remote learning process. Despite the challenges, remote learning is seen as bringing positive effects. Teachers experience digital skills improvement as using technology is imposed in the process of remote learning. Teachers also benefit from national and sub-national programme support for teaching at home; however, they still need to enhance their digital skills and literacy to be able to teach more effectively. Parents and caregivers' roles in education have increased as they need to be 'co-teachers' for their children's learning. These parents need support. For both teachers and students, engagement in learning has become an issue. Teachers facing difficulties in making their online presence felt, and a few students do not show up, for various reasons. Remote learning results in learning loss – not only academic but also non-academic loss (i.e. social skills).

5.1 Perspectives and reflections on remote learning

A joint survey between MoECRT and the INOVASI project (MoECRT, 2020c) revealed that teachers deem internet connectivity (69%) and ability to observe student development (68%) as their main hindrance in remote learning. Students reported that it is difficult to concentrate (52%) and to communicate with teachers (52%) when learning from home. Most students spend less than three hours a day on learning tasks. This is particularly true for male students and students residing in remote areas. Parents also struggle to comprehend their children's lessons (36%) and to help their children to study, because of fatigue from work. The pandemic is also highly likely to affect disadvantaged populations more, especially poor and vulnerable students: they struggle to follow distance and online learning, due to their limited internet access and unavailability of IT tools (i.e. smartphone).

A brief survey was conducted in June 2020 involving around 208,000 student, teacher, and parent respondents; it revealed that 94.7% of vocational schools used the remote learning mode during the COVID-19 outbreak (MoECRT, 2020d). More than half of teachers reported that distance learning is the most effective modality given the circumstances, but challenges include bad internet signal, home conditions that are not supportive of learning, and lack of ownership of a smartphone/computer. Around 57% of respondents think that remote learning is effective, while the remainder consider that the hindrances are more significant than the benefits. MoECRT relaxed the physical distancing restriction in August 2020 for senior secondary vocational schools or SMKs, fearing the practical learning loss during remote learning. Strict health protocols are applied for SMKs and they have prepared a shorter version of the curriculum and lessons to be implemented during the emergency conditions.

Around 93% of special education institutions are implementing learning from home strategy using a number of online platforms (MoECRT, 2020e). For students who do not have access to ICT devices and the internet, assignments are sent to students' homes or picked up by their parents at school. Further challenges have been identified, such as data accuracy regarding students with disabilities, the limited budget allocated by local governments, special schools not yet being available in 60 out of 514 districts/municipalities, the diversity of student needs, an insufficient special education curriculum designed for students with intellectual disability, parents' acceptance of their children's disability, and teachers' competency in using ICT for teaching and learning.

The role of the school principal and of teachers in mitigating the challenges in remote learning, and the risk of students falling behind, is important. The school principals and teachers in our research sites indicated that they independently look for the best possible solutions to resolve challenges. Some examples that are worth mentioning are the school principal's initiative in one primary school in DKI Jakarta Province to build a mini studio so that teachers could record their teaching with

proper equipment. The school principal and teachers also actively encouraged parents and monitored students' attendance at school in remote learning arrangements, due to the history of a high drop-out rate in that area (i.e. students coming from families with a low socioeconomic status, students who prefer to be absent and play with their friends, etc.). This also occurs in Sabutung Island, where teachers visit students who have been absent because of joining their parents in fishing.

Public–private partnerships occur between the government and the private sector to improve remote learning. This can be most beneficial for teachers and students in disadvantaged areas and from disadvantaged populations. An example is the collaboration between MoECRT and local broadcasting companies to distribute formal educational video content on TV Edukasi in some areas.

For special education delivery, learning from home during the COVID-19 pandemic has placed greater responsibility on parents and caregivers at home, especially for students with special needs. Recent research by Fakta Data (2020) revealed that virtual learning and therapies are particularly challenging for those with students with learning difficulties. Many teachers and parents decide to continue face-to-face teaching and learning because disruption may mean that the learning and therapy process needs to be restarted.

Monitoring and evaluation of teaching and learning from home was conducted by MoECRT and the INOVASI Project (MoECRT, 2020b). Both good practices as well as challenges for formal education were revealed. One example of good practice was observed in the good coordination of the Learning from Home strategy. Bulungan District Education Office in North Kalimantan delivered online Learning from Home training to 100 teachers from 26 primary school clusters and 146 schools. They were trained to reach all students using various teaching and learning modalities, to help both students and parents to coach their children.

There is considerable potential support for remote learning that can be tapped into through the role of village governments. Strong coordination between MoECRT and MoV to optimally use the resources is key for the following:

- *Support students in remote learning.* The *Patriot Desa* (Village Frontier) programme can potentially support students to access education through remote learning from their homes. The programme is being led by MoV and implemented by provincial and district Village Empowerment Offices, involving youth as village representatives.
- *Strengthen connectivity access.* Annual village planning and budgeting can involve proposals to implement educational support, in the form infrastructure development and maintenance, and digital skills training.

As has been said, public–private partnerships occur between the government and the private sector to improve remote learning. MoECRT and telecommunication companies have established memoranda of understanding on an internet subsidy. MoECRT has partnered with 12 online learning platforms under the *Bersama Hadapi Korona* Portal that are ready to be accessed by students throughout Indonesia (Kompas, 2020a). There exists a partnership between Pusdatin and local broadcast companies on content delivery targets for teachers and students in disadvantaged areas. Through this collaboration, Pusdatin distributes formal educational video content through local TV, such as V KU Semarang, Batik TV Pekalongan, Toba TV Sumatera Utara, Buana Jati TV Cirebon, and Live Media Yogyakarta (MoECRT, 2020j).¹⁰

¹⁰ Disclaimer: There have been many initiatives on digital literacy and digital skills development in Indonesia, both in the public/private sectors and through public–private partnerships, and many are not covered in this report. Please note that

5.2 Teachers' views

Access to MoECRT programmes. Priority programmes for teachers' skills improvement and continuity of remote learning include the *Guru Penggerak* (Teachers as Movers) and *Guru Belajar* (Teachers as Learners) programmes.

- *Guru Penggerak* aims to develop teachers' leadership skills over a nine-month programme. However, the results are yet to be seen because recruitment has just started. The programme also uses the 'teachers as coach' approach, whereby teachers provide guidance and facilitation to colleagues to continue learning while they also learn themselves. However, the teacher coaching approach is considered to be very complex and finding a teacher coach is challenging.
- *Guru Berbagi* builds communities of practice to facilitate information sharing among teachers, to allow them to seek dynamic solutions for the diverse situations teachers face.
- The *Guru Kunjung* (Teacher Visits) programme involves teachers carrying out home visits to students' homes or to selected places where small groups of students can receive tutorials. This is particularly useful for disadvantaged children residing in remote villages or those who do not own a communication device. In both Pangkep and Sukabumi districts, when visiting students in hard-to-reach villages, teachers need to be equipped with multigrade teaching skills. The student study groups usually comprise children from various grade levels meeting at proximate hubs.
- When online learning is not possible, teachers set up study groups and conduct scheduled home visits. During home visits, teachers provide printed materials for teaching. The multigrade teaching method has become a requirement for rural contexts. A teacher from a primary school in Sukabumi schedules assignment pick-ups from schools, but the actual learning happens in students' homes. As required and based on proximity considerations, they teach multigrade students in study groups. This also applies in Sabutung Island and other villages in Pangkep district, South Sulawesi.

Use of EdTech. Teachers use EdTech in teaching and learning. The online meeting platforms that are typically used include Zoom, Google Meet and Google Classroom. However, for most teachers, virtual and real-time teaching cannot be delivered full-time, for a variety of reasons (i.e. need high data packages, no proper tools/devices, a weak internet network). As a result, teachers combine virtual meetings with offline teaching, involving one to two hours of virtual teaching, sharing materials through WhatsApp, home assignments (students find materials online using Google, YouTube, and other sources), submission of assignments, and discussion through WhatsApp. The recent MoECRT study indicates that the internet subsidy has an impact on teaching and learning practices. Teachers who received the internet subsidy interacted with students for longer. Teachers also admitted that they were able to employ more innovative and interactive approaches through EdTech platforms and apps (MoECRT, 2021f).

Digital skills and literacy. Teachers and educational staff still need to improve their digital skills for innovation in teaching. For in-service training, digital skills training still needs to be scaled up to fulfil the needs of over 3 million teachers. The PemBATIK programme of MoECRT has covered slightly over 100,000 teachers who participate in training on four ICT competencies: i) ICT basic literacy; ii) twenty-first century skills implementation; iii) creation of interactive learning media; and iv) knowledge sharing. For pre-service teacher education, the current pre-service education at Teacher Education Institutes has yet to be designed to prepare teachers to be ready for digital transformation. The digital skills content needs to be embedded in the existing curricula.

the digital-related programmes mentioned in this report are only a few, and are those that directly relate to remote learning.

Furthermore, as noted by MoECRT, digital transformation also concerns a cultural shift, which needs to be introduced at early stages of teacher training. Digital skills are also a collaborative effort, being supported by MoCI and an EdTech company (Ruang Guru) through the Indonesia Teacher Fellowship Programme.

Teacher respondents to this study also noted that remote learning in the context of the COVID-19 pandemic pushed them to improve their digital skills. Before remote learning became compulsory, their digital skills were quite limited. When learning from home started, ICT subject teachers provided peer-support to their colleagues. Schools expanded further training for teachers to be able to use learning management systems and other useful digital tools for teaching, partnering with EdTech companies or facilitators in their network. As mentioned earlier, a primary school in Jakarta rapidly established a mini studio to develop digital-based materials, such as video recording.

Remote learning challenges. When asked for their preference, teachers chose face-to-face over online learning due to a number of challenges encountered during the latter. Some issues presented from the field were as follows:

- Some students are not reachable, most probably because they lack ownership of devices or they have a limited data quota they can use to access synchronous learning sessions and materials. This is particularly notable for lower-grade students in poorer communities. A few students dropped out as they were asked to help their parents in work.
- When students are present, learning is difficult. Students seem to be disengaged due to home circumstances. In urban slum areas, this may be due to the unavailability of a space to study and learn. In rural areas, connectivity is scarce and students have a reduced number of hours for learning, which distracts them from working on their assignments.
- In teaching lower-grade students (Grades 1 to 3 for primary school students), teachers rely on parents' involvement. Small children need to be attended by parents or adult family members to ensure that they keep track of their learning and to receive learning materials shared via social media chat, or learning resources picked up in schools.
- Monitoring students' non-academic development (character education) through effective social interaction can only be carried out to a limited extent.

The increase in data purchased for remote learning. Teachers emphasised that families' socioeconomic background may impact the learning that takes place at home. Parents from low-income households feel the burden of high internet costs and the need to buy devices for online learning.

Our school located on the coast area and people live in this community are low-to-middle income. So, you can imagine, once I upload one video for learning...well, let's not talk Zoom...when uploading video, it needs at least 20 mb. If I upload the videos in five days, one video for one subject, it means that once a week I have to spend their 100 MB. That is only one subject while there are four subjects a day so you can imagine how difficult it is for students to have internet access. (Primary school teacher, male, Jakarta)

Although there has been an increase in the buying of internet data packages, the data package quota limitation is less of a problem for teachers than for students. In rural areas, such as in Sukabumi, where there is community-based internet provision, teachers can easily buy credits and get connected. Teachers are also supported by school wi-fi through broadband networks, and some also benefit from the *Kuota Belajar* subsidy. However, for school administration purposes when rural schools need to upload data to MoECRT's education database (*Data Pokok Pendidikan, Dapodik*), representative teachers cannot use the available connectivity because of

the large size of the data: they have to go to the nearest town or location where a good internet connection is available.

5.3 Students' views

Experience of remote learning. Students in urban areas, such as Jakarta, conduct most of their school-relevant activities online. This applies to academic learning and extra-curricular school activities. For those who made their education level transition from primary to secondary school during the pandemic, all interactions with classmates happen online. This all-online interaction has led to loneliness and anxiety about the need to socialise. One student who had just entered senior high school shared this view:

This is my first year at school. Since remote learning, I never met my classmates. The first and the most annoying thing for us, students, is actually about the friendship. During remote learning, we are really individuals who do not know each other. Even if we know each other, it is limited to chat or phone call. It scares me. Next year, if we enter this school, we do not know each other. We cannot really understand each other because we are really blind about who our friends are. In fact, school should be the place where we socialise, looking for friends and experience with many people. (SMK student, male, Jakarta)

Confirming the survey findings and teachers' remarks on student disengagement, one SMK student in Jakarta also reported that some of his classmates do not show up to class and are rarely seen online. Understanding online lessons is also challenging for some students, particularly when lessons are delivered in a rather monotonous way through one-way presentations. Just-in-time support is not well received by students. In cases where students send follow-up questions on lessons through chats, they may receive slow responses from teachers.

However, learning from home brings an upside for some students. Student learning time is more flexible and sessions are scheduled throughout the day based on teacher–student agreement, so students are able to pursue their hobbies (e.g. horse riding). They can allocate time between study and other activities more easily.

EdTech use. Students are quite aware of various learning tools; however, their limited digital skills and limited exposure to the tools means the level of utilisation is low. Students mentioned that WhatsApp is a 'mandatory' platform for use during remote learning since teachers and students exchange information through it, including sharing materials and assignments, and for discussion. A recent study by MoECRT shows that students who received an internet subsidy employed a greater variety of EdTech platforms and apps. Students who received the internet subsidy also experienced more contextual learning (MoECRT, 2021f).

Students with no or limited connectivity study remotely using the offline mode. As mentioned above, offline learning through teacher home visits has become the main strategy for continuing learning. Where connectivity is still possible, students find spots where they can connect and learn. For urban school students, such as those in Jakarta, connectivity may not be an issue, but device ownership and limited data packages can hinder them joining online learning. For fully equipped students, they use the internet connectivity for learning and for interactions on social media, as well as using web searches for information to complete their assignments. Some students reported that they sometimes find it difficult to follow the online lessons, therefore more information needs to be searched for on the web.

Digital skills and literacy. Despite the common belief that young people are digital natives, students need support in digital skills and literacy development. Both teachers and students observed that some students experience challenges in getting assignments done because of their lack of knowledge and skills in operating their devices and using the features of different apps. A few students also felt that their teachers lack innovation in teaching, and they feel bored during online learning.

5.4 Parents' views

The increasing role of parents in children's education. Teachers and parents agreed that parent awareness and commitment in accompanying their children's learning at home is critical. This task is easier for stay-at-home parents but it is challenging for parents who work. Parents find it difficult to understand the materials and explain them to their children. Parents also feel that being at home and on screen, their children lack social skills. Parents referred to the non-academic aspects of development, such as social life, interactions, and attitudes, as a potential learning loss. As mentioned by one parent:

As a parent, I do not want remote learning to continue. Honestly, there are many positives of remote learning, especially for my child who is benefited with remote learning due to his activities (as an athlete). Yes, remote learning is positive and easy, but we as parents, we want our children to have interaction with their friends. Then about their habits, which may be different with us when we were their age. We see students now spend most of the time in front of laptop/screen and they do not socialise. Ultimately, I am afraid that the level of sensitivity with society decreases. There are many things that we cannot learn from just the screen, there are lots of lessons that we can get only if we interact with friends or with the community. I do not deny that remote learning has its positives too, but when asked about this I actually do not want remote learning to continue. (SMA parent, female, Jakarta)

Support for parents. Systemic support to parents is lacking and parents struggle to guide their children in day-to-day lessons and assignment completion. Guidelines have been developed for parents of pre-school and primary school students, but structured guidance is needed for parents of primary, junior secondary, and special school students. Students in higher grades may not need individual assistance from parents as much as students in the lower grades for day-to-day learning. However, parents of high school and vocational high school students can also benefit from information on education change management during the pandemic. Parent support groups can encourage sharing of experiences among parents and can bring them practical guidance from educators.

6 Learning from the DAP pilot projects: community-based connectivity (Component B)

In order to establish digital and educational inclusion in remote areas, the DAP has introduced two pilot projects. The first is a community radio project in Sabutung Island, South Sulawesi. The second is a community networks platform and tech hub in an indigenous community in Kasepuhan Ciptagelar, West Java. The community radio and community-based network are seen as the best possible ways to support teaching-learning in the presence of connectivity challenges. The lesson learnt from these pilot projects have inspired replications of similar community-based initiatives in other areas.

6.1 Community radio project in Sabutung Island, implemented by Institut KAPAL Perempuan

Connectivity is a key challenge in Indonesia. Community-based internet is increasingly seen as a sound model of internet provision for a number of reasons. First, it allows for the connectivity for students who have not received an internet data quota from MoECRT and ensures their continued learning. Second, it allows the community to promote their locality (cultural values) to the wider public. Third, it enhances the livelihoods of community members. Fourth, radio is also an option for supporting the implementation of teaching and learning in remote areas, delivering pre-developed content in the form of recorded podcasts or live broadcasts by teachers.

Box 2: About Sabutung Island

Sabutung Island is administratively located in South Sulawesi Province, Pangkajene Islands (Pangkep) District, Liukang Tupabbiring Utara Subdistrict, Mattiro Kanja Village. The island is around 1.3 km long 400 metres wide. It is estimated that the area of the island is nearly 50 ha. The Island's topography includes forests and shrubs, in the middle of the island.

Mattiro Kanja Village can be reached by sea transportation from Pangkajene City (the capital of Pangkep Regency) by boat that can be accessed from Pangkajene River, with a travel time of around two hours. However, this boat is only available once a day at 6 a.m. Another alternative is to travel by boat through Maccini Baji Pier, which is located in Labakkang District, with a travel time of around 45 minutes.

Mattiro Kanja Village has a population of 1,706 people, consisting of 836 men and 878 women, with 317 family heads. Most of the people of Mattiro Kanja Village work as fishermen, boat builders, and transporters. In general, women are engaged in Massire'-sire (sewing crab nets) and operate businesses. The majority of the population of Sabutung Island are aged 0–29 years. Most of the people of Sabutung Island are elementary school graduates. There are six schools in Sabutung Island: one pre-primary school, two primary schools, two lower-secondary schools, and two upper-secondary schools, with a total of 231 students and 48 teachers (Profile of Mattiro Kanja Village, 2021).

The Community Radio Programme is a pilot project initiated by the DAP, with Institut KAPAL Perempuan as the project implementer. The pilot started in October 2020 and has been introduced to communities in Sabutung Island, Pangkajene Kepulauan (Pangkep) District, South Sulawesi and Bayan Village, North Lombok, West Nusa Tenggara (Institut KAPAL Perempuan, 2020b). The project was designed to address the issue of the unavailability of digital facilities and access. It aimed to promote inclusive technology and to minimise the risk of COVID-19 through community radio, applying gender and plurality principles. The project targets women and children in remote communities on an isolated island where the population is considered to be vulnerable since they live in a remote region with limited connectivity and ownership of adequate ICT devices (Institut KAPAL Perempuan, 2020b).

Community radio is seen to be the best possible option for people who reside in these areas to access information and to support them to better respond to the COVID-19 circumstances, which require school closures and the implementation of the learning from home/remote learning modality. For an island such as Sabutung, remote learning presents challenges: there is very

limited infrastructure (electricity and internet connectivity), there is a lack of affordability to purchase internet data, and parents complain about not being able to support their children's day-to-day learning process. The community radio, called Siperennu radio, is a community-driven solution. It was developed after a request by parents/local community members (who signed a statement to this effect) for help to mitigate remote learning challenges.

The radio programmes produced by the community radio to aid in remote learning within the formal education pathway, as well as the non-formal pathway to improve women's livelihoods. The radio broadcasts six days a week from 9 a.m. to 3 p.m. The community radio enables the broadcasting of teaching and tutorial sessions and materials/content for school children with no smartphone or internet access. The radio also offers marketing and promotional programmes on women's empowerment and enterprises, health education during COVID-19, and reproduction issues. It is notable that some people in the area are still unable to understand the Indonesian language; therefore, materials are delivered in both the local language and the Indonesian language.

Box 3: About Institut KAPAL Perempuan

Institut KAPAL Perempuan stands for Lingkaran Pendidikan Alternatif untuk Perempuan (Alternative Education Circle for Women). Institut KAPAL Perempuan is based in Jakarta and was founded on 8 March 2000. Its vision is to create a civil society – focusing on women's movements – that engages in critical thinking and solidarity, that is based on gender equality, and that practises pluralism, transparency, and non-violence (Institut KAPAL Perempuan, 2020a).

During the project implementation, the Institut KAPAL Perempuan team resides in Sabutung Island, to allow them to better understand the needs of the community, including in regard to establishing radio infrastructure and management. Institut KAPAL Perempuan has provided capacity building activities for broadcasters and radio managers, consisting of 40 personnel from Pangkep and Lombok Utara: elementary, junior high, and senior high school teachers; the village head, to encourage the village to support the project; female leaders; potential broadcasters; and local partner organisations. Institut KAPAL Perempuan also operates 'Sekolah Perempuan' and 'Sekolah Perempuan Muda', to train female leaders. Broadcasters receive incentives in the form of transportation costs and 'lunch money'.

Based on the trail, this radio frequency can be captured by six other islands. If the transmitter is improved, it could reach an even wider area and deliver service to other islands. Beneficiaries include 698 primary and secondary school students residing in Sabutung, as well as other community members in six surrounding islands and port areas in the mainland. Since the community radio was launched in September 2020, it has gathered interest from the community members: they welcome and show ownership of this initiative; community radio is not something common in this area. The community radio has also been endorsed by the Ministry of Women's Empowerment and Child Protection, during the minister's visit to Sabutung Island. With huge support, the district and village government has shown enthusiasm to continue and maintain the community radio to ensure continued empowerment.

Box 4: Insights from Sabutung Island community on remote learning and Siperennu community radio

As an island community in a remote area, people in Sabutung experience difficulties with connectivity. Students and teachers struggle during the implementation of remote learning, due to the low quality of internet services and electricity supply. Socioeconomic background also contributes to the lack ownership of smartphones and an inability to buy data packages.

The initiation of the Siperennu community radio was inspired by the challenges faced during remote learning. Since the outbreak of COVID-19, schools were closed and students started to learn from home. Parents and communities on the island complained because teachers gave students homework/assignments and children asked their parents to accompany them in studying. With the low

educational levels in the island (parents' education background is mostly up to primary school only), there was a tendency towards domestic violence against children because parents did not understand the school lessons and felt exhausted.

In response to this, Sekolah Perempuan Muda, a women's empowerment and education initiative in Sabutung Island, established in 2018, started to deliver tutorial services for students by visiting their houses to provide learning assistance. School assignments were given by teachers through WhatsApp. However, with limitations in internet access, students could not undertake remote learning effectively. Thus, the community radio is seen as a great channel for providing teaching and learning outreach to remote communities in the island, since it is low-cost and there is no need to buy data packages, which are considered to be expensive.

The community radio was initiated by Institut KAPAL Perempuan and Yayasan Kajian Pemberdayaan Masyarakat (YKPM) Makassar. The community radio is named 'Siperennu', which means 'happy or happy together' in the Bugis language. Siperennu also stands for Sikolah (which means school) for Perempuan Nusantara. It took more than two months for the radio to be established, with the process starting with contacting the relevant district offices in South Sulawesi and collecting 285 signatures from Sabutung citizens as a sign of their support for this radio. The following activities were then undertaken: i) infrastructure provision; ii) processing a radio frequency permit; iii) capacity building for broadcasters/announcers, and radio managers; iv) teachers prepared lessons by using textbooks as references; and v) rehearsal with radio broadcasters prior to radio lessons. The community radio station is located in the subdistrict office, and receives full support from the village heads, subdistrict head, and the district offices. The community radio in Sabutung Island was launched on 25 September 2020.

In order to prepare teachers for broadcasting, teachers were trained, and received knowledge and best practices from the radio management team and other broadcasters. Most of the time, teachers develop materials from text books and the internet.

The presence of the community radio has had an impact on the delivery of remote learning, not only for the students in Sabutung, but also for students in the surrounding area. As mentioned by some teachers, the community radio provides a great pathway for remote learning since it is low-cost and user-friendly:

With this radio, students no longer need to buy quotas to learn from home because most of the reasons students are lazy to study because of quotas (data package) reason, they think buying quotas is expensive. With this radio, they can study without quotas can learn by listening to the radio. Our obstacles are network and electricity, our students from several islands with the same network are not good enough so it is difficult to study. This radio is very helpful, the frequency can be accessed from several islands, so our students who are on other islands can listen. (Teacher, female)

When the radio was introduced, it helps us in the village because students can learn remote learning just by listening to the radio even though they do not own or use cell phone. It has helped them listen and understand the lessons through radio. Students' responses in learning through the radio compared to using WhatsApp is way better. Before radio, parents could not control their children's assignments in WhatsApp. Now, parents are aware since it is announced in the radio so that they could remind their children. (Teacher, male)

Even after remote learning ends, teachers think that the community radio will still be beneficial in teaching and learning:

We still need this radio if this pandemic is over because the teaching materials that we provide in class is not enough. We can provide additional material via radio. Radio can improve children's understanding and increase their knowledge. (Teacher, male)

Besides remote learning, the community radio also provides the islanders with updated information on health, especially during the COVID-19 pandemic. The radio community has three main objectives: (i) providing tutorials for school children; (ii) raising awareness on health and COVID-19 news; and (iii) promoting women's empowerment. The radio is operated Monday–Saturday with the following schedule:

- 09:00–10:00: Morning greeting and playing the national anthem. News from other islands about the weather or other developments, live reports to radio.
- 10:00–11:00: Elementary school lessons.
- 11:00–12:00: Junior high school lessons.
- 12:00–13:00: Noon class programme content; Bugis songs; and information on health and tips.
- 13:00–14:00: Senior high school lessons.

- 14:00–15:00: Information about COVID-19 in Indonesia or in Pangkep.
- 10:00–11:30: Special on Saturday – there is a female talk show that hosts several resource persons who are experts in law and health, as well as child survivors who tell stories (about child marriage, violence against women, and other women's issues).
- 11:30–14:00: Special on Saturday – the 'gade-gade' programme discusses efforts to deliver Women's School economic practices, promoting businesses on the island, and helping small business owners during the pandemic (who experienced a decline in sales).
- 14:00–14:30: Special on Saturday – children's fairy tales, listening to inspirational children's tales that provide moral values, for children from Kindergarten to Elementary Class 1 and 2.
- 14:30–15:00: Special on Saturday – COVID-19 information and broadcast closure.

Learning from the case of the Siperennu radio, the permit for radio broadcasting was not issued because the radio frequency intervenes with a flight frequency. The lesson here is that implementation of a radio station requires thorough technical assessment prior to launching. Siperennu radio needs to shift frequency to ensure it receives a broadcast permit and can continue beyond the pilot phase, or it could be broadcast as part of the Suara Pangkep radio, as suggested by the district government. While waiting for the permit, the radio is currently recorded as a podcast (audio broadcasts) and broadcast through several platforms, such as Anchor, Spotify, and Google Podcast, which can be accessed online. On the island, the broadcast is played repeatedly using loudspeakers in several places in the villages.

6.2 Indigenous Community Networks Platform and Tech Hub for Rural Innovation, implemented by the Common Room Network

The Indigenous Community Networks Platform and Tech Hub for Rural Innovation is an initiative of the DAP that is implemented by the Common Room Network, with support from the Medco Foundation (Common Room, 2020a). This pilot project is a COVID-19 response and preparedness initiative that deploys local internet infrastructure in Cileungsing and Cirendang villages, two isolated villages located on the southern border of Kasepuhan Ciptagelar region.

the project activities to date include the following:

- building a prototype to inform government-managed programmes that seek to expand connectivity access in both indigenous and non-indigenous communities;
- building upon indigenous communities that are aware of and understand the role of digital technology for their livelihoods;
- mobilising 'social capital' through public–private collaboration, establishing local, national, and international networks to learn further how to make the best use of ICT in rural contexts;
- creating an ecosystem for connecting the community with internet service providers for infrastructure installation and maintenance training, and the development of a media lab and training centre for content production and digital skills improvement; and
- focusing on COVID-19 mitigation, producing useful (digital and visual) guidelines for community members in both Bahasa Indonesia and the local language (Sundanese).

Box 5: About the Common Room Networks Foundation (Common Room)

The Common Room Networks Foundation is an open platform for creativity and innovation which was found in 2006. Common Room has been working to engage with diverse social and cultural backgrounds to create space for freedom of expression and civic empowerment using art, culture, and ICT/media tools. Starting from 2013, Common Room has also been actively involved in a collaborative effort to develop urban and rural collaboration platforms that nurture creativity, innovation, and social entrepreneurship, in both local and international contexts (Common Room, 2020b).

Community-based internet provision is community-driven, as it is built, managed, and used by community members. Relevant to the pandemic circumstances, the internet connectivity provision is used for formal remote learning and other non-formal training that can improve community livelihoods.

Box 6: About Kasepuhan Ciptagelar

Kasepuhan Ciptagelar is a customary law community living in the hinterland area of Mount Halimun-Salak. It is located in Sukabumi District, West Java Province. The term Kasepuhan comes from the Sundanese language, and generally means those who are elders. Specifically, the Kasepuhan Ciptagelar community areas are spread across three districts around the border area of Banten and West Java Provinces. Based on existing records, Kasepuhan Adat Ciptagelar was founded in 1368 and has undergone several leadership changes that have been carried out from generation to generation.

Administratively, Kasepuhan Ciptagelar is located in the southern part of West Java, particularly in Sukamulya hamlet, Sirnaresmi Village, Cisolok Subdistrict, Sukabumi District. Based on data from 2008, Kasepuhan Ciptagelar is inhabited by around 293 people, consisting of 84 heads of families, with 151 men and 142 women. This village is part of the Banten Kidul Traditional Union, which is spread over more than 500 villages. Kasepuhan Ciptagelar residents adhere to customs and traditions related to an agricultural culture (West Java Province Government, 2020).

Having observed lessons learnt from the pilot project in Ciptagelar, replication is ongoing in Ciracap subdistrict, involving local human resources, including IT volunteers from Sukabumi, Ruhay Community, SMK Eka Nusaputra, and Al-Mutadiin Empowerment Islamic Boarding School students, for the maintenance of infrastructure, and supported by the Medco Foundation, APC, and the FCDO, through the DAP. The School of Telecommunication Garut is also taking part in replication of the programme in Garut district.

This pilot project has gathered support from various parties, both in the production and distribution of public education materials, funding, and logistics and technical support, namely from the local government (Sirnaresmi village office and government officials in West Java Province), the Medco Foundation (as partner), ICT Watch Indonesia, AAPJII, APC Global Fellow, ISOC Internet Society, MoV, MoECRT, and MoCI. To date, various collaborations are taking place:

1. Common Room, the DAP, MoECRT, and MoV are designing a collaboration to utilise the facilities of the ICT training centre and media lab in Ciptagelar for training of trainer activities to promote culture in rural and remote areas. The participants will be traditional villages involved in the agenda of promoting village culture. Participants will be trained by a master trainer from a Common Room partner, Yayasan Jendela Ide.
2. Common Room and the DAP are also in consultation with MoV on designing an affirmative approach to introducing community networks and IT at a local level by developing: (i) national guidelines for community-based internet initiatives, with a detailed explanation of government regulations, a business model, and technology options, and how to utilise the technology for public services in villages and rural areas; and (ii) a practical pocket book about COVID-19 in Bahasa Indonesia and Sundanese languages.
3. Common Room and Medco will independently replicate the activities in seven other regions as part of an agenda to develop the prototype of remote learning, drawing on the lessons learnt from the pilot project in Ciptagelar.

Box 7: Experience of community-based internet initiatives in West Java

Internet service providers and players in Indonesia are mostly business oriented. Many firms are reluctant to invest in rural and remote areas since from a business perspective they offer no potential. Different from regular internet service providers, community-based internet is based on the concept that internet infrastructure is built by the community, managed by the community, utilised by the community, and

developed by the community, in collaboration with internet service providers and other partners. In other words, the infrastructure, as well as maintenance, are managed by the community

The development of internet infrastructure in Ciptagelar initially started in 2013; however, a significant improvement occurred when Awinet, a local internet service provider, experimented with providing a wireless network in 2018. Throughout 2019, Common Room and the Association for Progressive Communication developed internet services centralised in Ciptagelar to cater to the needs of nearby villages. Since 2019, Common Room has been involved in a learning programme for developing core concepts and an internet-based infrastructure framework with the community. The process of establishing internet infrastructure in Ciptagelar was not without challenges. The geographical conditions and bad weather made installation difficult. Bad weather also impacts the quality of the internet connection.

Based on the project evaluation, it is recommended that managing, utilising, and developing internet infrastructure in Ciptagelar requires people who have mastered technical skills, including the knowledge required to utilise technology. Based on needs, it is recommended to establish a training centre and media lab. Besides being a training facility for those who are interested to learn, the media lab also serves as a centre for the production and distribution of local knowledge from the Ciptagelar community through media (digital content) and vice versa. The training centre and media lab in Ciptagelar provides an example of best practice regarding learning how indigenous people use technology and how to establish internet infrastructure independently at a local level. Activities which have been completed in Ciptagelar include the following:

- Desa Siaga COVID-19 – Pandemic Preparedness and Resilience Initiative: The launch of an e-book and printed book about COVID-19 Village Preparedness in the Sundanese language and the use of telemedicine in coordination with the community clinics and the district general hospitals.
- Deployment of local internet infrastructure and education resources in Cileungsing and Cirendah located on the southern border of Kasepuhan Ciptagelar.
- Training centre and media lab development in Kasepuhan Ciptagelar – a space and a vocational training facility for Kasepuhan Ciptagelar and West Java.
- Organising a rural ICT camp. This event is held annually to provide opportunities for discussions among multiple stakeholders from national and international communities. The first event was held from 12 to 14 October 2020 and was attended by over 600 participants.

Before this initiative, teachers and students had to find 3G and 4G signal by climbing a hill. Since signal is limited, teachers often go to the district capital, which is 1.5–2 hours away, to download and upload materials or data. Based on teachers, almost all students are registered for the *Kuota Belajar* from MoECRT. However, some of them cannot be contacted during the verification process or their sim cards are expired so they do not receive the quota. On the other hand, extra expenditure to buy devices and the data quota become an additional burden for most families, especially those from the low socioeconomic class.

In a remote learning context, the provision of local internet services has made teaching and learning easier. After community-based internet services were rolled out in Ciptagelar, remote learning could be implemented more effectively:

During the pandemic, learning is done at home online. With the internet, we can search materials on Google. Fortunately, Ciptagelar has started the internet well so it makes it easier for us to search for subjects/materials on Google. (Primary school student, male)

Having learned from the success story of this initiative, replication is ongoing in some parts of West Java, namely Ciracap Subdistrict and Garut District:

For internet access in Ciracap, previously we had no internet network at all during the establishment of our school for about five years. My experience with the existence of an internet network in SMK is it really helps us to convey the following information with online learning methods because during the pandemic we cannot do face-to-face learning. With the internet, it is easier for us to learn online. (SMK teacher, Ciracap, male)

The provision of internet services is not only for educational purposes but also to enhance technical and digital skills, achieving students' aspirations, and empower the community:

For the internet network, the benefits with the community-based internet are enormous. I found it difficult to deliver materials in the absence of internet, which made it very difficult for me to communicate. Then to prepare modules or materials, since it is now online, for teaching staff it makes it easier to find information, material, etc. For students, there are some materials that might be searched through internet. Students who are creative, when the teacher is delivering materials, they are looking for more materials on the internet, for

example looking for tutorials on YouTube about computer installations, how to install cables, etc. (SMK teacher, Ciracap, male)

I have many hobbies, but most importantly, I like writing. Since primary school, I started from painting then making stories with pictures. During upper-secondary school until now, I like to write stories. Now, I make novel. With internet connectivity, I am able to access the network for uploading posts or my writing in platform. (SMK student, Ciracap, female)

In our higher education institution, we have collaborated with several communities and schools for this initiative. There are still many blank spots in Garut, so there is no internet access yet and, of course, in the midst of this pandemic, it becomes an obstacle for the community because they cannot come to school and the internet access is not available. This initiative has been beneficial for the community not only in terms of education but also to empower community to grow the agricultural potential to enter the digital realm, especially for business promotion. (Lecturer, Garut, male)

7 International good practices

Remote learning and enhancing digital skills are a key policy priority in a number of countries, especially given the COVID-19 pandemic. This chapter highlights examples of initiatives from different countries, with a view to providing examples of good practices which can be applied to the Indonesian context. These examples come from the UK, China, Brazil, and Chile. The chapter also highlights a combination of country-specific interventions and some initiatives undertaken by multilateral organisations, to provide some examples of innovative ideas which can be modified or scaled up to suit the requirements of Indonesian institutions.

7.1 United Kingdom

The UK Department for Education (DfE) focuses on the provision of both digital access and the development of a computing curriculum to achieve optimal student learning outcomes.

- **Digital skills:** The EdTech Demonstrator programme has been implemented to support 4,000 schools and colleges to use technology tools. This programme enables teachers to teach at a distance using synchronous and asynchronous approaches and to communicate with parents. Included in this initiative are special schools and colleges that focus on improving accessibility and inclusion in both special and mainstream schools and colleges (DfE, 2020a).
- **Digital access and skills for disadvantaged students:** i) Delivery of hardware and software: 560,000 computers and 50,000 4G wireless routers have been distributed to disadvantaged students. Furthermore, the UK Government also funds access for schools to Google for Education or Microsoft Office 365 Education. ii) Delivery of an EdTech R&D programme to support disadvantaged students to obtain a deeper understanding of what technology works and what does not. iii) Implementation of a National Tutoring Programme that helps schools to provide tutors to students who are most affected by school closures. Many of the teaching partners provide online instruction and/or are being supported to develop online services (DfE, 2020).
- **Establishment of a National Centre for Computing Education.** The centre has been operationalised since 2019; its 40 centre hubs provide support for schools to implement the computing curriculum. Computing education delivers the basics of computing and digital literacy to primary and secondary education students, as well as a more advanced curriculum for those who want to go on to pursue careers in computing (DfE, 2020b)
- **Curriculum integration.** Integration of an online safety programme into the computing curriculum and other cross-cutting subject matter, such as relationship, sexual, and health education. This approach provides an understanding of people's behaviour on online platforms and awareness of the risks of online interactions. Schools refer to online safety guidance on tools and frameworks for teachers, online harm legislation, the media literacy strategy and regulations, and on how to work with respected child safety experts (DfE, 2020c; DfE, 2020d).

Relevance to Indonesia

While some contexts may be different, the UK's experience can inform Indonesia's current practices of remote learning and remote learning support. Some ideas for consideration include the following:

- To benefit disadvantaged students, MoECRT *Guru Kunjung* programme, and the ICT in education research and education programme by Pusdatin, can refer to and adopt useful practices from the National Tutoring Programme and the EdTech R&D programme, respectively.
- An online safety programme has not been mainstreamed in Indonesian schooling. The approach and curriculum employed by the UK's DfE may be adapted and delivered for education at all levels in Indonesia.

7.2 China

During the COVID-19 pandemic, an emergency policy of ‘suspending classes without stopping learning’ has been put into effect by the Chinese Government (Zhang *et al.*, 2020). There are five main approaches in this policy:

- Provision of connectivity. In collaboration with a number of telecommunication companies, China’s Ministry of Education aims to provide fast and stable networks for online education.
- Teacher training. A resource package has been generated for teachers, which covers: online teaching strategies, ICT applications, school epidemic prevention, and local teacher training. All resources are free and can be accessed by the public.
- Online teaching is carried out, particularly by local authorities, due to differences of infrastructure among regions.
- Development of online teaching guidelines for schools. All education technology platforms are to provide free resources to schools. The government also requires schools to make full use of National Elite Online Open Courses, as examples. An online teaching evaluation system has been established.
- Working on a plan for schools re-opening beyond the pandemic. Regional risk levels, population density, school age, traffic conditions, and emergency responsiveness are to be considered prior to face-to-face instruction.

Other good practices have been observed (World Bank, 2020b), which include the mobilisation of online courses and resources, which makes more than 24,000 online courses accessible for university students. Twenty-two validated online course platforms, empowered by artificial intelligence, have been mobilised for primary and secondary education. Moreover, the Chinese Government also:

- improves online security by means of collaboration with the telecom sector and online platform service providers; and
- provides psychosocial support for COVID-19 knowledge dissemination and how to protect oneself from the virus.

Relevance to Indonesia

Similar to Indonesia’s context, China also encounters policy implementation challenges, among others: a lack of online teaching infrastructure, which is uneven across regions; inexperience of teachers, which affects unequal student learning outcomes; and a complex environment in the home.

However, a couple of good practices may be open for adaptation in Indonesia:

- China’s systemic approach to mobilising education technology platforms’ resources and online courses could be adapted and made more substantial in Indonesia’s remote learning programme as an emergency response during the pandemic. While Indonesia is applying and developing teaching and learning resources in special/emergency conditions, a more substantial collaboration with EdTech companies in Indonesia would be beneficial. This may include, for example, the alignment of curriculum-based content, as supported by these private stakeholders.
- The development of differentiated online teaching and learning guidelines for different types of schools, education levels, and infrastructure availability.

7.3 Brazil

Since 2008, Brazil has been implementing projects under a federal-led initiative called ConnectEd, with the aim that all schools at the public level across the country have connectivity. The objective is carried out on two fronts: first, checking whether it is actually realised; and, where it is, checking

that children have their own access, especially in small villages and inner cities/municipalities. Currently, 70% of 155,000 schools are connected, although 58% are limited to a speed of 2 Mbps. Around 19% of rural schools in the Amazon need a radio to be able to access information.

There are still 4.3 million students who do not have an internet connection at home to do remote learning in Brazil. Of these 4.3 million children, most are from the lower classes: this is very obvious because Brazil has both public and private education, and most children in the public sector come from the lower classes. To note, many places in Brazil are actually within internet coverage but the cost of access is very high and they do not own devices/smartphones. As 5,000 municipalities and more than 18,000 schools are in the public sector, this is challenging.

To optimise remote learning delivery in Brazil during the pandemic, the Brazilian Government is improving the capacity of teachers. Teachers have to deliver classes online; however, the number of teachers who actually know how to operate an online system are very few. Teachers feel very uncomfortable and insecure. Before discussing the types of content for students, teachers need greater strength, knowledge, and comfort. In response to the COVID-19 pandemic, innovative approaches by sub-national governments have been taking place. Different states are piloting subsidies for internet access and for providing iPads. Two states in Brazil – Amazonas and Pará – have launched a strategy relying heavily on the use of educational television. Guidelines for system managers, teachers, students, and parents have been developed as a reference to help remote learning take place.

To accelerate digital inclusion, in December 2020, the UK and the Brazilian governments signed a memorandum of understanding to accelerate digital transformation and innovation in public services delivery in the country from now to March 2023. Increased digital inclusion will facilitate job creation and digital entrepreneurship. To support the digital inclusion agenda, the DAP is now working with the telecom operator regulator in Brazil specifically on how to take connectivity to more remote areas through community networks.

Anticipating school re-opening, Brazil tracks students to mitigate learning loss and to identify students in need. This programme is delivered through a participative approach involving schools and communities, and is called School Active Search.

Relevance to Indonesia

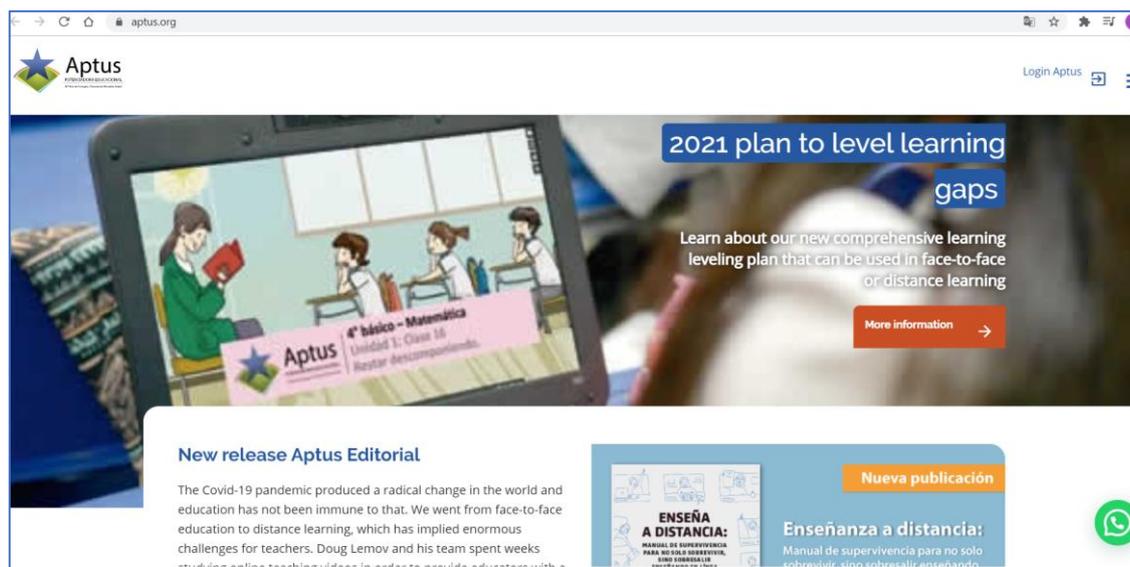
Indonesia and Brazil experience similar challenges in connectivity in remote areas and high internet costs for disadvantaged populations. Beyond Indonesia's National Digital Literacy Programme, the country may benefit from an inclusion programme to foster marginalised groups, such as those residing in remote and underdeveloped areas, to access formal and non-formal education. Such a programme can also provide support for women and girls who are at risk of being left behind in digital skills development programmes.

In relation to learning loss, the approach introduced by Brazil to reach out to students and monitor attendance, absenteeism, and drop-out might be employed by Indonesia to mitigate learning loss for vulnerable students and their needs, as a basis for designing personalised learning.

7.4 Chile

The Chilean Ministry of Education has made a notable move forward in providing content for children from age four to 13 years old. This content is hosted on the Aptus portal at www.aptus.org/, and is particularly good on pre-school instructions and teaching literacy for early grade children. The Aptus platform also allows teachers to seek help for distance learning support and to create their own class plans. This initiative has impacted 15% of schools in Chile. The country also offers the content to other countries in Latin America (World Bank, 2020b).

Figure 11: Chile's Aptus home page



Source: DepEd Chile, 2020

Relevance to Indonesia

The pre-school and kindergarten curriculum adaptation from the face-to-face to an online learning modality is a useful reference for Indonesia's MoECRT programme. The early grade literacy and numeracy digital resources could also be modified for Indonesia's literacy movement and for Rumah Belajar.

7.5 Digital skills development partnerships

In recent years there have also been a number of global digital skills partnerships convened by multilateral organisations, such as ILO and UNICEF. Two such partnerships which are particularly relevant to the Indonesian context are described below:

- **ILO-ITU Digital Skills Campaign.** The partnership between ILO and ITU aims at equipping 5 million youth with digital skills as a tool to enter the job market. It has been identified that most jobs nowadays need digital skills, on top of the core skills listed in the qualifications. However, these jobs have become difficult to fulfil because of a lack of digital skills. The campaign attempts to bridge the skill gaps in order to increase youth employability and job creation, and to spark innovation across sectors of the digital economy. Further, the movement is inviting all parties who are interested to introduce demand-driven digital skills curricula in education, apprenticeships, and other youth skills development programmes, to enhance the quality of teaching and the training of digital skills, to build links between digital skills training providers and employers to foster job placement, to deliver or fund digital skills development programmes for youth (including programmes targeting young women), and to implement digital skills projects at a country and regional level.
- **Gen-U Movement** is a global multi-sector partnership¹¹ that aims to meet the need for education, training, and employment opportunities for young people. Three main issues are being addressed: connectivity, digital skills, and job opportunities. In response to schools closing during the COVID-19 pandemic, Gen-U established a task force to connect all schools and learners to the internet, to scale up online and remote learning both for general education

¹¹ The Gen-U Movement is a collaboration among public and private sector players, including: ILO, UNESCO, the World Bank, the OECD, Microsoft, Unilever, PricewaterhouseCoopers, brac, International Youth Foundation, ISDB, Telenor, and SAP.

and TVET, to generate entrepreneurship, and to support youth as change-makers. As part of the Gen-U Movement, some countries have shown progress:

- o *India*: Yuwaah (Gen-U India) focuses on youth as active change-makers to equip them with skills to address job losses and school closures, and provides psychosocial support for those who are impacted by COVID-19.
- o *Bangladesh*: The country is scaling up remote learning using online or offline courses and platforms for upskilling and digitising apprenticeship and entrepreneurship programme components. It will provide 17 million young people with new opportunities for skills, employment, and entrepreneurship by 2024.
- o *South Africa*: A virtual Youth Consultative Meeting of African Youth Ministers on COVID-19 was hosted by the South African Government on 17 June 2020. Participants attending the meeting included AU Youth Envoy, UNECA Executive Secretary, and a Gen-U champion and UNICEF ED Fore. Gen-U, in collaboration with AUC, is fostering the 'Be a Responder' initiative, which involves African youth finding solutions and being part of communities involved in COVID-19 prevention.

Relevance to Indonesia

The Gen-U Movement is a significant movement promoted by multi-sector stakeholders, which will bring a sound platform for knowledge sharing and potential adoption of ideas. With the flagship programme in job creation, upskilling, and reskilling, and strengthening of *Sislatkernas*, Indonesia could consider 10 promising ideas to be incorporated into education and training programmes:

1. Digital connectivity and skills for youth.
2. The green economy, to equip off-grid schools with renewable energy
3. Job matching to harness data from labour markets to shorten the feedback loop between skills supply and demand.
4. Remedial learning within personalised technology-supported platforms.
5. Remote learning and work to expand access to remote learning and work opportunities for youth.
6. Mental health programme support for young people affected by conflicts.
7. Instant translation as a tool for accessing skills development opportunities and employment.
8. Data and measurement to use new forms of data to better measure young people's empowerment.
9. Portable certification with international recognition.
10. Innovative financing.

7.6 Mitigating learning loss during remote learning during the COVID-19 pandemic

Many countries have been implementing innovations in remote learning and digital literacy, identifying students who are left behind, and mitigating the educational impact resulting from remote learning. Countries have also prepared programmes for school re-opening. Anticipating a worsening situation of the COVID-19 pandemic in the future, countries have increased their investment in remote learning to prepare for further school closures: for example, identifying hard-to-reach communities, reviewing materials/content for blended (in-school and virtual learning) learning, and continuing to utilise remote learning platforms in offline teaching.

- *Uganda*: A pilot UNICEF pilot project in Uganda is adopting the 'teaching at the right level' approach, which focuses on individual assessment of children's literacy and numeracy skills; grouping children by ability level rather than age or grade; and innovative activities on reading and mathematics over a certain period of time. Similarly, Viet Nam targets ethnic minorities for special measures and acceleration of remote learning.

- *The United Arab Emirates* and some other countries (like Singapore, Pakistan, the Netherlands, and Hungary) provide remedial programmes for students who are impacted by and cannot cope with remote learning. Some other countries adjust the school calendar, shorten holiday times, and plan to add class time when schools re-open.
- *Honduras, the Cayman Islands, and Afghanistan*: Countries like Honduras, the Cayman Islands, and Afghanistan assess students' learning during school closure in preparation for school re-opening, in order to diagnose and meet students' needs.
- *Latin America and Africa*: Some Latin America and African countries monitor attendance, absenteeism, and drop-out as a strategy to bridge the transition from remote learning to school return. This strategy is deemed to be important to map students who are impacted by the pandemic, cannot follow remote learning, and are at risk of not returning to school.
- *Brazil*: Since millions of students are impacted by the pandemic, it is critical to identify and reach out to vulnerable students who are at risk of being out-of-school. Brazil tracks its students through a participative approach involving schools and communities (the School Active Search programme).

Relevance to Indonesia

Like other countries, Indonesia is mitigating learning loss resulting from school closures. The teaching at the right level approach is now being carried out by MoECRT and a diagnostic tool for student assessment is being designed and developed. Remedial programmes will need to be developed and implemented based on the teaching at the right level assessment results, to cater for the individual needs of students and to ensure no child is left behind. Vulnerable students who are at risk of not returning to schools will also need to be identified and a mechanism to address their needs will need to be established.

8 Conclusions and policy recommendations

Attention has been increasingly focused on the delivery of remote learning, which often cannot be solely delivered through online methods, due to diverse connectivity, technological, and human resources challenges. This chapter provides recommendations for policymakers and relevant actors seeking to implement an adaptive approach to, and to support innovations at the local level in, the remote learning and digital literacy strategy.

8.1 Component A: Development of a remote learning and digital skills and literacy strategy

8.1.1 Recommendations for policymakers

On the remote learning and digital literacy strategy

1. **MoECRT and sub-national education offices should sustain their agile/flexible policy and strategic directions at national and sub-national level.** Agile supporting policies and strategic directions are needed in response to the dynamic of remote learning during the COVID-19 pandemic. While a plan to re-open schools is put in place, the circumstances can vary for each district, school, and even student, due to parental permission to attend face-to-face learning. The possibility of reclosing schools should be anticipated due to possible rises in COVID-19 cases. Prompt alignment of sub-national government policy implementation also needs to be carried out. Support to sub-national governments and schools should be given through the role of MoECRT and COVID-19 task forces at national and sub-national level.
2. **In order to mitigate learning loss and enhance the learning environment, MoECRT should optimise remote learning through course designs for different modalities: online, blended, and offline learning. This will also prepare the education system to make use of an e-learning approach beyond the pandemic.** Ideally preceded by curriculum mapping or review, a more structured design for curriculum delivery will need to be carried out to provide options for educators, based on their needs and conditions. A structured open courseware or learning management system would be able to host learning interactions occurring in schools and to host downloadable resources. There need to be incentives to ensure this structured approach is used by schools managed by sub-national governments.
 - a. *Enabling factors:* Some considerations that need to be factored in might include connectivity, digital skills and literacy, and available learning resources. The design of different scenarios or approaches for remote learning will be useful beyond the pandemic, to ensure teachers continue enhancing instructions through e-learning in or beyond the classroom walls (e.g. use of a flipped classroom strategy).
 - b. *Effective instructions in learning through the use of digitalised learning resources:* Adaptation of printed materials into digital learning resources might be needed in many cases. Further, the online learning scenario can be enriched by making use of pdf-based reading materials within more interactive resources.
 - c. *EdTech use:* Making use of apt technology for different modalities can make the difference. While high-tech applications can be opted for in urban areas, lower-tech apps and means can be used for environments with limited or no connectivity.
 - d. *Personalised learning:* Students learn at different paces and with different styles, with no one (or a combination of) visual(s), audio, reading(s), or kinaesthetic

- approach(es) working best for all. To engage students – and more importantly to mitigate further learning loss – personalised learning is an imperative building block.
- e. *National assessment: Indonesia’s current national assessment can serve as a tool for monitoring the progress of students’ learning after the pandemic, as well as for mitigating learning loss and preparing for school re-opening. The tracking of students who are vulnerable to drop-out from schools can be considered to be embedded in the national assessment.*
 - f. *Integration of online safety in the curriculum: Thus far, an online safety programme has not been mainstreamed in Indonesian schooling. The approach and curriculum employed by the UK’s DfE may be adapted and delivered for education at all levels in Indonesia. This should be closely tied with the National Literacy Movement and sharpen it with integration of online safety and security in the curriculum.*
3. **While the ICT Competency Framework for Teachers framework has been adapted and implemented in MoECRT’s *PemBATIK* programme, both national and local efforts in equipping educators with pedagogical and digital skills and literacy need to be scaled up.** This will need to go hand in hand with other teacher improvement programmes, such as *Guru Penggerak*. A few steps might be considered:
- a. *Digital skills development: This should lay the foundation of digital skills and literacy for teachers. The *PemBATIK* programme needs to be scaled up to reach all teachers, offering trainings and mentorship in using technology at different levels of competencies. The training can also be repackaged to offer refresher and advanced courses for more advanced users of technology.*
 - b. *Strengthen programme synergies. The *PemBATIK* programme framework and its training curriculum can also be used to strengthen the *Guru Penggerak* programme in order to provide teachers with foundational skills in using technology for teaching and learning.*
4. **Teacher communities of practice are a strong vehicle for teachers’ improvement, including in the effort to develop their digital skills and literacy. MoECRT, along with sub-national governments, should reflect on the importance of teacher communities of practice, through the role of KKGs, MGMPs, and the Guru Berbagi and Guru Belajar forums.** With the newly established Guru Berbagi and Guru Belajar forums, MoECRT, along with sub-national governments and schools, needs to strengthen KKGs or Teacher Working Groups at primary schools, as well as MGMPs or Subject matter Teacher Working Groups at secondary schools. KKGs and MGMPs have been a mainstream programme over the years, since 2007, therefore they are already engrained in teacher practices in rural and remote areas. There may be a need for MoECRT to put together a more integrated and inclusive programme to support teacher communities of practice through online, blended, and face-to-face platforms.
5. **MoECRT and sub-national governments, along with the community (parents), needs to flag the awareness of the risks of children being online.** This should be closely tied with the National Literacy Movement, with a focus on integration of online safety and risks in the curriculum.
6. **MoECRT and sub-national governments should focus on supporting parents, possibly through coordinating parent support groups.** Parents’ role as ‘co-teachers’ at home has increased significantly during the remote learning process due to the COVID-19 pandemic. They have become the teachers that students can interact with directly. Therefore, providing strong support to parents is an imperative element in remote learning, including the following:

- a. *Providing academic support:* Scale up the effort to develop subject matter-based guidebooks/tutorials for parents, for them to guide their children in learning. While MoECRT has developed modules on literacy and numeracy for early childhood education and primary education for parents, parent support groups can foster experience exchange among parents and can convey practical guidance from educators. The development of modules for parents will also be beneficial for other subjects.
 - b. *Providing psychosocial support:* This support can be given particularly by school counsellors and local governments to parents through help desks in schools or school chat groups. Useful resources can be developed and forums for experience sharing among peer parents can also facilitate rich discussions around co-teaching their children at home and parenting, in order to cope with the circumstances arising during the pandemic.
7. **MoECRT should consider scaling up CAT as a diagnostic tool to assess potential learning loss that students may experience.** In this way, the results can be retrieved promptly, right after the test, to help school and teachers to decide on the support needed by their students in different contexts. Item banks can be pulled from those developed by Pusmenjar/MoECRT, or newly developed as needed. Good practices shared by the KIAT Guru programme in the use of CAT in remote schools can be considered to be adapted or replicated.
8. **The MoECRT Directorate General of Vocational Education can consider the following:**
- a. *Innovative mechanisms to deliver TVET:* This could include using blended learning modules, using simulators (for courses such as those for welding, driving, or construction-related trades), or using virtual reality/augmented reality to deliver TVET programmes. The delivery of courses through these channels can enhance the quality and relevance of TVET programmes. With the expansion of connectivity, such initiatives can also be rapidly scaled up. Such mechanisms will also be helpful for upskilling and reskilling programmes.
 - b. *Employ innovative mechanisms to ensure online assessment and certification of skills and TVET programmes.* This will not only reduce the backlogs in assessments and certifications during lockdown, but will also ensure that learning continues.
 - c. *Conduct online job fairs, to connect trainees to jobs (part-time or full-time).* This will ensure that those who undergo formal vocational training have access to career counselling and mentorship support online. Such a platform and such support can assist individuals in job searches (and help match the right job with the right individual), as individuals transition from school to work. This step will also help mitigate some of the livelihoods-related challenges which are likely to emerge as the COVID-19 pandemic subsides.

On connectivity:

1. **At the national level, coordination among MoECRT, MoCI, and MoV will need to be strengthened to accelerate connectivity provision in rural and remote areas.** The number of remote schools which need to be connected may increase due to nationwide implementation of the remote learning mode. With regard to the village fund window, villages can prioritise connectivity programmes where needed. With village funds, villages can procure facilities or use resources for maintenance.
2. **Continue the legacy of practices during the COVID-19 pandemic regarding the establishment of an umbrella agreement on quota data pricing and a disbursement**

strategy between MoECRT and telecommunication companies. In the longer term, beyond the pandemic, this strategy may also be undertaken at sub-national level for local governments seeking to work on arrangements to reduce quota data pricing when purchases reach economies of scale.

3. Learning from the Component B pilot projects supported by the DAP, FCDO, and the UK Embassy, some approaches can be considered:

- a. Community-based connectivity can bridge the access gap in remote learning. While the *Kuota Belajar* data package subsidy is provide, the need for remote learning may be greater than the data quota allocated. Due to challenges in accessing *Kuota Belajar* (e.g. *Kuota Belajar* quota disbursement delays, failure to confirm phone numbers), a demand-driven approach is most suitable for parents and students seeking to get connected.
- b. It is hoped that collaboration will continue to take place between MoECRT and the DAP, the FCDO, and the UK Embassy in resolving connectivity challenges for remote learning. In particular, regarding the DAP's pilot on community-based connectivity programme and the community network project, the latter will commence shortly and will aim to contribute to the acceleration of school connectivity access.
- c. District governments should consider shifting ownership of connectivity facility assets to the villages. This will allow villages to directly manage and maintain the connectivity facilities (e.g. VSAT towers and signal transmitters) using the available village funds.

8.1.2 Recommendations for educators

Online learning can potentially offer rich resources and an enabling environment for delivering instruction in interactive ways. This can promote higher-order thinking by students. In this regard, educators can do the following:

- 1. Establish a strong online presence while delivering online and blended learning to ensure students engage and are learning.** While the curriculum is being adjusted based on teaching and learning circumstances, it important to make sure that each theme/topic and session is effective.
- 2. Continue to create and adapt lesson plans that incorporate a teaching strategy for remote learning.** Many educators have shared their adaptation of lesson plans on the *Guru Berbagi* website as a starting point, and more can be pulled from the existing learning resources and books to fit online and blended learning. The role of school supervisors can be strengthened in terms of providing quality assurance to lesson plans developed by teachers.
- 3. Make use of various tools and apps to make teaching and learning more engaging and to promote higher-order thinking.** By adequate planning of lesson plans, the consideration of various online/digital learning tools can be incorporated into learning sessions.
- 4. Online training methodologies should continue to be used for upskilling and reskilling TVET educators,** to enable them to continuously upgrade their digital skills and remain up to date with rapidly changing technologies.
- 5. Educators must not only be trained on digital skills and the application of these skills in the classroom, but also on how to ensure data security and privacy.** Training

on these aspects needs to be included in any digital literacy skills training programme for educators.

8.2 Component B: Community-based connectivity

8.2.1 Recommendations for project implementers

1. **Continue with continuous reflective monitoring and evaluation of pilots to learn from the experience, to make further improvements.**
 - b. Common Room Network: Continue the development of national guidelines and a practical book on community-based internet, in collaboration with MoV and MoCI. In order to assess the impact of the pilot project in the future, to aid replication of the pilot project in other areas, consider conducting an impact evaluation study. This will include baseline and endline data collection in the project sites.
 - c. Institut KAPAL Perempuan: Address the challenges to sustaining and disseminating the approach with regard to the following:
 - Frequency setup: The radio broadcast encountered a challenge in obtaining an official permit, due to the frequency's proximity with that of an airport. A permit to change the frequency of the emergency radio has been granted by MoCI, but only for six months. Resolving the frequency issue by exploring the merging of the community radio of Sipurennu in Sabutung Island with that at Suara Pangkep run by Pangkep district is one solution. If possible, the remote learning broadcasts through radio sessions can be converted into offline digital-based podcasts and distributed through home visits by teachers.
 - Collaboration with the RRI: The remote learning programme offers a good approach for remote learning in remote areas and can potentially be broadcast nationally in cooperation with RRI.
2. **Common Room Network and Institut KAPAL Perempuan, as project implementers, should disseminate their efforts more widely to policymakers at sub-national government level, particularly where the project sites are located.**
 - a. The Common Room Network has reached out to other communities in Sukabumi and has received good responses in regard to replication (e.g. Ciracap subdistrict). A partnership with Sukabumi or neighbouring districts within West Java Province should be explored, to mainstream community-based connectivity.
 - b. Likewise, despite the challenge regarding the radio permit, the experience of using community radio as means to facilitate learning should be shared with Pangkep district and the South Sulawesi government.
3. **Continue the rural ICT camp and other dissemination efforts for broader outreach, to share the experience with wider key stakeholders at international, national, and sub-national levels.** This will include relevant international communities, policymakers (such as MoECRT, MoCI, and MoV), and sub-national governments and non-government institutions and communities.

8.2.2 Recommendations for national and sub-national governments

1. **Both national and sub-national governments should adapt the innovative approach of community-based connectivity.** The community-based internet implemented in Kasepuhan, Ciptagelar, and Sukabumi benefits from being a demand-driven initiative from

the community and provides good access for online learning. The community radio in Sabutung island can also be considered when other connections are not possible.

2. **Community funding is also a powerful source for enabling more sustainable connectivity.** This has been modelled by West Java Digital Services through collaboration with *Badan Usaha Milik Desa* (Bumdes) (Village-Owned Enterprises) and in the community-based connectivity project in Kasepuhan Ciptagelar.

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Annex A List of stakeholders consulted

Institution	Sub-unit	Inception	Engagement	Data collection
COMPONENT A: Development of a remote learning and digital literacy strategy for MoECRT				
1. National				
MoECRT	Kick-off: BKHM (Public Relations Bureau)	√		
	Kick-off: Directorate of Community Education and Special Education (Direktorat Pendidikan Masyarakat dan Pendidikan Khusus)	√		
	Directorate of Teachers and Education Personnel for Basic Education (Direktorat GTK Dikdas)	√		
	Centre of Data and IT (Pusdatin)	√		
	Directorate General of Culture (Direktorat Jenderal Kebudayaan)			√
Digital Inclusion for Telemedicine	Digital Access Programme/Team in Health Sector	√		
MoECRT (high-level meeting)	Directorate General of Vocational Education (Direktorat Jenderal SMK)		√	
	Directorate of Primary Education (Direktorat Sekolah Dasar)		√	
	Directorate of Upper-Secondary Education (Direktorat SMA)		√	
	Directorate of Special and Community Education (Direktorat SMA)		√	
	Minister's team (Staf Khusus Menteri)		√	
	Directorate of Partnership and Industry (Direktorat Kemitraan dan Penyelarasan DUDI)		√	
	Centre of Data and IT (Pusdatin)		√	
	Bureau of Cooperation and Public Relations (BKHM)		√	

MoECRT	Directorate of Community and Special Education (Direktorat Pendidikan Masyarakat dan Pendidikan Khusus)		√	
	Centre for Curriculum and Books (Pusat Kurikulum dan Perbukuan)			√
	Secretary of Research and Development and Books (Sekretaris Balitbang dan Perbukuan)			√
	Centre for Policy Research (Pusat Penelitian Kebijakan)			√
	Centre for Assessment and Learning (Pusat Asesmen dan Pembelajaran)			√
	Centre of Data and IT (Pusdatin) with pilot project implementers			√
	Directorate General of Vocational Education (Direktorat Jenderal GTK)			√
MoCI	Telecommunication and Information Accessibility Agency (BAKTI, Badan Aksesibilitas Telekomunikasi dan Informasi)			√
MoV	Directorate of Development of Socio-Culture and Village and Rural Environment (Direktorat Pengembangan Sosial Budaya dan Lingkungan Desa dan Perdesaan)			√
COMPONENT B: DAP project review and application of insights from Component A				
1. Project implementers				
Institut KAPAL Perempuan	Institut KAPAL Perempuan Team		√	
Common Room Network and Medco Foundation	Common Room Network and Medco Foundation teams		√	
2. Beneficiaries and policymakers				
Rural Innovation Hub Cipateglar – Community-based education and training	Teachers, parents, students, and other direct beneficiaries at community level (i.e. students, citizens)			√
Radio Komunitas Sabutung - Community-based education and training	Teachers, parents, students, and other direct beneficiaries at community level (i.e. community radio, women group)			√

Remote learning in vocational high schools	Teachers, parents, students at school level			√
Remote learning in urban areas (DKI Jakarta)	Teachers, parents, students at school level			√
Local governments (DKI Jakarta, West Java, South Sulawesi)	West Java Province (Communication and Information Office, Culture Office, Village Offices, and West Java Digital Service-JDS)			√
	Sukabumi District (Education Office, Communication and Information Office, Culture Office, and Village Offices)			√
	Pangkep District (Education Office, Communication and Information Office, Culture Office, and Village Offices)			√
	DKI Jakarta Province (Education Office), Sudin Pendidikan Jakarta Utara			√

Annex B Timeline and activities

	Oct-20	Nov-20				Dec-20				Jan-21				Feb-21				Mar-21				Apr-21				May-21		Jun-21							
	26/10/20	09/11/20	16/11/20	23/11/20	30/11/20	07/12/20	14/12/20	21/12/20	28/12/20	04/01/21	11/01/21	18/01/21	25/01/21	01/02/21	08/02/21	15/02/21	22/02/21	01/03/21	08/03/21	15/03/21	22/03/21	29/03/21	05/04/21	12/04/21	19/04/21	26/04/21	03/05/21	10/05/21	17/05/21	24/05/21	31/05/21	07/06/21	14/06/21		
Key Activities																																			
Stage 1: Inception																																			
Project kick-off with Programme Lead (British Embassy) and MOEC	█																																		
Stakeholder mapping		█																																	
Desk review and analysis of secondary data		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
Sharing of inception report with client and incorporation of feedback																																			
Deliverables : Inception Report																																			
Stage 2: Stakeholder engagement & data collection																																			
Stakeholder engagement meeting (Component A)																																			
Interviews with Component A respondents																																			
Interviews with Component B respondents																																			
Development of debriefing note																																			
Deliverable: Debriefing note																																			
Stage 3: Analysis and report writing																																			
Component A																																			
Data analysis and development of strategy framework																																			
Synthesis and sharing of key findings and development of strategy framework																																			
Development of review report																																			
Sharing of review report with client and incorporation of feedback																																			
Deliverable: Remote Learning and Digital Literacy Review Report and Report Pointers (for presentation purpose)																																			
Component B																																			
Detailed analysis of two pilot projects (including identification of insights from Component A to inform the 2 pilot programmes)																																			
Development of learning brief																																			
Sharing of draft learning briefs with client and incorporation of feedback																																			
Deliverables: Learning brief and pointers (for presentation purpose)																																			
Stage 4: Dissemination																																			
Support to dissemination workshop																																			