



# Teachers' Digital Literacy in the East Asia and Pacific Region

Spotlight on Cambodia, China, Lao PDR,  
Solomon Islands and Vanuatu

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### Cover photo:

At Royal Crusade High School in Stung Treng, Ms. Mechpring Sereny (20) guides Panha (18) through Generation Future's Local Life Skills Education programme, empowering youth to tackle issues like climate change and gender equality in STEM. @UNICEF Cambodia/2023/Nick Sells

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# Acronyms and abbreviations

|                     |                                                                      |
|---------------------|----------------------------------------------------------------------|
| <b>AI</b>           | Artificial intelligence                                              |
| <b>ASEAN</b>        | Association of Southeast Asian Nations                               |
| <b>CDPF</b>         | Capacity Development Partnership Fund                                |
| <b>CLICC</b>        | Computer Laboratory and Internet Community Centre                    |
| <b>CPD</b>          | Continuing Professional Development                                  |
| <b>EdTech</b>       | Educational Technology                                               |
| <b>EMIS</b>         | Education Management Information System                              |
| <b>FGD</b>          | Focus Group Discussion                                               |
| <b>GDP</b>          | Gross Domestic Product                                               |
| <b>HSP</b>          | Home-schooling package                                               |
| <b>ICT</b>          | Information And Communication Technology                             |
| <b>ICTSU</b>        | Information and Communication Technology Support Unit                |
| <b>IoT</b>          | Internet of Things                                                   |
| <b>KII</b>          | Key Informant Interview                                              |
| <b>LCP</b>          | Learning Continuity Program                                          |
| <b>LDC</b>          | Least Developed Country                                              |
| <b>MEHRD</b>        | Ministry of Education and Human Resources Development                |
| <b>MoES</b>         | Ministry of Education and Sports                                     |
| <b>MoET</b>         | Ministry of Education and Training                                   |
| <b>MoEYS</b>        | Ministry of Education, Youth and Sport                               |
| <b>NGO</b>          | Non-Governmental Organization                                        |
| <b>OECD</b>         | Organisation for Economic Co-operation and Development               |
| <b>PPP</b>          | Public–Private Partnership                                           |
| <b>SDG</b>          | Sustainable Development Goal                                         |
| <b>STEM</b>         | Science, Technology, Engineering And Mathematics                     |
| <b>TPACK</b>        | Technological Pedagogical Content Knowledge                          |
| <b>TRBR</b>         | Telecommunications Radiocommunications and Broadcasting<br>Regulator |
| <b>TVET</b>         | Technical And Vocational Education And Training                      |
| <b>UAP</b>          | Universal Access Policy                                              |
| <b>UNICEF EAPRO</b> | UNICEF East Asia and Pacific Regional Office                         |
| <b>VR</b>           | Virtual Reality                                                      |





# EXECUTIVE SUMMARY

As societies embrace a rapidly evolving digital landscape, digital skills have become essential for meaningful engagement and participation for all nations. In the face of a global learning crisis, compounded by the COVID-19 pandemic's impact on education, the education sector recognizes the integral role digital skills play in preparing for the digital era. Governments across the East Asia and Pacific region have striven to address digital inequalities and enhance digital literacy through initiatives such as the Bangkok Statement 2022 and the Declaration on the Digital Transformation of Education Systems in ASEAN (ASEAN, 2022; UNESCO, 2022b). These efforts emphasize the importance of teachers in developing the digital literacy skills needed for remote, online and blended teaching. Teachers can and must play a pivotal role in equipping future generations with the 21st century skills they need to successfully engage in multiple activities, including civic life, education, healthy living and employment.

This report aims to provide a detailed analysis of the digital education landscape in East Asia and the Pacific, with a particular focus on the role of teachers in equipping the next generation with the skills necessary to participate in the labour market. Building on the findings of UNICEF's 2023 study on girls' digital literacy in the East Asia and Pacific region (UNICEF EAPRO, 2023a), this study provides insights on teachers' digital skills and literacy to inform policy development in five countries: Cambodia, China, Lao PDR, Solomon Islands and Vanuatu.

The study used three main qualitative research methods: a comprehensive review of existing literature; key informant interviews (KIIs); and focus group discussions (FGDs) with teachers, teacher educators, and education authority representatives. The data were enhanced with qualitative polls. A critical part of this report is the inclusion of the voices of practising educators discussing digital skills and providing concrete examples of successful strategies and approaches that have been implemented in the five countries. This teacher-centred approach provides practical insights for educators looking to improve their digital teaching methods, and offers actionable advice to teachers and policymakers seeking to enhance learning outcomes in digital skills.

The findings highlight the importance of gender-responsive pedagogies for online safety and inclusivity, and identify geographical disparities in digital education resources as a common challenge across all countries. Rural areas, in particular, often need to catch up to their urban counterparts regarding access to digital tools and internet connectivity, as seen in Cambodia and Vanuatu. Distinct patterns in the digital literacy of teachers across the five countries were revealed in the study. Several critical themes became apparent, underscoring the importance of empowering teachers with digital skills to enhance the overall learning experience. Three key areas emerged as clear priorities: the acquisition of digital skills by teachers, the diverse pedagogical approaches employed, and the integration of gender-responsive strategies and online safety measures.



## Teachers' acquisition of digital skills

The report identifies unique approaches to teachers' acquisition of digital skills in the five countries. The research revealed diverse levels of digital proficiency among teachers, directly influencing the quality of student learning outcomes. Regions with more digitally literate teachers offer interactive and engaging learning experiences for their students.

Insights into effective professional development programmes and training initiatives shed light on the strategies employed to enhance teachers' digital literacy. Notably, China places a distinct national emphasis on digital literacy, as seen in initiatives like Digital China and teachers' adoption of advanced technologies in the classroom, including virtual reality (VR) and artificial intelligence (AI). In contrast, Cambodia, Solomon Islands and Vanuatu lack structured professional development, heavily relying on self-directed learning.

The study also delves into challenges faced by teachers in acquiring digital skills. Constraints on the time available to learn and improve digital skills were a recurrent challenge for teachers in China. Teachers in Cambodia and Lao PDR highlighted a challenge with language accessibility in digital platforms and online educational resources. In Solomon Islands and Vanuatu, limited access to digital tools, poor internet connection in rural areas, and expensive internet access hamper effective integration of digital skills into teaching.

Government support, both in budget allocation and regulatory measures, emerged as a crucial factor in the integration of digital skills. Teachers urged governments to provide digital infrastructure and emphasized the need for substantial formal training in digital skills, such as how to successfully integrate digital tools in different subjects and how to make learning more interactive for students. They expressed a need for information and communication technology (ICT) tools and the integration of resources into the curriculum.

The report also identified that a supportive community is essential, allowing teachers to seek assistance and fostering parental involvement in supporting students' learning journeys in digital skills. This aligns with the broader discussion about the impact of geographical disparities in digital education resources, emphasizing the importance of collaboration and community engagement in achieving effective digital education.

## Pedagogical approaches to digital skills learning

Across the five countries, the report highlights successful examples, showcasing innovative methods of incorporating technology to enrich lesson plans and create interactive learning experiences.

The findings show the wide variety of pedagogical approaches to teaching and practising digital skills. China stands out with innovative methods supported by national digital competence frameworks, contrasting with more basic, resource-constrained approaches in Cambodia and Lao PDR. The global impact of the COVID-19 pandemic significantly accelerated the adoption of digital teaching methods across all countries, with China making substantial advancements owing to superior infrastructure and access to digital tools.

The study addresses challenges related to the integration of digital tools in the unique educational landscapes of each country, providing practical insights and solutions. A prevalent challenge is the geographical disparity in digital infrastructure and education resources, particularly in rural areas of Cambodia, Solomon Islands and Vanuatu. This uneven distribution adversely affects access to digital tools and internet connectivity, resulting in inconsistent learning experiences and outcomes for students across different regions.

## Gender-responsive pedagogies and online safety

The study underscores the importance of gender-responsive strategies in digital literacy across diverse cultural contexts. The research revealed disparities between boys' and girls' experiences in digital education, particularly in regards to access to digital devices, confidence levels, attitudes and learning approaches. The study examines how teachers in the five countries address these gender disparities and create inclusive learning environments.

Additionally, the report explores how educators integrate online safety measures into their teaching, focusing on responsible online behaviour and cybersecurity. Across the five countries, some teachers discussed how they actively engage in educating students about cyber safety, even using real-life cases. Teachers stressed the need for gender mainstreaming, especially in pedagogy training. Online safety, particularly for girls, emerged as a priority, emphasizing the need for formal training to raise awareness of potential risks like cyber-bullying.

Tailored recommendations are provided to promote gender equality and online safety in the specific educational environments of the five countries. The report emphasizes the need for comprehensive strategies that integrate gender-responsive pedagogies and online safety into the digital skills curriculum across all countries.

In conclusion, this study serves as a valuable tool for policymakers, schools and stakeholders in the East Asia and Pacific region as they navigate the details of digital education in each country's unique situation and provide the support and professional development that teachers need. The practical findings contribute not only to improving teachers' digital skills but also to creating positive and inclusive digital skills learning environments customized for each country's specific needs.

The report concludes with recommendations for the development of flexible and context-specific policies that take into account the unique challenges faced by each country, and emphasizes the importance of investing in teacher training and professional development to ensure that educators have the skills and knowledge necessary to effectively teach and practise digital literacy.









# Introduction



As technology continues to reshape the educational landscape, the proficiency of teachers in digital skills and digital literacy becomes increasingly crucial.

## Digital skills

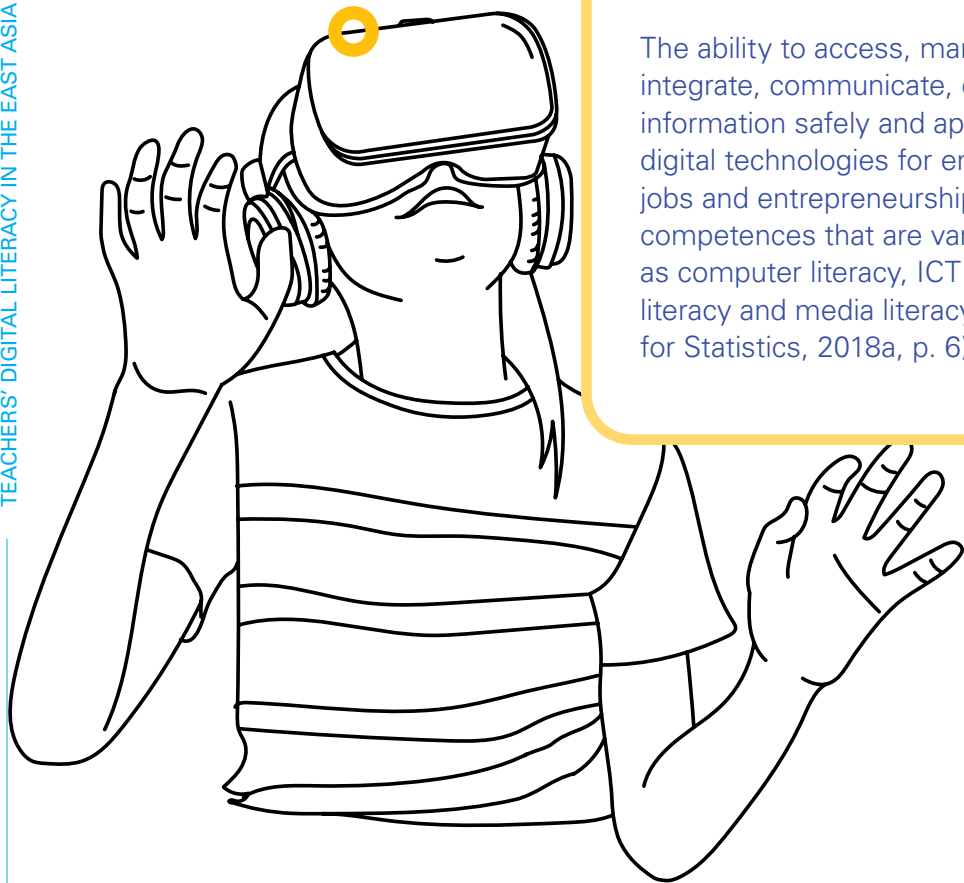
is defined by UNESCO (2023b) as:

A range of abilities to use digital devices, communication applications, and networks to access and manage information. They enable people to create and share digital content, communicate and collaborate, and solve problems for effective and creative self-fulfilment in life, learning, work, and social activities at large.

## Digital literacy

is:

The ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies for employment, decent jobs and entrepreneurship. It includes competences that are variously referred to as computer literacy, ICT literacy, information literacy and media literacy. (UNESCO Institute for Statistics, 2018a, p. 6)



Traditional teaching and learning approaches are being replaced by problem-based learning, which encourages students to develop the reflective and critical thinking essential for transferable skills (UNICEF EAPRO, 2019c). Digital skills are instrumental in shifting teaching methods from traditional, teacher-centred approaches to student-centred ones by enhancing student engagement, collaboration and critical thinking.

**Table 1. Digital skills outlined in Sustainable Development Goal (SDG) indicator 4.4.1**

| Skill level     | Activity                                                                                                                                                                                                                                                                                           |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic skills    | <ul style="list-style-type: none"> <li>• Copying or moving a file or folder</li> <li>• Using copy and paste tools to duplicate or move information within a document</li> <li>• Sending emails with attached files</li> <li>• Transferring files between a computer and other devices</li> </ul>   |
| Standard skills | <ul style="list-style-type: none"> <li>• Using basic arithmetic formulas in a spreadsheet</li> <li>• Connecting and installing new devices</li> <li>• Creating electronic presentations with presentation software</li> <li>• Finding, downloading, installing and configuring software</li> </ul> |
| Advanced skills | <ul style="list-style-type: none"> <li>• Writing a computer program using a specialized programming language</li> </ul>                                                                                                                                                                            |

Source: UNESCO Institute for Statistics (2018b).

In facing a learning crisis, where millions of children and young people are not developing the skills they need to break out of poverty, the education sector recognizes the critical role digital skills play in preparing them for the digital era. Nearly 60 per cent of 10-year-olds in low- and middle-income countries suffer from learning poverty – meaning they are unable to read and understand a simple story. This learning crisis has been exacerbated by the COVID-19 pandemic, although it is widely acknowledged that many of the challenges in the sector predate it (World Bank et al., 2022).

Numerous initiatives by governments and global development organizations have emerged to tackle the crisis. Among these, the Reimagine Education initiative and the Transforming Education Summit stand out as noteworthy efforts at a global scale aimed at advancing and transforming education in response to the demands of the digital age.

As part of the Reimagine Education initiative, UNICEF is urging global partners to join a movement focused on revolutionizing education. The initiative calls for the prioritization of the most vulnerable children and young people in gaining access to quality digital skills learning, stressing the need for relevance and accessibility tailored to each individual's education level, language and abilities. It advocates for the protection of education funding, with a specific focus on meeting the needs of the most vulnerable. Additionally, it encourages decision-makers to drive innovation and investment through cross-community collaborations involving governments, businesses, community groups, industry leaders and more (UNICEF, n.d.).



Similarly, in 2022, the United Nations Secretary-General convened the Transforming Education Summit in response to the “triple-headed crisis heightened by the COVID-19 pandemic: a crisis of equity and inclusion, a crisis of quality and a crisis of relevance” (UNESCO, 2022g). At the summit, thought leaders, policymakers and educators converged to address the challenges and opportunities posed by the digital revolution. The resulting global education transformation initiative centres on securing high-level political commitment and engaging cross-sectorally at the country level. Stemming from national consultations in 163 countries, it involves extensive commitment from Member State governments. Emphasizing the pivotal role of youth, as outlined in the Youth Declaration, the initiative calls for increased, equitable and efficient investment in education through the Call to Action on Educational Investment. Complemented by global initiatives, it aims to garner greater financial, technical and political support for country-level implementation, responding to various calls to action launched at the summit. This comprehensive strategy aims to drive transformative changes in education globally.

Teachers can contribute to preparing future generations for success in a digitally connected world by staying updated on technology, integrating digital literacy into teaching, and fostering critical awareness of digital ethics, online safety and responsible digital citizenship. This study builds on the findings of UNICEF’s 2023 study on girls’ digital literacy in the East Asia and Pacific region (UNICEF EAPRO, 2023a) to gather insights on teachers’ digital skills and literacy in five countries: Cambodia, China, Lao PDR, Solomon Islands and Vanuatu.

In the aftermath of the COVID-19 pandemic, governments across the East Asia and Pacific region are addressing digital inequalities and enhancing digital literacy through initiatives such as the Bangkok Statement 2022 and the adoption of the Declaration on the Digital Transformation of Education Systems in ASEAN. Around the world, the accelerated pace of digital transformation in education as a consequence of the pandemic has brought about a renewed emphasis on learning digital skills. In addition to enhancing digital skills broadly, education systems need to apply a gender lens to teaching through gender-responsive pedagogy, to ensure that girls and boys are on equal footing to participate in digital transformation (UNICEF EAPRO, 2023a).

Among other findings, the girls’ digital literacy study, which focused on children in Cambodia, Indonesia, Lao PDR, Timor-Leste and Vietnam, revealed that despite the crucial roles teachers could play in facilitating their students’ digital skills acquisition, their involvement was minimal or even non-existent; rather, teachers operated as gatekeepers to girls’ online access because of concerns about online safety and a lack of confidence in their own digital literacy levels. In addition, the study found that the learning process was hindered by low digital literacy levels among teachers, limited availability of technology and devices, challenges with network and internet connectivity, and the high cost of data and devices, particularly in the Pacific. Prevailing sociocultural norms served as a further barrier to children’s opportunities to build digital literacy and skills, especially for girls. Addressing these challenges is necessary to empower all children to safely advance towards more sophisticated digital competencies (UNICEF EAPRO, 2023a).



# Objective

In response to the findings of the girls' digital literacy study, UNICEF EAPRO elected to conduct country-level case studies to explore the following fundamental areas:

- **Teachers' acquisition of digital skills** – to understand how teachers gain digital skills, which they can then pass on to their students.
- **Pedagogical approaches to digital skills learning** – to explore teachers' methods and strategies to facilitate digital skills learning among students.
- **Gender-responsive pedagogies and online safety** – to explore teachers' comprehension of gender-responsive pedagogies in the context of digital skills acquisition. This includes focusing on online safety concerns.

The insights gained from this study, existing data and the girls' digital literacy report will help inform policymaking decisions to support teachers in leveraging technology to bridge the digital divide,<sup>1</sup> to improve learning experiences for students, particularly girls, and to foster the development of a technologically competent and confident teaching workforce capable of enhancing the skills of a future-ready generation of learners.

UNICEF EAPRO is committed to bridging the digital divide by harnessing the potential of digital solutions in the East Asia and Pacific region. This study on teachers' digital skills and literacy holds great importance as it sheds light on the region's ongoing journey towards embracing digital advancements. The rise of mobile network operators and improved internet coverage paved the way for this transformation, further accelerated by the challenges posed by the COVID-19 pandemic. This study underscores UNICEF's dedication to advancing digital literacy skills and learning platforms while safeguarding the well-being of children and caregivers in online and remote learning spaces.

<sup>1</sup> The ITU (2022) defines the digital divide as: "The gap between those who have access to and use information communication technologies (ICTs) including internet connectivity, digital literacy skills, and internet-enabled devices, and those who do not."

## CHAPTER

## 1

# Methodology

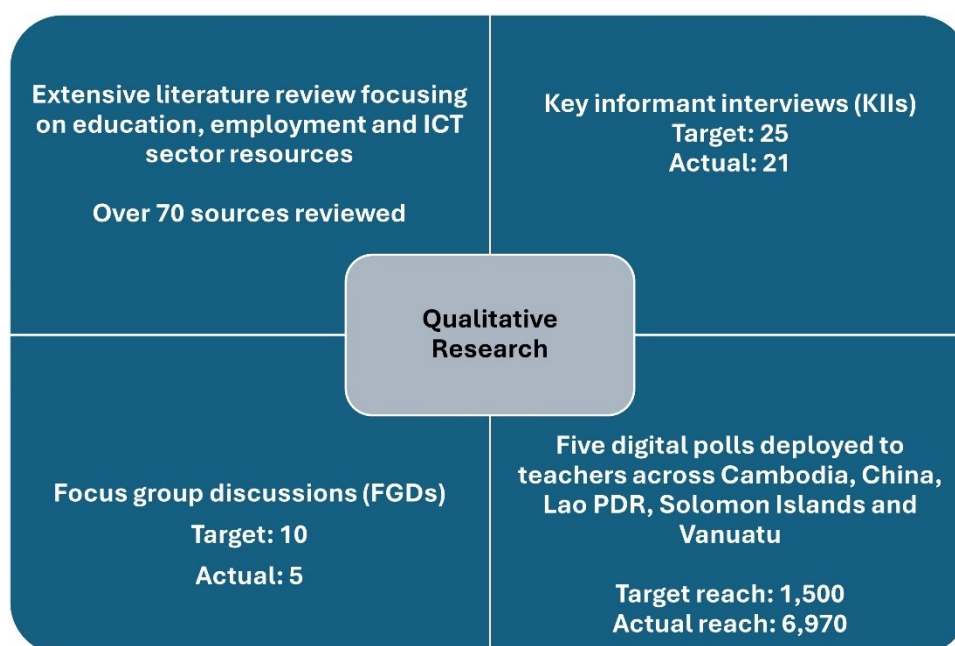
This study employed a qualitative research approach to provide the depth needed to understand the contextual intricacies and complexities of teachers' experiences, shedding light on their perspectives, barriers and challenges. This holistic approach ensured that the research gathered a nuanced understanding of teachers' digital skills acquisition and teaching practices, which enhanced the study's ability to provide teacher-centred recommendations and insights that demonstrate the diverse contexts and challenges across the East Asia and Pacific region.



## 1.1 Research design and data-collection methods

The research involved a thorough review of existing literature, along with key informant interviews (KIIs) and focus group discussions (FGDs) to gather qualitative data. Additionally, separate from the KIIs and FGDs, a series of five polls were conducted to collect further data supporting the qualitative findings.

**Figure 1. Qualitative research design**



### Literature review

The literature review systematically analysed more than 70 sources of targeted literature related to education, employment and the ICT sector, offering insights into the broader policy context. These sources included academic research articles, policy documents, government reports, publications from international organizations, case studies, and empirical studies. This review provided a contextual backdrop for the study.

### KIIs and FGDs

The qualitative data collection included KIIs and FGDs with teachers and teacher educators from the five countries, in addition to education authority representatives in the Solomon Islands. The education authority representatives provided the national and rural-level perspective in the absence of geographical diversity among research participants due to connectivity challenges. These in-depth conversations provided diverse perspectives and experiences, offering valuable insights into the digital skills landscape in each country.

The KIIs and FGDs were conducted using video-conferencing platform Zoom. To maintain methodological rigour, the researcher created and deployed open-ended questions to ensure a standardized and comprehensive framework for eliciting participants' responses during the KIIs and FGDs. This design aimed to facilitate in-depth analyses while maintaining consistency in the types of questions posed and the range of insights obtained, giving

sufficient space for teachers, teacher educators and education officials to express their thoughts and perspectives.

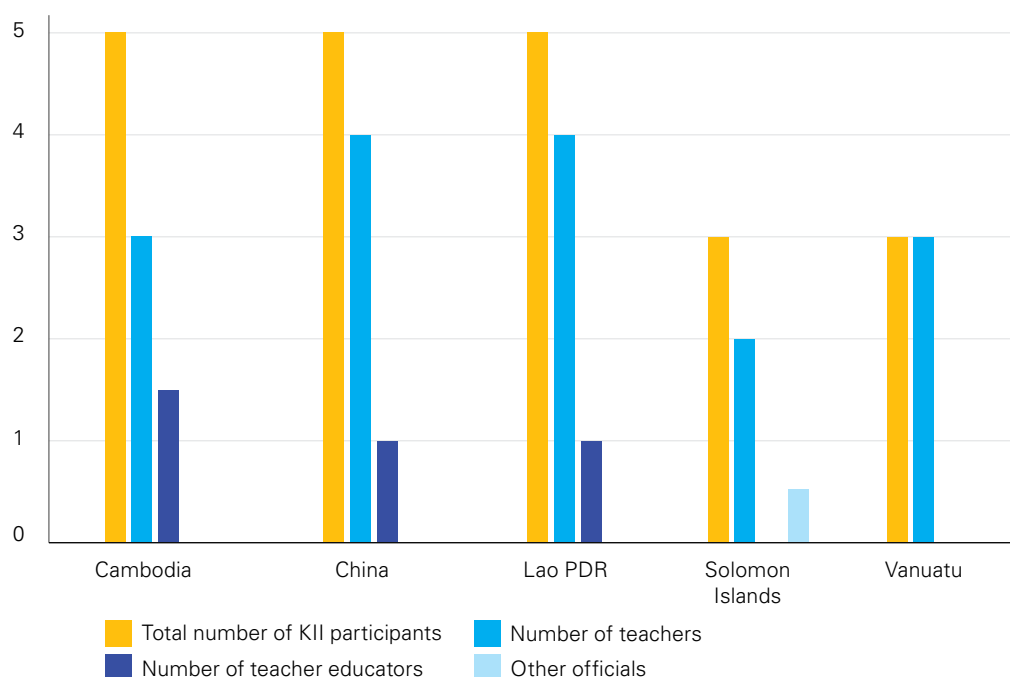
The data were collected over a six-week period from 15 September to 29 October 2023. The target sample size for the KIIs was five per country, comprising teachers and teacher educators. The FGD target was two per country, with five people participating in each FGD. While these targets were met in Cambodia, China and Lao PDR, in Solomon Islands schools closed early for the academic year owing to the nation's hosting of the Pacific Games in November and December 2023, and Vanuatu was hit by Cyclone Lola on 24 October, rendering data collection untenable with regards to achieving the FGD composition sought.

Altogether, 21 KIIs and five FGDs were conducted across the five countries. The following tables and figures provide a detailed overview of the number of KII and FGD participants per country, and a breakdown of the sample composition based on their respective roles.

**Table 2. Key informant interviews (KIIs)**

| Country                | Total number of KII participants | Number of teachers | Number of teacher educators | Other officials    |
|------------------------|----------------------------------|--------------------|-----------------------------|--------------------|
| <b>Cambodia</b>        | 5                                | 3                  | 2                           | -                  |
| <b>China</b>           | 5                                | 4                  | 1                           | -                  |
| <b>Lao PDR</b>         | 5                                | 4                  | 1                           | -                  |
| <b>Solomon Islands</b> | 3                                | 2                  | 0                           | 1 school inspector |
| <b>Vanuatu</b>         | 3                                | 3                  | 0                           | -                  |

**Figure 2. KII participants**

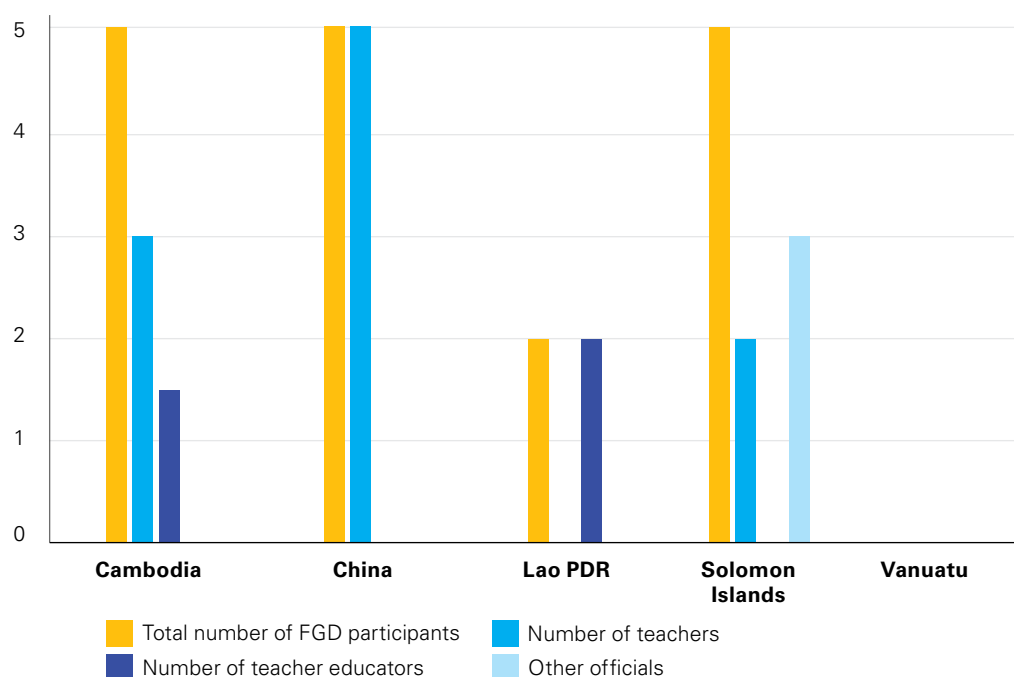




**Table 3. Focus group discussions (FGDs)**

| Country                | Total number of FGD participants | Number of teachers | Number of teacher educators | Other officials              |
|------------------------|----------------------------------|--------------------|-----------------------------|------------------------------|
| <b>Cambodia</b>        | 5                                | 3                  | 2                           | -                            |
| <b>China</b>           | 5                                | 5                  | 0                           | -                            |
| <b>Lao PDR</b>         | 2                                | 0                  | 2                           | -                            |
| <b>Solomon Islands</b> | 5                                | 2                  | 0                           | 3 ministry officials (MEHRD) |
| <b>Vanuatu</b>         | 0                                | 0                  | 0                           | -                            |

Note: MEHRD is the Ministry of Education and Human Resources Development, Solomon Islands.

**Figure 3. FGD participants****Table 4. Research participant profiles**

| Country         | KIs    |                                                      |                              | FGDs   |                          |                              |
|-----------------|--------|------------------------------------------------------|------------------------------|--------|--------------------------|------------------------------|
|                 | Gender | Subject taught/ job role                             | Years of teaching experience | Gender | Subject taught/ job role | Years of teaching experience |
| <b>Cambodia</b> | Male   | Child development psychopathology (Teacher Educator) | 13                           | Female | ICT (teacher educator)   | 11                           |
|                 | Female | Teacher educator                                     | 16                           | Male   | Physics & chemistry      | 8                            |
|                 | Female | Mathematics                                          | 8                            | Female | English                  | 13                           |

| Country         | KIs    |                                             |                                    | FGDs   |                                    |                                    |
|-----------------|--------|---------------------------------------------|------------------------------------|--------|------------------------------------|------------------------------------|
|                 | Gender | Subject taught/<br>job role                 | Years of<br>teaching<br>experience | Gender | Subject<br>taught/ job<br>role     | Years of<br>teaching<br>experience |
| Cambodia        | Female | Social studies                              | 22                                 | Female | Physics & mathematics              | 10                                 |
|                 | Male   | Physics & chemistry                         | 18                                 | Female | Teacher educator                   | 8                                  |
| China           | Female | ICT                                         | 24                                 | Female | ICT                                | 22                                 |
|                 | Male   | History                                     | 10                                 | Female | Chemistry                          | 15                                 |
|                 | Male   | Mathematics                                 | 18                                 | Female | Mathematics                        | 17                                 |
|                 | Female | Teacher educator                            | 10                                 | Female | Mathematics                        | 11                                 |
|                 | Female | Physics                                     | 1                                  | Male   | Mathematics                        | 13                                 |
| Lao PDR         | Female | Lao language & history                      | 12                                 | Male   | Fundamental ICT (teacher educator) | 11                                 |
|                 | Male   | English                                     | 23                                 | Male   | ICT (teacher educator)             | 10                                 |
|                 | Female | ICT                                         | N/A                                |        |                                    |                                    |
|                 | Female | English & ICT                               | 15                                 |        |                                    |                                    |
|                 | Female | Lao language and culture (teacher educator) | N/A                                |        |                                    |                                    |
| Solomon Islands | Male   | Computer studies                            | 2                                  | Female | Mathematics & computer studies     | 21                                 |
|                 | Male   | School inspector                            | N/A                                | Female | Computer studies                   | 2                                  |
|                 | Male   | Computer studies                            | 17                                 | Female | Ministry official                  | N/A                                |
|                 |        |                                             |                                    | Male   | Ministry official                  | N/A                                |
|                 |        |                                             |                                    | Male   | Ministry official                  | N/A                                |
| Vanuatu         | Male   | Mathematics                                 | 8                                  |        |                                    |                                    |
|                 | Male   | ICT                                         | 2                                  | -      |                                    |                                    |
|                 | Female | English                                     | 25                                 |        |                                    |                                    |

### Polls

To enhance the qualitative data, the researcher distributed a series of five Yes/No polls through teacher networks in each country using the preferred digital platform within that context. The structured Yes/No format aimed to streamline responses and enable descriptive analysis. This approach allowed for overarching conclusions and generalizations, providing a foundation for drawing broad-based inferences. The polls increased the robustness of the study's findings by broadening study participation to a larger pool of education stakeholders across different areas in all five countries, contributing to a more comprehensive understanding of the research topic.

The target for the polls was 1,500 collectively across the five countries, with a minimum of 50 responses from each country. This target was met in every country except Vanuatu, where responses did not exceed 18 owing to the natural disaster that hit the country in October 2023. The study received a total of 6,970 responses across the five countries. Table 5 shows the number of poll responses received per country.

**Table 5. Number of poll responses**

| Country                | Total number of poll responses |
|------------------------|--------------------------------|
| <b>Cambodia</b>        | 5,962                          |
| <b>China</b>           | 730                            |
| <b>Lao PDR</b>         | 54                             |
| <b>Solomon Islands</b> | 206                            |
| <b>Vanuatu</b>         | 18                             |

## 1.2 Sampling techniques and participant selection criteria

The researcher asked UNICEF country offices and education ministries to select teachers to participate in the study, aiming for as much diversity as possible considering the following characteristics: gender, age, geography, subject matter taught, school level taught, years of professional teaching experience and ICT skill level. The study also aimed to include at least one teacher educator from each country. For the KIIs and FGDs, the study used a purposive sampling strategy, where participants are selected based on specific characteristics or criteria relevant to the research question, rather than aiming to reflect or represent the general population. For the polls, the only criterion was that the teachers, teacher educators, or education authorities had to be registered on the platform used to deploy the poll; anyone who received the poll was able to participate.

## 1.3 Ethical considerations

Consent to participate was an important ethical principle in this research study (Resnik, 2020). At the beginning of each KII, the researcher read out a permission request that briefly outlined the research details and assured participants that their responses were voluntary and would be kept confidential. Participants were also reassured that their real names would never be used or written anywhere unless they expressly granted permission. This step was necessary to help promote candour while discussing a subject that might be considered politically sensitive. All participants granted their permission to participate in the study and for their quotes to be used if needed, with any potentially identifying information removed.

## 1.4 Limitations

The study aimed to explore teachers' experiences in acquiring and teaching digital skills, including their use of gender-responsive pedagogies and online safety measures. Limitations that could affect the study – such as language and availability of literature – were mitigated with a series of measures to enhance the depth and reliability of findings.

### **Language**

One of the primary constraints was the language barrier when literature in English was not readily available (Paré & Kitsiou, 2017). The use of advanced digital translation tools helped the researcher to overcome this significant limitation to some degree, allowing access to literature in the languages of the five countries.

### **Remote collection**

Implementing studies remotely can pose limitations, particularly when researching complex local educational practices and cultural nuances. Access to data sources can be restricted and reliance on digital communication may lead to a loss of the context that is crucial in qualitative research (Burroughs, 2017). Mitigation measures for conducting this study remotely included spending additional time before and after data-collection activities to answer further questions from research participants, building camaraderie with interpreters, obtaining additional information sources from UNICEF country offices, and enabling all collaborators in this process to speak their minds even if unrelated to the study, in order to build strong rapport at a distance.

### **Limited numbers**

The limited number of KIs and FGDs might not sufficiently represent teachers' diverse experiences and viewpoints across different regions within the five countries (Nyumba et al., 2018). To mitigate against gaps identified in the KIs and FGDs, reference to various literature sources was included throughout the analysis and interpretation phases. Specifically, when discussing geographical disparities in digital skills within China, the lack of direct data was counteracted by incorporating insights from existing documents and studies on the topic. This approach broadened the understanding and provided a more comprehensive analysis.

Furthermore, owing to participants' time constraints, FGDs and KIs in Solomon Islands were combined. This could lead to a dilution of the data richness. Separate FGDs and KIs would allow for more focused discussions and in-depth exploration of individual experiences. By combining these methods, the study could diminish the depth and specific insights that each method offers independently (World Bank, 2020).

### **Interpreters**

The use of interpreters in the study introduced another layer of complexity. While interpreters are invaluable in bridging language gaps, their presence inherently introduces the risk of misinterpretation or loss of nuanced information (Köksal & Yürük, 2020; Papatsimouli et al., 2023). Misinterpretations or omissions during translation can sometimes generate incomplete or skewed data (Barocas & Selbst, 2016).

Mitigation measures included providing clear guidelines at the start of data collection for interpretation expectations and cultivating friendly collaboration with interpreters before data collection to lower their affective filter, which can enhance interpretation accuracy. Additionally, the researcher talked with the interpreters to understand their skill level as well as to orient them on the research process.

### **Question format**

Another limitation of the study stemmed from the variations in responses to the same question obtained from different data-collection methods. This was particularly notable for



questions about receiving training and defining digital skills confidence levels. Yes/No polls potentially elicit responses that lack thorough consideration of actual abilities, as validation of the response is not required; this possibility emphasizes the challenge of determining how respondents interpret and process questions and responses (Farmer et al., 2022). Conversely, initiating an interview with an open-ended question such as “What is your understanding of digital skills?” fostered a more thoughtful and nuanced tone, revealing a richer perspective and leading to people thinking more carefully before responding.

### ***Selection bias and sample population***

Participants for KIs and FGDs were chosen by government officials. This selection process may have skewed the representation of perspectives. Recognizing this limitation is essential for accurately interpreting our findings (Millard et al., 2023). To address the selection bias in this study, careful attention and prioritization was given to comparing findings with those from the literature review.

Owing to the non-representative nature of the sample, the findings are not generalizable to the wider population. Therefore, any conclusions drawn should be viewed as specific to the surveyed group and not indicative of broader trends or behaviours. This limitation is crucial to keep in mind when considering the applicability and implications of the survey results in wider contexts.

Caution should also be taken when interpreting the poll surveys, particularly because they were conducted using online digital devices. While this method allows for convenience and further reach (Bailey, 2023), it biases the sample towards teachers who possess a certain degree of digital literacy, as they are more likely to engage with online platforms and respond to such polls. Consequently, the findings may not fully represent the views of less digitally literate teachers, potentially skewing our understanding of the broader educational landscape.

### ***Availability of peer-reviewed literature***

Another limitation was the narrow body of research available on the Pacific Islands. This led to a potential gap in capturing comprehensive, country-specific insights and understanding for Vanuatu and Solomon Islands, or the nuances of digital skills acquisition and teaching practices across the different islands (Aydin et al., 2023).

Lastly, the uneven distribution of existing peer-reviewed literature across the studied countries posed a challenge. The abundance of sources for China, Cambodia and Lao PDR contrasts with the limited peer-reviewed research available specifically for Vanuatu and Solomon Islands (rather than literature focusing on the Pacific Islands as a whole). This disparity may have led to an imbalanced view of the issues at hand, as the study could be affected by the lack of linkages to be made between insights that surface and established research (Nuñez et al., 2019; OECD, 2020b). This unevenness could result in a skewed understanding of regional differences and similarities in digital skills acquisition and teaching practices among teachers (Xiao & Watson, 2019). To help decrease the impact of this constraint on the study findings, UNICEF EAPRO and the UNICEF country offices who helped facilitate the study were regularly encouraged to share studies, academic research, and other relevant sources that could be integrated into the study.

CHAPTER

2

# The digital education landscape in East Asia and the Pacific



## 2.1 Overview

In an increasingly digital world, young people's success often depends on digital skills, which they need in order to participate in the modern labour force and to make well-informed decisions on matters that affect their lives (UNICEF EAPRO, 2021a). Digital technology has significantly changed how teachers teach and students learn, improving the quality of education and access to education worldwide. However, the right conditions need to be implemented before teachers and students can reap the benefits of digital technology (Tondeur et al., 2019). Teachers need professional and systematic training to reshape their educational philosophies, enhance digital skills, and boost work productivity (Zhou et al., 2023).

While some teachers have acquired basic technological literacy, others have yet to develop technical and pedagogical knowledge, or the skills to integrate technology with pedagogy (Garba et al., 2015). Furthermore, context-specific technology and digital solutions are needed for the particular challenges faced by different communities – such as teachers with limited digital skills, lack of appropriate infrastructure, and insufficient numbers of schools with digital tools (UNICEF, 2023a). Before the COVID-19 pandemic necessitated remote learning, the use of ICT in education across most East Asian and Pacific countries was limited, and many countries lacked specific educational policies for its integration into education (UNICEF EAPRO, 2022).

### **COVID-19 pandemic**

The COVID-19 pandemic accelerated the adoption of online teaching methods in East Asia and the Pacific, pushing teachers to enhance their digital competencies (Adedoyin & Soykan, 2020). Before the onset of the pandemic, education in the East Asia and Pacific region was largely characterized by traditional methodologies and practices. In this context, traditional education often involves face-to-face classroom interactions, teacher-led instruction, physical textbooks, and a conventional assessment framework (UNESCO, 2015). The sudden emergence of the pandemic disrupted this conventional educational landscape and led to a rapid and widespread shift towards alternative modes of learning (UNICEF EAPRO, 2020b).

The East Asia region was the first to experience the impact of COVID-19, leading to school closures as an immediate safety measure. These closures persisted for an average of 151 days from February 2020 to August 2021 and significantly disrupted the education of over 800 million children in the East Asia and Pacific region (UNICEF EAPRO, 2021b). The closures severely affected the provision of high-quality education, hindering the attainment of expected learning results, diminishing the quality of student participation, and adversely affecting learners' general health and well-being. This impact was particularly pronounced among students who were already economically disadvantaged or marginalized in other ways, and students with disability (UNESCO, 2022a). In response to the challenges posed by the pandemic, governments in the region intensified efforts to prioritize digital skills learning and address the inequalities, in order to improve digital literacy, especially in rural areas (UNICEF EAPRO, 2023a).

### Post-pandemic progress

Even after the pandemic, though, digital literacy and ICT integration in classrooms vary across the region, owing to disparities in both economic development and resources dedicated to ICT in formal education (UNICEF EAPRO, 2022). While middle- and high-income countries demonstrate widespread ICT use in education, many developing nations lack integration, especially with more advanced forms. Consequently, children in developing countries often gain more ICT skills informally outside the classroom than within it (UNESCO, 2016).

**China** has made notable strides in advancing digital literacy, particularly in bridging the digital divide among older demographics (Famin et al., 2021). Despite this progress, however, urban/rural disparities persist (Gao & Li, 2022). Meanwhile, **Lao PDR** and **Cambodia** have been proactively tackling significant challenges in their education systems and are in the early stages of integrating ICT in education and improving digital literacy and educational access through technology (Asian Development Bank, 2022b; GPE, n.d.). However, they also continue to grapple with challenges of uneven resource distribution between urban and rural areas (Pang et al., 2022). **Solomon Islands** and **Vanuatu** have also made progress in digital education but encounter difficulties with limited digital infrastructure and resources, particularly in remote areas (Sharma et al., 2018). Despite the challenges, governments and organizations in the region are committed to enhancing digital literacy and digital innovation, especially in educational contexts, with a renewed focus on bridging the digital divide (UNESCO, n.d.).

As economies become more digital, the traditional curriculum has to evolve to emphasize basic digital literacy, recognizing its significance for economic and social growth (UNESCO, 2019b). Digital skills learning can contribute significantly to advancing Sustainable Development Goal (SDG) 4 to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (UNESCO, 2022a).

### Opportunities for women and girls

Digital technology can also offer women and girls opportunities to overcome hurdles they may face in the physical world (Tyers-Chowdhury & Binder, 2021). UNICEF reports that while digital spaces offer new opportunities for adolescent girls and young women, they also generate new ways to harm them and to amplify existing forms of abuse. Therefore, equipping them with knowledge and skills for navigating the internet and using digital devices safely is essential (UNICEF, 2023a). Adolescent girls and young women must be supported to develop advanced digital skills so that they can create online content and digital technologies that reflect their lives and that are devoid of gender bias (UNICEF, 2023a). As a recent UNICEF report notes:

*Including girls' voices is essential when developing any digital products or services, or any digital development programmes. Putting girls front and centre in the design process not only ensures that the products and services meet their needs and their digital realities, but it also builds girls' skills and confidence in doing so.*

(Tyers-Chowdhury & Binder, 2021, p. 19)

### ***Insights from the girls' digital literacy report***

The girls' digital literacy report that preceded this study found that although adolescents are active online, they tend to engage in only basic digital activities, and there is a notable lack of progression to more advanced digital competencies, especially among girls when reaching adolescence. The research uncovered a notable issue in the prevailing approach to digital literacy education, which leans heavily towards teacher-centred, theoretical methods and is essentially gender-neutral. Coupled with the fact that many teachers themselves possess limited digital literacy skills, this situation disproportionately affects the quality of education received by girls.

The study also found that girls and boys primarily learn through social learning with peers, and that parents and teachers play little to no role in supporting their children's digital skills acquisition. Rather, they operate as gatekeepers to girls' online access because of concerns about online safety and lack of confidence in their own digital literacy. However, it is widely acknowledged that teachers can help students develop digital skills to perform well in a digitally connected world (UNICEF EAPRO, 2023a). Several studies have highlighted the significant role that teachers play in promoting digital transformation in education, suggesting that the success of digital education systems relies on the number of teachers equipped with digital literacy and skills (Esteve-Mon et al., 2020; UNESCO, 2022c).

### ***Literature review***

The literature review that follows in section 2.2 seeks to paint a comprehensive picture of the contexts in which the countries are undertaking digital transformation in their education systems and enhancing their teachers' digital competencies. The objective is to cultivate an understanding of the factors that may influence teachers' acquisition of digital skills and their pedagogical approaches to teaching these skills. Chapter 3 then follows up with analysis of the data collected directly in KIs and FGDs for this research.

The literature review examines the context of digital education in Cambodia, China, Lao PDR, Solomon Islands and Vanuatu. The selection of these countries for the study was influenced by their differing levels of economic development, access to technology, and educational systems. Moreover, their geographical diversity, spanning from the Southeast Asian mainland to the Pacific Islands, introduces an additional layer of complexity in terms of digital infrastructure, connectivity and resources. The review analyses more than 70 sources of targeted literature related to education, employment and the ICT sector, offering insights into the broader policy context. These sources include academic research articles, policy documents, government reports, publications from international organizations, case studies and empirical studies.

### ***GSMA Mobile Connectivity Index***

One of the data sources used is the GSMA Mobile Connectivity Index (GSMA, n.d.). This index measures the performance of 170 countries – representing 99 per cent of the global population – against key enablers of mobile internet adoption: infrastructure, affordability, consumer readiness, and content and services with available data, from 2014 to 2022. Countries are ranked in five clusters with similar enabling environments:



- **Leaders** (score above 80) generally perform very well across all enablers and have very high levels of mobile internet penetration.
- **Advanced** (score above 65) perform well on three enablers and usually have high penetration rates.
- **Transitioners** (score above 50) perform well on at least two enablers.
- **Emerging** (score above 35) countries perform fairly well on one or two enablers but show room for improvement on others.
- **Discoverers** (score below 35) show room for improvement across all four enablers and have correspondingly low levels of mobile internet penetration.

To compare the rankings of the countries in this study, Table 6 presents the scores of other countries within the South, Southeast and East Asia region. These scores provide valuable insights into the performance of each country in the context of the broader region.

**Table 6. Mobile connectivity by country**

| Cluster              | Country                | Score       |
|----------------------|------------------------|-------------|
| <b>Leader</b>        | Singapore              | 93.1        |
|                      | South Korea            | 83.7        |
|                      | Japan                  | 84.6        |
|                      | <b>China</b>           | <b>80.7</b> |
| <b>Advance</b>       | Malaysia               | 73.9        |
|                      | Thailand               | 73.8        |
|                      | Brunei Darussalam      | 71.2        |
|                      | Indonesia              | 67.9        |
|                      | Mongolia               | 65.5        |
| <b>Transitioners</b> | Philippines            | 63.0        |
|                      | India                  | 61.3        |
|                      | <b>Cambodia</b>        | <b>54.6</b> |
|                      | <b>Lao PDR</b>         | <b>52.5</b> |
|                      | <b>Vanuatu</b>         | <b>51.1</b> |
| <b>Emerging</b>      | Timor-Leste            | 48.1        |
|                      | Myanmar                | 47.5        |
|                      | Pakistan               | 44.9        |
|                      | Papua New Guinea       | 43.4        |
|                      | <b>Solomon Islands</b> | <b>38.9</b> |
| <b>Discovers</b>     | Afghanistan            | 30.1        |

Source: GSMA, n.d.

## 2.2 Country contexts



### Cambodia

#### i. Socio-economic context

Cambodia is a Southeast Asian country with a population of over 16 million (GlobalEDGE, 2023; World Bank, 2023a). Cambodia's government is a mix of democracy and monarchy, with a king as the top leader and a prime minister running the government. The World Bank (2023a) notes:

*Over the two decades before COVID-19 struck in 2020, Cambodia blossomed economically. Having reached lower middle-income status in 2015, it set its sights on attaining upper middle-income status by 2030. Thanks to garment exports and tourism, Cambodia's economy grew at an average annual rate of 7.7 per cent between 1998 and 2019, making it one of the fastest-growing economies in the world.*

#### ii. Digital infrastructure

The GSMA Mobile Connectivity Index ranks Cambodia at 54.6, in the Transitioners cluster, which indicates that Cambodia is in a transitional phase regarding mobile connectivity. While it has strong mobile broadband coverage, the affordability and availability of digital content and services present areas for improvement. The consumer readiness score indicates a population that is relatively prepared for and engaged with mobile services (GSMA, 2023).

#### iii. Structure of the education system

During a difficult period in Cambodia's history under the Khmer Rouge in the 1970s, several events led to the complete dismantling of its education system, with educational infrastructure repurposed or destroyed and educators targeted for execution, with a staggering 75 per cent loss of the teaching force (Ayres, 2000; Heng & Sol, 2023). Cambodia's education system has since experienced notable improvements driven by extensive efforts from the government and stakeholders in the last 5 to 10 years (Heng & Sol, 2023). Gross school enrolment at the primary level in Cambodia was 110 per cent in 2022, according to the World Bank collection of development indicators (World Bank, 2023a).<sup>2</sup>

#### iv. Prevalence of EdTech

In recent years, Cambodia has taken significant strides in integrating technology into its education system. Cambodia has recognized the transformative potential of technology education, particularly in the wake of global advancements in the digital landscape. This

<sup>2</sup> The total enrolment in primary education, relative to the age-specific population, surpassed 100 per cent owing to under-age and over-age students.

recognition gained particular prominence during the COVID-19 pandemic (UNESCO, 2020c). Nonetheless, Cambodia's education system faced substantial challenges during the pandemic, particularly concerning the adoption of digital technologies (UNESCO, 2020b).

A survey conducted across Cambodia at the start of the pandemic, involving 67 districts in 15 provinces of the country, found that key constraints on implementing successful distance learning programmes included unequal access to ICT infrastructure at home (53 per cent), insufficient internet (47 per cent), and skill limitations of caregivers in using ICT (33 per cent) (UNICEF Cambodia et al., 2021). Notably, 76 per cent of respondents had access to smartphones, but only 32 per cent reported having access to the internet. There were large disparities in access levels, with education administrators having the highest access to smartphones (93 per cent) while students and caregivers had the lowest levels (69 per cent).

As schools closed to curb the spread of the COVID-19, the country transitioned to distance learning. This shift had multifaceted consequences (Bhatta et al., 2022). First, it had an immediate negative impact on student learning and well-being, particularly among children. Second, teachers and school personnel encountered significant hurdles in adapting and using ICT skills for effective distance teaching. Third, the delivery of continuous learning programmes faced difficulties, resulting in suboptimal learning outcomes and a noticeable decline in education quality. Lastly, the pandemic severely disrupted the implementation of Cambodia's Education Strategic Plan 2019–2023 (Sothy, 2021).

#### v. *Government initiatives*

To address these challenges, multiple stakeholders in Cambodia, including the Ministry of Education, Youth and Sport (MoEYS), UNESCO and non-governmental organizations (NGOs), collaborated to develop online video lessons focused on mathematics and Khmer literacy for early-grade students, and to promote digital adult literacy programmes. They also worked on upgrading technical and vocational education and training (TVET) initiatives through digital skills learning platforms (UNESCO, 2020b). These interventions aim to support digital and distance learning during school closures and post-pandemic recovery, with a focus on gender equality and empowerment.

Despite these initiatives, challenges such as the digital divide and inequitable access to education persisted, especially in remote and vulnerable communities. The Capacity Development Partnership Fund (CDPF) Phase III (under UNICEF) has supported MoEYS and the Department of Information Technology to enhance the digital skills learning environment for educators and education staff through the development of a high-quality, integrated online platform for continuous professional development (CPD), which began operation at the end of 2023. The CDPF now supports a harmonized CPD online platform that is integrated with the country's human resources management platform and hosts accredited and non-accredited courses for teachers, teacher educators, school administrators, education officials and other education staff across MoEYS (World Education, 2023a; UNICEF, 2024). UNICEF also supported the development of remedial materials, student online videos and resources.

In addition, Cambodia is exploring several other innovative solutions, including the Khmer Digital Literacy Programme. Collaboratively crafted by MoEYS, Kampuchea Action for Primary Education, and Meta, this initiative aims to elevate digital skills among Cambodian educators and students, equipping them for the demands of the digital age. It introduces the 'We Think Digital' curriculum, which empowers teachers and students in New Generation Schools and fosters collaboration among key stakeholders to amplify digital skills learning opportunities within these schools (Kampuchea Action to Promote Education, 2023; Pradeep, 2023).<sup>3</sup>

Regarding technology laws, policies, plans and regulations, Cambodia has issued key policies – such as the 2022 EduTech Roadmap and the 2018 Policy and Strategy on ICT in Education – that emphasize the integration of ICT within the education system (UNESCO, 2023i). Furthermore, MoEYS is now developing a digital education strategy for schools, supported by UNICEF and other partners (Ministry of Education, Youth and Sport, Cambodia, 2019; UNICEF Cambodia, 2021b).

These initiatives aim to provide students with essential digital skills and promote innovation and creativity among graduates (UNESCO, 2023i). The infrastructure for technology in schools is also a priority. Approximately 11 per cent of schools have an ICT teacher (with specific responsibilities), and 94 per cent of primary schools have electricity, but only 29 per cent are connected to the internet (Bhatta et al., 2022). The government has set goals to ensure schools can access electricity, computers and internet connectivity. New Generation Schools, particularly, are encouraged to become 'smart classrooms' equipped with technological resources. Additionally, Cambodia is working to develop e-learning and open and distance learning programmes to provide alternative channels for education delivery, particularly in response to the challenges posed by the COVID-19 pandemic (UNESCO, 2023i).

The development of technology competencies among both learners and teachers is a focal point of Cambodia's education system. The curriculum emphasizes digital literacy skills for students, while teachers are expected to incorporate ICT into their teaching methods. The government is also working to strengthen science, technology, engineering and mathematics (STEM) education and encourage female students to pursue STEM subjects (Chhoeurm, 2020; UNICEF EAPRO, 2023b). In terms of governance, MoEYS plays a central role in leading ICT services in education. Coordination mechanisms involve various ministries, including the Ministry of Post and Telecommunications and the Ministry of Economy and Finance, to ensure infrastructure and connectivity support for educational institutions (Ministry of Post and Telecommunications, Cambodia, 2022).

#### *vi. Other education system challenges*

However, despite all these efforts, Cambodia still faces several intricate challenges that must be addressed. One of the primary concerns is the need for more adequately trained

<sup>3</sup> New Generation Schools in Cambodia, established by MoEYS, are innovative educational reforms focused on creating autonomous public schools. These schools, launched in 2015, aim to improve educational quality and relevance, with a particular emphasis on developing cognitive competencies in areas like STEM, ICT and critical thinking, preparing students for the 21st century workforce (Donaher & Wu, 2020).

teachers, which raises questions about the quality of ICT education in the country. Additionally, limited access to electricity, deficient ICT infrastructure, and constrained internet availability for students further hinder the development of educators' and students' ICT skills (Lai, 2019). Technical support and access to resources also still need to be improved.

Despite government initiatives to promote ICT in education, including plans for digital transformation (Heng, 2019), a digital divide between urban and rural areas remains. It is reported that, as of 2023, 25.3 per cent of the population in Cambodia is urban and 74.7 per cent is rural (DataReportal, 2023). This urban/rural divide affects internet access, as the lack of infrastructure in many rural areas is a significant barrier. While urban areas have better internet connectivity, many rural areas do not have any access, making internet connection difficult even if it is affordable (DataReportal, 2023; Ministry of Education, Youth and Sport, Cambodia, 2022). This suggests that rural schools still face considerable challenges in embracing ICT.

Teacher competence also emerges as a critical factor affecting ICT integration, emphasizing that willingness and ability to apply knowledge and skills significantly influence efficacy. A 2022 study that examined Cambodian teachers' readiness for using ICT in rural upper secondary schools found that all 109 teachers surveyed had a positive attitude towards using ICT in their teaching, yet over 40 per cent had never once used ICT in their teaching. This was despite 75 per cent of the teachers having received ICT training when they were at teacher-training college (Pang et al., 2022). These findings underscore the urgent need for comprehensive teacher training and clear ICT policies to enhance teachers' digital readiness, especially post-COVID-19, both of which are addressed in the new Teacher Policy Action Plan (2024–2030) (NEP, 2023).

Research into the digital skills and attitudes of teachers in Cambodia over the last 10 years (Hun Ravy, 2019) suggests that Cambodian teachers generally exhibit a positive disposition towards integrating ICT into education, with a particular eagerness to receive ICT training. However, their overall ICT competence is moderate, although they demonstrate a higher level of pedagogical ICT competence than overall ICT competence (Ravy, 2019). The relationship between their attitudes and their competence underscores the importance of improving digital skills to foster positive attitudes and effective ICT integration. The literature highlights ongoing efforts to enhance teachers' digital competencies, emphasizing the need for comprehensive training and support from educational authorities to bridge the competence gap and facilitate ICT integration in Cambodian education subjects (Ministry of Education, Youth and Sport, Cambodia, 2018; Ravy, 2019; UNICEF EAPRO, 2023b).

Pang, Nhor and Em's (2022) study delves into Cambodian teachers' ICT readiness, particularly in light of the COVID-19 pandemic. It aligns with prior research, affirming that Cambodian teachers, regardless of their urban or rural setting, maintain a positive attitude towards ICT integration in their teaching. This positive stance reflects their eagerness to use technology to enhance student learning, laying a promising foundation for potential ICT integration. However, new challenges in the post-COVID-19 era have arisen (Pang et al., 2022; UNESCO, 2020b). While many teachers have received



ICT training, it predominantly covers basic computer skills, indicating a gap in the comprehensive ICT knowledge and skills necessary for effective integration (Pang et al., 2022).

Cambodia's education system is actively embracing technology to equip its students and educators with essential digital skills aligning with the nation's ambitious Pentagonal Strategy (2023). This national development plan significantly emphasizes digitalizing government services, with a special focus on the education sector (Royal Government of Cambodia, 2023). By embracing this digital shift, Cambodia aims to empower its students and educators with vital digital competencies. However, there are still areas that need support in order for them to reach their full potential. These include improving infrastructure, teacher training, curriculum development, and digital literacy initiatives.

As Cambodia's education system incorporates digital technologies, it will be crucial that robust online protection frameworks for safeguarding students and educators are introduced. The Cambodian Child Online Protection Guidelines for the Digital Technology Industry, spearheaded by the Royal Government of Cambodia through the Ministry of Post and Telecommunications, and supported by the Global Partnership to End Violence against Children and UNICEF Cambodia, offer comprehensive directives for the digital technology industry to prevent and respond to online child exploitation and other forms of digital violence against children. These guidelines, developed in alignment with the National Action Plan to Prevent and Respond to Online Child Sexual Exploitation 2021–2025, emphasize the imperative of creating a safe digital environment in educational settings. Incorporating these guidelines into curriculum development, teacher training and digital literacy initiatives is essential for ensuring a secure and supportive learning atmosphere in the digital age (Ministry of Post and Telecommunications, Cambodia & UNICEF Cambodia, 2023).



## China



### *i. Socio-economic context*

China is home to over 1.4 billion people (O'Neill, 2023). Its landscape is diverse, and it has a thriving and robust economy that ranks among the world's biggest and most diversified (World Bank, 2023b). China is a one-party socialist republic led by the Communist Party of China (Britannica, n.d.). China's economy has been growing consistently since 2009 and is now classed as an upper-middle-income country (World Bank, 2023b; Yang et al., 2018).

China has experienced a significant surge in urbanization over the past few decades. In 1978, the urban population in China was 170 million, and the urbanization rate was

17.9 per cent. By 2020, the urban population had increased to 902 million, indicating that, in 2020, 63.9 per cent of China's total population resided in urban areas (Han et al., 2023). China's economic transformation, incorporating elements of capitalist principles, has positioned it as one of the world's fastest-growing economies and a top exporter (BBC Monitoring, 2023b). The government places significant focus on digitalization and education for national development, leading to ambitious policies and investments in these areas (Roberts et al., 2021).

## *ii. Digital infrastructure*

Statista reports that China has one of the largest and fastest-growing telecommunications markets globally (Statista, 2023b). The country has achieved widespread coverage of mobile networks, with a high penetration rate of mobile phone usage. Additionally, China has made significant progress in developing broadband internet services, enabling connectivity and digitalization across various sectors (Zhang, 2021). The GSMA Mobile Connectivity Index ranks China at 80.7, in the Leaders cluster, indicating that China is excelling in all mobile connectivity and usage (GSMA, 2023).

## *iii. Structure of the education system*

Notably, China has high literacy rates, with a literacy rate for adults (people aged 15 years and above) of 97 per cent in 2020 (UNESCO Institute for Statistics, n.d.). Education in the country is divided into three categories: basic education, higher education and adult education (OECD, 2018b). By law, each child must have nine years of compulsory education: six years of primary school, and three years of junior secondary education (Kan, 2019). China's education system is extensive and well structured, covering various stages from preschool to higher education and offering diverse pathways, including technical and vocational education and training (TVET) and non-formal education programmes (Kan, 2019). There is coordination between the Ministry of Education and technology-related ministries, with digital skills progressively integrated into the curriculum (Jiang et al., 2022), as seen in the development of initiatives such as Smart Education of China (Ma & Cortes, 2023).

## *iv. Prevalence of EdTech*

China is at the forefront of the global digital education transformation and has a well-established and robust education system that surpasses its regional counterparts. Since the 1990s, a series of national initiatives and education ICT policies have been implemented to lay a solid foundation for digital education (Hu & Zhang, 2020). China's education policy has focused on improving teachers' digital literacy, promoting the application of information technology in education, and providing comprehensive guidelines for teachers' digital skills enhancement (Yang et al., 2023).

## *v. Government initiatives*

Through the Ministry of Education, China's government has taken substantial steps to advance digital skills development among teachers and to integrate ICT skills in education provision, through initiatives such as Education Informatization 2.0 (Yan & Yang, 2021) and the Teacher Education Revitalization Action Plan (2018–2022) (Ministry of Education of the People's Republic of China, 2018). UNESCO (2023f) notes that the Education Informatization 2.0 action plan:

*aimed to ensure that by 2022, teaching applications were provided to all teachers, learning applications covered all school-age students, and digital campus constructions covered all schools (primary, secondary and high). The IT application level and the level of information literacy of teachers and students were to be improved, and a large-scale platform of 'Internet + Education' [was] to be built.*

The Teacher Education Revitalization Action Plan focuses on improving rural teachers' capacity, and establishing teacher education bases. It emphasizes targeted poverty alleviation in education, particularly in remote and impoverished areas, and addressing digital disparities (Ministry of Education of the People's Republic of China, 2018).

Furthermore, the National Medium- and Long-term Education Reform and Development Plan (2010–2020) also highlights the significance of digital skills development among teachers. This plan, released by the Ministry of Education in 2010, provides a comprehensive framework for the development of education in China (Ministry of Education of the People's Republic of China, 2010). It emphasizes the need to improve the quality of education through the integration of ICT and the enhancement of teachers' digital skills. To assess the progress made in implementing these policies, the Ministry of Education released a progress report in 2020. This report provides an overview of the achievements and challenges faced in advancing digital skills development among teachers and integrating ICT skills in education. It highlights the efforts made by the government to provide training programmes, resources and support for teachers to enhance their digital skills (Gu & Li, 2022). This emphasis on teachers' professional digital competence reflects a forward-looking approach to education in the digital age (Yan & Yang, 2021).

Internet access and digital devices are common in schools; for instance, virtual reality (VR) tools and digital pens are used to supplement traditional methods of teaching and make learning more interactive (Peng, 2020). China is incorporating advanced technologies such as artificial intelligence (AI), VR, robotics, the Internet of Things (IoT), machine and deep learning, and face and voice recognition in education (Feijóo et al., 2021; UNESCO, 2021b). The government provides teacher training and opportunities to build digital skills, such as workshops, seminars and hands-on training (Yang et al., 2023). China is a leader in EdTech (educational technology) innovation, with wide adoption of e-learning platforms, interactive whiteboards, and AI-powered educational solutions such as smart classroom management, educational chatbots and language-learning apps (Feng, 2023).

The Chinese government has launched various initiatives to promote EdTech (Zeng, 2022), including policies promoting technology integration in education (Yan & Yang, 2021), national IT strategies for education (Liu-Schuppener, 2023), and significant investment in digital infrastructure. For instance, the Smart Education of China initiative is a network of three integrated online education platforms – for higher education, K–12 education and vocational education – centralizing China's online course offerings (Wang, 2023). The initiative uses technology to narrow educational gaps across China. China's

Minister of Education, Huai Jinpeng, stated that it represents “a notable milestone in the nation’s education digitalization strategy” (Ma & Cortes, 2023).

Gender equality in education is a priority in China. The Chinese government has implemented policies to promote gender equality in education, including the elimination of gender disparities in enrolment rates and the provision of equal educational opportunities for boys and girls (Li and Yang, 2022).

There is also a strong focus on teacher professional development to enhance digital skills and teaching methods. The Chinese government has implemented various initiatives to improve teacher training, including teacher-training centres and professional development programmes (Lei and Medwell, 2021). The Ministry of Education co-ordinates with technology-related ministries, and digital skills are progressively integrated into the curriculum (Luo et al., 2021; Ministry of Education of the People’s Republic of China, 2017). For instance, the Ministry of Education released the Key Areas of Work of the Ministry of Education in 2022, which proposes to “implement a strategic initiative on education digitalization” (Ministry of Education of the People’s Republic of China, 2022b; UNESCO, 2023f).

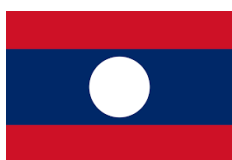
As the first nation to encounter the COVID-19 pandemic, China demonstrated responsiveness and agility in adapting to the challenges of the pandemic for the education system. Shortly after the outbreak, the Chinese government introduced the ‘Classes Suspended but Learning Continues’ emergency plan (Ministry of Education of the People’s Republic of China, 2020). This initiative mandated the closure of all schools and the shift to entirely online teaching and learning activities. As Gu and Li (2022) write:

*Schools across the country, including K–12 institutions, colleges, and universities, pushed back their spring semester start dates and switched to teaching classes online. To support the implementation of the emergency plan, the central government, local authorities, educational institutions, and enterprises made collective efforts to address the most salient needs; including enriching the provision of online learning resources, strengthening the supply of technological infrastructure, addressing digital inequalities, and training teachers for new modes of instruction.*

During the early stages of the pandemic, teachers encountered a significant challenge: adapting their teaching methodology from offline to online. This shift required a transformation in the role of the teacher, evolving from content provider to facilitator and content curator as more than 200 million students (primary and secondary) started the new semester through online platforms (Feijóo et al., 2021). The Smart Education of China platform, rolled out in 2020, is considered the cornerstone of the country’s digital transformation in education. It is one of the largest collections of digital skills learning resources and has provided training to more than 10 million teachers across the country, contributing to the narrowing of the digital divide in China (Zhou et al., 2023).

China initially focused on facilitating extensive online education. Once the COVID-19 situation began to improve, the emphasis shifted towards reinstating traditional classes. This shift was driven by challenges such as parents' work obligations, limited home resources, and the complexity of overseeing education entirely online, making comprehensive online education less preferable (Feijóo et al., 2021). Li (2022) writes that from 2020, the pace of progress in China's digital skills education advanced rapidly as the shift towards online learning prompted educational institutions to adopt digital technologies and platforms to ensure continuity in education. Online learning platforms such as DingTalk and Tencent Classroom became widely used across the country (Li, 2022). However, while China is a leader in EdTech adoption, there are challenges such as patchy implementation, a lack of standards, and concerns about data privacy (Feijóo et al., 2021).

China's robust digital infrastructure, comprehensive education system and widespread use of EdTech tools demonstrate elements of preparedness for digital education activities (Xiao & Zhang, 2022). The country's emphasis on teacher training (Lei & Medwell, 2021), educational innovation and gender equality in education positions it as a leader in educational technology adoption. Yao et al. (2023) report that the Chinese government has actively promoted educational innovation through policies and initiatives such as the Internet Plus Education action plan, which aims to integrate technology into education and foster the development of innovative teaching methods.



## Lao PDR



### *i. Socio-economic context*

Lao PDR is a landlocked country in the heart of Southeast Asia with a population of 7.1 million people (World Bank, n.d.-c). It is currently classified as a least developed country (LDC) but is on track to graduate from LDC status in 2026. In the last decade, Lao PDR has made considerable gains in national development (UNCTAD, 2019). Driven by strong economic growth and rapidly improving healthcare and education, Lao PDR has improved life expectancy and reduced poverty; GDP per capita increased from about US\$581 in 2006 to US\$2,054 in 2022 (World Bank, n.d.-b).

With 63 per cent of its population living in rural areas, agriculture plays a crucial role in Lao PDR's economy and accounts for 28 per cent of the country's GDP (FAO Regional Office for Asia and the Pacific, 2023). The country's political structure is based on one-party parliamentary socialism, and over the last 50 years it has experienced peace and political stability, making it an attractive country for foreign investment in the region (US Department of State, 2022).



## ii. *Digital infrastructure*

The GSMA Mobile Connectivity Index ranks Lao PDR at 52.5, in the Transitioners cluster, which indicates that it is in a transitional phase regarding mobile connectivity and usage. While the country scored particularly low on affordability and availability of digital content and services, it scored 71.8 out of 100 on consumer readiness, suggesting the population is engaged and well prepared for mobile connectivity and associated services (GSMA, 2023).

An Asian Development Bank survey on financial literacy in Lao PDR further revealed that while over 80 per cent of respondents owned a phone, only 30 per cent of them had a smartphone (Morgan & Trinh, 2019). The survey also highlighted a considerable digital divide between urban and rural areas, with one-fifth of rural respondents not using a phone, which is twice the number of urban residents (Pavanello, 2021). Around 47.3 per cent of smartphone users were living in urban areas, suggesting that access to digital technology is still limited in rural areas of the country (Morgan & Trinh, 2019).

## iii. *Structure of the education system*

The government of Lao PDR spends approximately 3.3 per cent of the country's GDP on education, one of the lowest rates in the world, against the backdrop of other national priorities and a heavily indebted economy (Steventon, 2023). Lao PDR's education system grapples with significant challenges, including low enrolment rates in rural areas; high dropout rates, especially at lower levels; gender-based enrolment disparity; teachers' limited skills in child-centred pedagogies and access to teacher-learning materials; and an inadequate education budget. Concerningly, many children face a language barrier as they may not be literate in Lao, the official language of instruction (Steventon, 2023; UNICEF Lao PDR, 2023a).

Approximately 61 per cent of Lao children aged 3–5 years were enrolled in early childhood education programmes in 2022–2023; however, those in hard-to-reach areas and from low-income families are most likely to be excluded (UNICEF Lao PDR, 2023a). This limited access to quality early childhood education strongly influences the high repetition and dropout rates at the primary level (UNICEF Lao PDR, 2023a). While 81.9 per cent of children complete their primary education, only 15 per cent go on to pursue lower secondary education, and just 3 per cent progress to upper secondary levels. These low rates are attributed to poor road access, financial constraints on low-income families, and a shortage of teachers. Furthermore, gender-based disparities persist, with fewer girls enrolled due to traditional expectations that prioritize household responsibilities over female education (Steventon, 2023).

Due in part to the government's spending on education being lower than the benchmark of 18 per cent set by Article 60 of the Education Law, (2015) which governs educational activities in the country, (UNICEF,n.d.), learning poverty remains rife in the country:

*The Gross Enrolment Ratio for pre-primary education in 2022–2023 stood at 61.3 per cent for children aged 3–5 years and 81.9 per cent for those aged 5. Enrolment in primary school was high at 97.7 per cent, but only 67.3 per cent transition to lower secondary and 36.2 per cent to upper secondary education. The primary school completion rate was 93.1 per cent, while the completion rates for lower and upper secondary were 87.9 per cent and 86.8 per cent, respectively. All of these indicators showed a downward trend compared to previous years, reflecting the long-term effects of COVID-19 and socio-economic challenges. (UNICEF Lao PDR, 2023b).*

Through the Ministry of Education and Sports (MoES) Sector Development Plan 2021–25, the government has committed to refocusing on primary education to enhance teachers' content knowledge and pedagogical skills, expanding access to lower secondary education to make it more affordable and effective, and realigning the skills of MoES staff (GPE, n.d.).

#### iv. Prevalence of EdTech

In addition to challenges in its education system, Lao PDR contends with considerable difficulties in digital education stemming from limited internet accessibility and affordability. The World Bank notes the country's significant lag in digital adoption compared with its regional counterparts in terms of accessibility, quality and affordability of internet services. Access to mobile broadband is increasing, but rural and remote communities are still underserved (Demas et al., 2018). Before the onset of COVID-19, digitalization and digital skills had a limited presence in the Lao education system at all levels. According to a recent UNESCO survey on the ICT readiness of Lao PDR's education system, 78 per cent of teachers had not undergone any ICT training. While teachers acknowledged the significant role of ICT in education, the majority had not been motivated or encouraged to integrate ICT into their classrooms (World Bank, 2022a).

#### v. Government initiatives

In response to long-standing school closures, the MoES launched the country's first digital education platform, Khang Panya Lao, which means 'wisdom warehouse'. The platform offers digital skills learning content, including the official curriculum from pre-primary to the completion of upper secondary school, and other resources. The platform enabled the government to minimize pandemic-related school disruptions for over 90,000 pre-primary and primary students (Ministry of Education and Sports, Lao PDR, 2021; World Bank, 2022a).

The Lao Digital Economy Strategy 2021–2030 seeks to promote ICT infrastructure development to facilitate digital transformation (World Bank, 2022a). While the Lao government is taking action to expand access to excellent education and address gender disparities, present cultural norms, a top-down approach to education governance, and limited resources remain significant impediments to reaching SDGs 4 and 5 by 2030 (Haefner, 2020).

While there is no finalized ICT or digital education master plan for the country, as reported by UNDP (2022a), a number of initiatives are bringing together internet service providers and partners in the private sector to enhance access to digital infrastructure to support digital skills learning (UNICEF Lao PDR, 2022). Analysis of recent initiatives underlines Lao PDR's commitment to integrating digital curriculum into learning (UNICEF Lao PDR, 2023a). The country has established ICT competency standards for teachers to align the ICT competency expected in teachers with the national policy and vision (UNESCO, 2022f). The integration of digital skills learning in the curriculum is reflected in the competency framework's metrics for assessment, which include elements such as the application of digital skills (UNESCO, 2022f). Implementing competency-based ICT course syllabuses is one mechanism to ensure pre-service teacher programmes in primary and secondary education incorporate digital skills learning in the curriculum (UNESCO, 2022f). In addition, UNICEF is supporting the formulation of an ICT strategy, while the MoES has established a dedicated ICT core team tasked with overseeing the implementation of digital innovation within the sector (Australian Council for Educational Research, 2023).

In an effort to improve the education system in Lao PDR, and in particular to bridge the gender gap and enhance online protection for girls, the MoES launched a series of digital literacy camps aimed at providing students with the necessary skills and knowledge to thrive in a rapidly changing digital world (UNICEF Lao PDR, 2023c). During the camp, students are introduced to a range of important topics, such as online safety, and given hands-on experience with tablets and Khang Panya Lao (UNICEF Lao PDR, 2023c). In addition to teaching technical skills, the camp also provides a space for students to share their most pressing learning needs and priorities. This is particularly important for girls, who often face additional barriers to accessing education and technology.

Despite the progress made towards enhancing girls' education and achieving gender parity in Lao PDR, there are still significant gender inequalities that persist (UNICEF Lao PDR, 2017). These inequalities are deeply ingrained in the society and result in unequal opportunities for girls and boys, even in areas where the government has made efforts to improve the situation. According to the UNICEF Gender Equality report, girls in some areas of Lao PDR face the risk of being married off as children (UNICEF Lao PDR, 2017). This practice puts them at risk of early pregnancies, which can lead to health complications and other challenges that limit their opportunities in life.

UNICEF EAPRO has taken various measures to promote educational development in Lao PDR and other surrounding countries. EAPRO's initiatives aim to improve access, quality and equity in education. Prior to the COVID-19 pandemic, EAPRO undertook a range of educational projects and programmes to address the unique challenges and opportunities present in the East Asia and Pacific region. These projects and programmes include teacher training, curriculum development, and the introduction of new technologies to classrooms (UNICEF EAPRO, 2019a).



## Solomon Islands

### *i. Socio-economic context*

Solomon Islands is a Pacific Island nation with a diverse population of approximately 721,455 (Solomon Islands Government, 2020). The economy of Solomon Islands is predominantly supported by agriculture, fishing and forestry/industrial logging (Rohoia & Sharma, 2021), with a high reliance on subsistence farming. The country faces several socio-economic challenges, including income inequality, high youth unemployment, and limited access to healthcare and education. Solomon Islands is listed as an LDC, indicating economic vulnerability and substantial development challenges (United Nations, 2021). As of 2020, the GDP per capita was approximately US\$2,000. Solomon Islands is returning to growth driven by hosting the Pacific Games in November and December 2023, and several large infrastructure projects in the energy and transport sectors (World Bank, 2022b).

### *ii. Digital infrastructure*

While Solomon Islands is working to improve digital infrastructure, there are variations in internet availability, cost and type of connectivity across urban and rural areas in the country. According to the International Monetary Fund (2022), mobile and internet penetration rates in Solomon Islands are still below the regional average, indicating the need for additional infrastructure investments to enhance growth potential.

Access to the internet is limited, particularly in remote provinces, and there are challenges related to electricity supply. Hobbis and Hobbis discuss the concept of the 'Bush Internet' in Solomon Islands, which entails a flourishing offline circulation of multimedia files to facilitate reciprocal exchange networks, indicating a form of digital device accessibility in the region (S. K. Hobbis & G. Hobbis, 2022). The GSMA Mobile Connectivity Index ranks Solomon Islands at 38.9, in the Emerging cluster, which indicates that Solomon Islands is in the early stage of establishing mobile connectivity. While there are strengths in consumer readiness and mobile connectivity coverage, challenges exist in infrastructure, affordability, and the availability of digital content and services (GSMA, 2023).

### *iii. Structure of the education system*

Solomon Islands' education system consists of early childhood, primary, secondary and tertiary levels. It spans various pathways, including traditional/academic education, technical and vocational education and training (TVET) and non-formal education (Porakari et al., 2015). The curriculum is influenced by both Western and traditional knowledge, reflecting the nation's cultural diversity. Challenges include limited access to quality education in rural areas, teacher shortages, and disparities in educational outcomes. Completion rates vary at each stage, and gender disparities exist, with girls having lower completion rates than boys (Asian Development Bank, 2015). According to a UNDP report, completion of secondary school and further education remains

skewed in favour of male students: 47 per cent of 18-year-old males are enrolled in education compared with only 37 per cent of 18-year-old females (UNDP, 2018).

The UNDP (2018) notes:

*Access to education is relatively low in rural areas ... The concentration of the National Secondary Schools in Honiara has had several effects. First, it means that the chances of rural people accessing education is lower, due to increased costs and travel needed to go to school ... Other students may leave their provinces to go to Honiara and stay with extended family, which puts financial pressure on households and can lead to disillusionment if education is not completed or does not lead to work ... The lack of resources at Provincial Secondary Schools also puts rural students at a disadvantage in terms of applying for tertiary education, scholarships and other opportunities ... The lack of internet access in rural areas remains a problem several years later. (pp. 14–15)*

#### iv. Prevalence of EdTech

The Ministry of Education and Human Resources Development (MEHRD) manages education in Solomon Islands in collaboration with church education authorities and provincial government education authorities (Sanga et al., 2020). The integration of digital skills into the curriculum at each level is supported by the ICT and EdTech departments within MEHRD, in coordination with the Ministry of Communication and Aviation. This integration is crucial for preparing students for the digital age and for improving the quality of education in Solomon Islands.

#### v. Government initiatives

Several government initiatives are supporting the move towards ICT in education. UNESCO (2023d) notes that the National ICT Policy 2015–2019 outlines the government's commitment to promoting the use of ICT in various sectors, including education. The policy emphasizes the importance of integrating ICT into the education system to improve teaching and learning processes, as well as to enhance the overall quality of education in the country. The ICT in Education Master Plan 2019–2023 takes steps towards operationalizing the ICT policy (Ministry of Education and Human Resources Development, Solomon Islands, 2019). In addition, iResource, a digital skills learning platform developed by the ICT Information Services Department and MEHRD, is a tangible output of the planning and strategic work towards fortifying EdTech in Solomon Islands, and is discussed later in this report (Ministry of Education and Human Resources Development, Solomon Islands, n.d.).

The curriculum in Solomon Islands is being developed to integrate digital skills at each level, emphasizing the importance of preparing students for the digital age and enhancing their employability. However, the limited internet infrastructure has hindered the effective implementation of digital education initiatives (ITU, 2019), thereby affecting the quality of and access to education and the development of digital skills among students. Policies and initiatives are also being formulated to integrate technology into



education, improve digital infrastructure, and provide training for teachers. One of them is ICT for Better Education (ICT4BE), a project driven by MEHRD in conjunction with the Information and Communication Technology Support Unit (ICTSU) and the Asian Development Bank.

UNESCO (2023d) notes:

*The ICT for Better Education project seeks to drive the use of ICT to support management, administration, teaching, and learning throughout the education sector. With the aim of promoting a student-centred teaching and learning environment, a number of schools in Solomon Islands were equipped with tablet computers and digital skills learning materials to promote information literacy and drive student learning outcomes. The focus is on creating a foundation for digital education to benefit students across the country.*

The availability of EdTech in Solomon Islands is particularly lacking in remote areas, and this urban/rural digital divide poses a significant barrier to the widespread use of EdTech. The emergency remote education experience during the COVID 19 pandemic highlighted challenges in digital transformation for higher education institutions, including outdated technological devices and compatibility gaps in certain disciplines (Oliveira et al., 2021).

The pandemic further highlighted the importance of teachers' digital skills readiness, as it encompasses a large variety of knowledge and skills regarding digital technologies and their application in teaching practice (Perifanou et al., 2021). Through online professional development programmes and virtual teaching resources, educators in Solomon Islands can enhance their skills and knowledge, ultimately improving the quality of education imparted to students.

The ICT in Education Master Plan 2019–2023 is a five-year plan to improve the access to and quality of ICT for teaching, learning, administration and management of the education system (Ministry of Education and Human Resources Development, Solomon Islands, 2019; UNESCO, 2023d). UNESCO (2023d) notes that the plan “covers four major pillars of ICT integration into education, namely 1) ICT infrastructure (iKonec), 2) human resource development (iTeach), 3) digital content development (iResource), and 4) education management information system enhancement (iManage).” The plan aims to facilitate equitable access to learning by enhancing ICT infrastructure and connectivity, leveraging quality digital resources and pedagogy, and improving the effectiveness and efficiency of education management resources.

In response to the COVID-19 school closures, MEHRD implemented the Learning Continuity Program (LCP) to provide guidelines for schools, teachers, parents and guardians on the process and resources required to deliver online learning and home-schooling modalities for students (Solomon Islands Government, 2022). As part of the LCP, MEHRD digitized learning resources for early childhood education through to junior secondary levels in a web platform called iResource, which the government created to

provide schools with curriculum-aligned and locally produced digital resources (Ministry of Education and Human Resources Development, Solomon Islands, n.d.). For students with limited to no internet connectivity at home, MEHRD distributed physical copies of the learning resources to students in primary, junior secondary and senior secondary levels via education authorities.

In addition, the National Education Action Plan 2016–2020 (Ministry of Education and Human Resources Development, Solomon Islands, 2016b) provides further evidence of the government's efforts to enhance digital literacy among teachers. This plan includes specific objectives and strategies aimed at integrating ICT into the education system, including the provision of ICT training for teachers and the development of ICT infrastructure in schools. UNDP has also developed strategies for Solomon Islands to use technology to address issues of remoteness and to monitor and support the work of provincial governments (UNDP, 2022b).

These efforts aim to bridge the digital divide and improve educational quality (Lucas & Vicente, 2022). Moreover, the localized efforts to enhance digital literacy among teachers in Solomon Islands can also be informed by regional frameworks and initiatives. For example, the Pacific Regional Framework Implementation Rolling Plan emphasizes the importance of building the capacity of teachers to effectively integrate ICT into their teaching practices (Pacific Community, 2021). This regional framework provides a strategic direction for leveraging ICT to improve educational outcomes in the Pacific region, including Solomon Islands.

Solomon Islands' journey towards digital education is characterized by efforts to overcome challenges and foster sustainable development. While facing unique obstacles, the nation is making progress in improving digital infrastructure and integrating technology into education. The government's initiatives reflect a commitment to providing equal opportunities and preparing the younger generation for the digital age in a geographically dispersed context. MEHRD, with technical support from UNICEF, is reviewing its current education ICT master plan for another five years, which will establish a clear pathway for improving digital skills learning and capacities in collaboration with various development partners and government institutions (UNESCO, 2023d).



## Vanuatu



### *i. Socio-economic context*

Vanuatu, a Pacific Island nation, is home to around 300,000 people with unique cultural backgrounds (Pascht, 2022; World Bank, n.d.-e). The country's geography and environment play a significant role in shaping its socio-economic dynamics. Vanuatu's major sectors and industries include agriculture, tourism and fisheries, with a focus

on marine conservation (Pascht, 2022), and its economy is also influenced by trade agreements, which affect its food environment and national policies (Ravuvu et al., 2021).

Vanuatu has been independent since 1980, and is governed by a constitutional democracy. The nation has made strides in economic development, with a focus on sustainable practices and community resilience (Asian Development Bank, 2022a). The GSMA Mobile Connectivity Index ranks Vanuatu at 51.1, in the Transitioners cluster, which indicates that Vanuatu is in a transitional phase regarding mobile connectivity. While the country scored particularly low on the availability of digital content and services, it scored 71.2 out of 100 on consumer readiness, suggesting the population is likely to be receptive to new digital technologies and content (GSMA, 2023).

## *ii. Digital infrastructure*

Vanuatu's digital infrastructure is developing, as efforts are made to improve telecommunications and internet connectivity. It has made progress in mobile network coverage, but challenges such as geographical remoteness hinder universal access (UN-OHRLLS, 2018). Access to digital devices and internet connectivity also plays a crucial role in digital inclusion (GSMA, 2019). Gender differences in internet use patterns have also been documented, with reports suggesting that men have historically had greater internet access compared with women, especially among the college-educated, the wealthy, and urban dwellers (UNICEF EAPRO, 2019b). These challenges suggest that Vanuatu experiences gender and socio-economic disparities in internet connectivity. The government is working towards enhancing digital services to overcome these obstacles and promote inclusivity in the digital era (UN-OHRLLS, 2018).

## *iii. Structure of the education system*

The government plays a pivotal role in shaping Vanuatu's digital and educational advancements through the Ministry of Education and Training (MoET), emphasizing quality education for all, with programmes promoting inclusivity and equal opportunities. Despite challenges, literacy rates have been improving, reflecting the commitment to education. The adult literacy rate of Vanuatu increased from 52.9 per cent in 1979 to 89.1 per cent in 2021, growing at an average annual rate of just over 9 per cent (World Atlas, n.d.). In Vanuatu, schools teach in either English or French, which are the principal languages of education in the country, though Bislama is considered the national language. The stages of education in Vanuatu include early childhood education, and primary, secondary and further education, with completion rates varying across these stages (Pierce & Hemstock, 2021; UNESCO, 2021c). In 2021, the youth literacy rate in Vanuatu was 97.2 per cent for adolescent girls and young women and 96.6 per cent for adolescent boys and young men (Pacific Community, 2023b).

## *iv. Prevalence of EdTech*

Vanuatu's journey towards digital education is characterized by its commitment to overcoming challenges and fostering sustainable development. While facing unique obstacles, the nation is making strides in improving its digital infrastructure and integrating technology into education (UNESCO, 2023d). The government recognizes the potential of EdTech to enhance learning outcomes and is exploring ways to bridge the digital divide in education (UNESCO, 2021c). Since access to schools and educational

resources is limited, mobile phones have become a valuable tool for learning (Ministry of Education and Training, Vanuatu, 2018). With the help of mobile apps and internet connectivity, students in Vanuatu can access educational materials, participate in online courses, and even collaborate with peers (GSMA, 2019).

Internet access and digital devices are becoming more accessible, and the use of EdTech in Vanuatu is evolving. Specifically, the Vanuatu Teacher Standards incorporate ICT skills and effective use of digital tools (UNESCO, 2021c; Vanuatu Education Support Program, n.d.). While efforts are being made to integrate technology into classrooms, there is room for growth.

During the school closures that resulted from COVID-19 in 2020, education lecturers, curriculum officers, and education and assessment officers developed home-school guidelines to assist teachers, most of whom were not familiar with home-schooling (UNESCO, 2021c). E-learning platforms provided an adapted curriculum and students were equipped with home-schooling packages as part of the COVID-19 Contingency Plan, which was a short-term crisis response (Ministry of Education and Training, Vanuatu, 2020b). The government also introduced 'Homskul Givhan', a radio learning programme on Radio Vanuatu to support parents with home-schooling from pre-primary to primary level (Ministry of Education and Training, Vanuatu, 2020c).

#### v. Government initiatives

Vanuatu first introduced ICT as a national priority in the 2013 National Information and Communication Technology Policy. The policy states that ICT has the strong potential to transform the education system in Vanuatu and support the country in becoming a "just, educated, healthy and wealthy Vanuatu". Its priority areas include "access to ICTs in education" and "access to ICT infrastructure and devices". The policy also proposes that "access to ICTs in schools in particular, and also for Vanuatu citizens and residents in general, will be radically expanded" and that ICT will be integrated into sectoral policies in key areas, including education (Republic of Vanuatu, 2013a; UNESCO, 2023e).

UNESCO (2023e) notes:

*The 2013 National ICT Policy aims to provide educational institutions with access to ICT infrastructure related services and devices (access to ICTs in education; access to ICT infrastructure and devices). It also envisions schools becoming Community Learning, Information and Communication Centres, which would extend the benefits of ICTs to surrounding communities. The 2013 Universal Access Policy also specifically targets educational institutions in the provision of telecommunications services to locations which are not adequately served by existing services.*

Vanuatu launched the One Laptop Per Child project in 2008, but more recently the Universal Access Policy (UAP), supported by the Telecommunications Radiocommunications and Broadcasting Regulator (TRBR), has facilitated the provision of computer laboratories and tablets to schools. This has been made possible through financial assistance from Australia's Governance for Growth programme, with initiatives initially planned for 2014–17 but extended to 2022 to support schools facing difficulties (UNESCO, 2023e).

UNESCO (2023e) describes progress under the UAP:

*The first [initiative], known as the Computer Lab and Internet Community Centre (CLICC) program, provides funding for the installation of computer facilities in participating schools which can be used by students, staff, and local community members ... The second program, known as Tablets for Schools, was designed to pioneer the use of low-power, low-cost computer tablets in rural and remote schools ... Schools that are part of the school-based CLICC program can also apply for grants from the TRBR, with preference given to schools in unserved or underserved areas.*

Other policy and strategy frameworks that emphasize the strengthening of ICT in schools include the MoET's 2019 Business Plan (aiming to develop minimum ICT standards for schools), 2018–20 Corporate Plan (aiming to strengthen ICT use), 2020–30 Vanuatu Education and Training Sector Strategic Plan (aiming to review legislation and ICT policy to improve teaching and learning in schools), and 2021 Vanuatu School Grants Code (aiming to maintain the infrastructure and ICT assets of disadvantaged schools) (UNESCO, 2023e).

Lastly, the 2021 Draft National ICT Policy Framework for Consultation aims to “provide open ICT infrastructure access to enhance service delivery with special emphasis on educational institutions and marginalized sections of the population” (UNESCO, 2023e). It also emphasizes that the “integration of ICT will remain a priority for sectoral policies, particularly in education” (UNESCO, 2023e).

These initiatives reflect the government's dedication to providing equal opportunities and preparing the younger generation for the digital age, and have not only reduced inequality but also promoted social inclusion.

During COVID-19, Vanuatu's approach to address learning continuity centred on teachers. The approach Vanuatu took to ensure learning continuity during COVID-19 focused on the Home Schooling Package (HSP) program, which was rapidly implemented in response to the pandemic (Kolisen Blong Leftemap Edukesen, 2020). This initiative, primarily aimed at government schools, involved a shift to remote learning from March 2020, necessitated by pandemic restrictions. The HSP aimed at evaluating students, teachers, parents, and education stakeholders' experiences with remote learning, thereby informing the development of a national home schooling policy and strategy.

Teachers were central to this approach, as they were responsible for the development and distribution of the HSP despite facing challenges due to a lack of training in creating these materials. Teachers encountered significant hurdles in producing and distributing HSP materials due to inadequate resources, such as printing facilities and transportation, compounded by Vanuatu's challenging geographical conditions. The teachers' role extended beyond material preparation to include student support and monitoring, although this proved difficult due to logistical challenges and a lack of direct contact with students (ibid.).



CHAPTER

3

# TEACHER'S PERSPECTIVE



This section provides an in-depth analysis of the outcomes derived from the KIs and FGDs involving the teachers enlisted for this research. The subsequent discussion delves into the themes identified in the participants' responses, aiming to pinpoint noteworthy points of agreement or disparity. **Eight central themes** surfaced from the research, with each country offering distinct perspectives and manifestations. The following eight themes are explored:

**1 Accelerating digital education in response to the pandemic**

**5 Geographical disparities in educational resources**

**2 Advancements in digital education**

**6 Gender disparities in digital skills education**

**3 Strategies to foster digital skills among students**

**7 Focus on online safety**

**4 Challenges in acquiring and enhancing digital skills among teachers**

**8 Enhancing the future of digital skills education**

### 3.1 Cambodia

In the evolving digital education landscape in Cambodia, the data analysis from KIs and FGDs with Cambodian educators reveals a complex picture. While these educators demonstrate adaptability and resourcefulness, their approach to digital skills acquisition varies significantly. A high school teacher encapsulated the sentiment: "I learned to use Microsoft Word and Excel for various teaching tasks ... [and] during the COVID-19 pandemic, I received one-week training to prepare for teaching students using Google Meet." This statement reflects a broader trend among Cambodian educators, who often acquire digital skills through self-learning and informal support, mainly in response to necessity, rather than via systematic training (Heng & Sol, 2021).

Related to this, during the COVID-19 pandemic there was a significant shift in how education was delivered in Cambodia, with Telegram emerging as a key platform for reaching students and teachers remotely. This application was extensively used for sharing lessons and educational videos, and is still widely used post-COVID not only for general information-sharing among teachers but also for communication and interactions between teachers and MoEYS officials.

Digital proficiency levels vary among teachers, with over 50 per cent of teachers and teacher educators interviewed across all FGDs and KIs feeling average compared with their peers. One teacher noted: "I feel I have lower digital skills compared to my colleagues

... but [my skills] are sufficient for my teaching tasks.” This points to a gap between the perceived and actual digital competencies of teachers (Heng & Sol, 2021; Soeung & Chim, 2022).

While there was no concrete mention of widespread and continuous structured training programmes, in the KIs and FGDs three teachers mentioned specific training they had received: one teacher with eight years of experience explained how she had received formal training in digital skills from an ICT working group at her school. Another teacher with 13 years of experience working with adult learners mentioned an initiative supported by UNICEF in Cambodia aiming to upgrade teacher qualifications in teacher-training centres, with a focus on enhancing digital teaching in schools. Similarly, a teacher educator with 16 years of experience noted that she had received foundational training in digital systems, designed for teachers and teacher educators to enhance proficiency in using digital systems, and supported by UNICEF. The lack of structured training programmes and professional development opportunities in digital education is a significant hindrance, leading to a disparity in the skills and confidence levels of educators (Ravy, 2019).

### ***Accelerating digital education in response to the pandemic***

The onset of the COVID-19 pandemic acted as a significant catalyst, accelerating the transition to digital teaching methods (Bhatta et al., 2022; UNESCO, 2020b). The need to continue education amid physical school closures prompted teachers to adapt quickly to online platforms like Telegram. However, this abrupt transition also laid bare the limitations inherent in the system, particularly the lack of preparedness and resources to support such a shift effectively. Teachers often found themselves navigating uncharted territories, as one teacher described in a KI: “Initially, [teachers] used a phone application, Google Meet, for this purpose. However, I found it inconvenient due to the small screen.” This insight from one participant highlights the rapid and willing transition to digital education by teachers in response to the pandemic in Cambodia, which was marked by a combination of adaptability, resourcefulness and challenges.

Similarly, in the FGDs, a high school teacher with 10 years of experience teaching physics and mathematics noted that “digital skills enabled teaching and interaction during COVID-19. Digital tools like Google Meet and Zoom were essential for conducting classes and other interactive sessions.” However, while educators quickly adopted available technologies to maintain educational delivery, the experience highlighted significant gaps in digital infrastructure and resources. It underscored the need for investment in appropriate digital tools and training to support educators in delivering quality online education, including available and relevant content in Khmer (Sothy, 2021).

A recent report commissioned by UNICEF also provides valuable insights into the adoption of digital skills by Cambodian teachers and school directors in the context of distance learning (UNICEF, 2023c). A concerning finding is that only a small fraction of teachers (9 per cent) and school directors (5 per cent) reported full proficiency in the skills necessary for supporting distance learning, a slight decrease from the 2020 data. The report further stated:

*The primary modes of training used were in-school training (68 per cent); online and face-to-face training provided by MoEYS and provincial/district education offices (46 per cent and 43 per cent, respectively); and self-study through materials provided by MoEYS and provincial/district education offices (37 per cent). Despite the low proficiency in digital skills, the majority of teachers and school directors actively used digital tools, with 95 per cent engaging in distance learning, including during the 2020–2021 school closures. The most popular digital resource was the MoEYS E-learning app (34 per cent), while the least used was the MoEYS self-test platform (10 per cent). (UNICEF, 2023c)*

In 2023, World Education reported that teachers and students in Cambodia are creating their own digital skills learning resources, as many prefer their own materials rather than those developed centrally (World Education, 2023a, 2023c). These findings highlight a significant gap in digital literacy among educators, underscoring the urgent need for enhanced digital infrastructure and targeted training programmes (UNICEF EAPRO, 2023a).

### **Advancements in digital education**

Despite these challenges, there have been commendable advancements in integrating digital tools into teaching practices in Cambodia where connectivity and infrastructure allow. Teachers have started employing various digital devices, not only for administrative tasks but also for instructional purposes. Using applications like Microsoft Office, Google Forms and Telegram has become more common. These tools have been instrumental in streamlining communication, enhancing the efficiency of administrative tasks, and creating interactive learning experiences for students.

Illustrating how digital tools have become integral to teaching, one teacher commented: “During the pandemic, when online teaching was necessary, I utilized Google Meet for online classes.” Another teacher, with 18 years of experience teaching physics and chemistry, explained how he integrated digital skills into his teaching practice:

“

*I utilize my computer for various tasks related to my teaching responsibilities, such as calculating my students’ scores using a calculator application. I also use Excel spreadsheets to organize class data. Moreover, I use my computer to open and fill in forms received from other parties, that were sent to me electronically.*

”

These accounts highlight a global trend where digital tools have transitioned from being optional or supplementary to becoming central to the teaching and learning process. However, it is important to acknowledge that in certain regions the majority of schools might not perceive them as central. In these contexts, digital tools may be more commonly associated with administrative tasks and school management.

During the COVID-19 pandemic, educators were driven to learn new virtual classroom platforms and incorporate digital applications into their routine teaching methodologies where possible. A teacher educator with 16 years of experience noted that while she initially developed digital skills out of necessity during the pandemic, despite the resumption of face-to-face teaching she has continued to integrate digital tools into the classroom. Her approach involves sharing links with students to connect to online classes via their phones and engaging them in online study and research. Similarly, a teacher with over 13 years of experience emphasized the cost-effectiveness of digital skills and has continued to incorporate them into his teaching practices even after the pandemic. He has transitioned from traditional methods of assigning homework to using digital tools like Telegram, highlighting the sustained integration of digital skills into his teaching methods.

Discussion in the FGDs noted how the adoption of digital tools led to innovative teaching methods, such as the 'flipped classroom' approach, to enhance student engagement. A teacher educator who teaches ICT, with over 11 years of experience, explained how during the pandemic, "I improved my digital skills significantly, becoming proficient in using digital devices and tools like Google Meet, preparing Google Forms, and communicating with students via Telegram", indicating a willingness to create a digital community of practice between teachers and students.

ICT teachers who participated in the study noted that their responsibilities included serving as a resource person for teachers as well as upskilling colleagues during the pandemic. ICT teachers in Cambodia played a vital role in the transition to online education. They provided training for educators and technical support, and contributed to curriculum development for digital skills learning. ICT teachers facilitated digital literacy training, monitored the progress of online initiatives, and collaborated with stakeholders to address infrastructure and connectivity issues. This period marked a significant advancement in digital education, not just in terms of necessity but also in realizing the potential of technology to streamline and enhance teaching practices (Pang et al., 2022; Sothy, 2021).

It should be noted that the examples listed are more linked to the administrative side of teaching and less about integrating technology into the learning experience. Only one teacher mentioned integrating digital skills into their teaching practices in a way that goes beyond administrative tasks; a teacher educator with 16 years of experience noted that her students used the internet for research purposes, both individually and in groups. It is worth noting that the positive relationship in Cambodia between exposure to digital devices and digital literacy development, and the advancements in digital education during the pandemic are also noted in the UNICEF girls' digital literacy study (UNICEF EAPRO, 2023a). Increased digital exposure during this period could have long-term benefits for students' digital competence.

### ***Strategies to foster digital skills among students***

Cambodian teachers have developed various strategies to foster students' digital skills, primarily by hands-on guidance and step-by-step explanations. The approach varies from teacher to teacher, with some acknowledging their limitations in effectively teaching these skills. One teacher, with eight years of experience, mainly used a direct, hands-on



approach to teach digital skills. She described her method as offering “in-person guidance and step-by-step explanations”, especially when using tools like Google Forms for tests. This approach suggests that she ensures students understand the process and can confidently navigate digital systems. It reflects an understanding that hands-on, practical instruction is crucial for effective digital skills acquisition, especially for students who may be less familiar with these tools (OECD, 2020c).

In contrast, a teacher educator with 16 years of experience expressed a different perspective, acknowledging her limitations in teaching digital skills. She stated: “I don’t possess specific super-effective strategies for fostering digital skills among my students.” This indicates a recognition of her need for further professional development in this area, and reflects a broader challenge among educators who might have had to suddenly adopt digital tools without adequate preparation or training, leading to a lack of confidence in their ability to teach these skills effectively (Pang et al., 2022; Phal et al., 2022; UNESCO, 2022d).

Another teacher, with over 13 years of experience in MoEYS, discussed a more policy- and infrastructure-oriented approach. He emphasized the need to integrate digital skills as a core part of competency frameworks at the policy level and create a conducive learning environment at the school level. He suggested that access to digital devices and technologies within schools is essential for developing students’ digital skills. His perspective points to the importance of a supportive infrastructure and a curriculum incorporating digital literacy as key factors in fostering these skills (Asian Development Bank, 2023).

These varied responses among Cambodian teachers underscore the diversity in teaching methods and perceived efficacy in imparting digital skills (Heng & Sol, 2023). While some educators employ direct, hands-on methods, others recognize their limitations and need further training and resources. This variance in approaches and confidence highlights the need for structured professional development programmes and supportive educational policies to ensure that all teachers are equipped to foster digital skills effectively (UNESCO, 2022d). Additionally, the emphasis on policy and infrastructure indicates that fostering digital skills is not just a matter of individual teaching strategies but also involves broader systemic support and resources (Chen et al., 2023).

### **Challenges in acquiring and enhancing digital skills**

The KIIs and FGDs highlighted several challenges that teachers face in acquiring and enhancing their digital skills. Internet connectivity issues, cost barriers to acquiring technology, language barriers to understanding technical terminology, and lack of formal training are some of the significant hurdles. A teacher noted issues with “slow or unreliable internet connections”, which not only affected the quality of online interactions but also incurred additional expenses, as she had to pay for mobile data. Another teacher highlighted the cost of acquiring digital tools and resources as a significant hurdle. In Cambodia, necessary technologies like smartphones and computers for online teaching are relatively expensive, placing a financial burden on both teachers and students. This cost barrier can limit access to digital tools, hindering the development of digital skills.

Language barriers also play a critical role in hindering digital skills acquisition and limiting access to resources and content, especially when the content is in English and not Khmer. Teachers mentioned difficulties with technical terminology and functions on digital platforms, often lacking clear translations in the local language. As one teacher noted, this language barrier complicates the effective navigation and use of digital tools, affecting their ability to provide seamless instruction.

Moreover, a common thread in the interviews was the lack of formal training in digital skills. Many teachers, including a lower secondary teacher with 18 years of experience, resorted to self-learning methods owing to the absence of structured pre-service and in-service training programmes. This approach, while commendable, can be inefficient and may not cover all necessary aspects of digital literacy. As one teacher put it: “I encountered challenges in acquiring and improving my digital skills, especially since it was a self-taught process.” Furthermore, this lack of training also led to notable variation in teachers’ confidence and skill levels, with some feeling average compared with their peers. In the FGDs a teacher educator with eight years of experience noted that “the ability to use digital skills depends on the individual’s training, experience and knowledge”.

These varied responses illustrate the range of challenges teachers in Cambodia face in acquiring and enhancing digital skills (Chandara, 2023). From infrastructural issues like internet connectivity and costs to systemic problems like the lack of formal training and language barriers, these challenges are multifaceted and require comprehensive solutions (UNESCO, 2020b).

### **Geographical disparities in educational resources**

The data analysis also sheds light on Cambodia’s geographical disparities in educational resources. Teachers in more remote and rural areas face additional challenges, such as unreliable internet coverage and limited access to digital devices, which have an impact on the effectiveness of digital education and hinder equal access to learning opportunities. As of 2023, internet coverage in Cambodia shows a significant distinction between urban and rural areas. The country had 11.37 million internet users at the beginning of 2023, with an internet penetration rate of 67.5 per cent of the total population. The majority of the population that remain offline are in rural areas (DataReportal, 2023). One teacher’s statement highlights this issue:

“

*In Cambodia’s public schools, digital skills, especially computer skills, may not be widespread. [There is a differentiation] between urban and provincial areas, suggesting that digital skills might be more prevalent in cities like Phnom Penh but less in rural provinces. Furthermore, older teachers face considerable challenges when using digital systems.*

”

Additionally, during the FGDs one high school physics and chemistry teacher with nearly eight years of experience remarked that “in remote areas where my school is located,

the pandemic posed challenges. Most students could not afford smartphones, so we primarily used Google Meet and Telegram for teaching.”

### ***Gender disparities in digital skills education***

Interestingly, the KIs suggest minimal gender disparities in digital skills acquisition among students, whereas in the FGDs it was remarked that there were some gender-related perceptions, with some students believing certain digital skills were more suitable for boys. This correlates with the finding from the girls’ digital literacy report, where a significant bias among teachers was identified in beliefs that STEM careers were not suitable for girls. Despite that, those in the FGDs highlighted that efforts were made to empower all students and dispel these myths. The high school teacher with 10 years of experience teaching physics and mathematics noted that she “focused on empowering girls, particularly among young students, by fostering group discussions and addressing the misconception that digital skills are unnecessary for them.”

Despite the students’ perceptions, most teachers reported no significant differences in how boys and girls learn digital skills, although some observed that girls might invest more effort and excel better. However, the lack of specific gender-responsive teaching strategies is notable, as teachers tend to employ a uniform approach to digital skills development for all students (UNDP, 2020). A teacher’s observation that “girls tend to work harder, they are smarter and are more diligent in using digital skills compared to boys” suggests a nuanced understanding of gender dynamics in digital skills learning but does not translate into differentiated teaching approaches (Ravy, 2019). Despite these perceptions of girls’ diligence, high-level gender gap data in Cambodia show that while at least 50 per cent of all university enrolments are girls and women, they are not equally represented in STEM subjects (UNICEF EAPRO, 2023b). Girls are also less likely to pursue STEM at higher levels of education.

### ***Focus on online safety***

Another crucial yet under-addressed area that emerged from the interviews is online safety. Teachers acknowledge the importance of educating students about cybercrime and safe internet usage, but formal training in online safety is limited (Sothy, 2021). As one teacher said, “I have not actively addressed online safety concerns ... [nor] received any formal training related to online safety.” While online safety was not explicitly detailed in the FGDs, the emphasis on digital literacy inherently includes understanding the safe and responsible use of digital tools, with one ICT teacher educator with 11 years of experience saying: “I highlight teaching inclusive education and gender equality to students, emphasizing bravery in participation, awareness of rights, and the proper use of the internet.”

The lack of consistency between teachers who do or do not teach online safety points to a critical area for development in digital education in Cambodia (Raksa, 2023). UNICEF is releasing a number of frameworks offering comprehensive directives for the digital technology industry to prevent and respond to things like online child exploitation and other forms of digital violence against children (Ministry of Post and Telecommunications, Cambodia & UNICEF Cambodia, 2023).

### Enhancing the future of digital skills education

For the future of digital skills education in Cambodia, teachers envision a scenario where classrooms are well equipped with modern digital tools and comprehensive teacher training is provided. A teacher educator with over eight years of experience explained during the FGDs:

“

*It's not necessary to compare digital skills because proficiency depends on individual experience, training and knowledge. I stressed the importance of continuous learning and improvement in the digital realm.*

”

Furthermore, teachers in the KIs emphasized the need for government and international support to equip classrooms with digital resources and to provide teachers with the necessary training in digital literacy (UNDP, 2020). A teacher shared his vision: “Classrooms should be well equipped with digital and innovative tools ... The curriculum should seamlessly integrate digital skills.” This vision aligns with the broader global shift towards a digitally driven future, necessitating significant investment and commitment from both the government and international partners (Sothy, 2021).

While the interviews reveal a commendable level of adaptability and resourcefulness among Cambodian educators in the face of rapidly evolving digital education demands, they also highlight significant gaps. There is a clear need for more structured and comprehensive training in digital skills for teachers, better integration of these skills into teaching practices, and a focus on online safety and gender-responsive pedagogies (Heng et al., 2022). Addressing these gaps will be crucial in enhancing the future of digital skills education in Cambodia, ensuring that educators are well equipped to meet the demands of a digitally driven educational landscape (Heng & Sol, 2023).

It is promising that the Cambodian prime minister's forward-looking vision, as articulated in the Pentagonal Strategy, dovetails seamlessly with these educational aspirations. This vision is a cornerstone of the National Development Plan, which places a strong emphasis on digital literacy and innovation as key drivers of national development (Royal Government of Cambodia, 2023). The new strategy highlights the government's commitment to digitalizing services and upskilling Cambodians to meet the needs of the 21st century. This includes a focus on modernizing classrooms and curricula (Royal Government of Cambodia, 2023).

### 3.2 China

While there is a growing body of literature on digital education in China in the context of the COVID-19 pandemic, this is the first major study focusing on the perspectives and experiences of teachers during and after the pandemic. Previous studies have explored the implementation and challenges of China's national online education strategy during the COVID-19 pandemic from the perspective of children and parents (Zhu et al., 2022).





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The data analysis presents a comprehensive overview of digital education in China, gathered from interviews and discussions with teachers. It reveals a widespread acknowledgement of the importance of digital skills, driven by national initiatives like Digital China. Teachers actively enhance their digital literacy through training and practical application. The study identifies effective strategies, such as project-based learning, but also highlights challenges like time constraints and geographical disparities in resources.

Gender differences in digital skills education are evident, emphasizing the need for inclusive approaches. Online safety is a central concern, with teachers addressing cybersecurity and promoting responsible online behaviour. Looking forward, teachers express a desire for collaborative international efforts and tailored digital skills training programmes. This summary captures the dynamic landscape of digital education in China, recognizing achievements and areas for improvement in teachers' digital skills and literacy.

### **Accelerating digital education in response to the pandemic**

In response to the abrupt closure of schools, teachers swiftly embraced digital solutions to ensure uninterrupted learning. The existing technological framework, marked by widespread internet access and the prevalence of digital devices among students and teachers, laid a robust foundation for the adoption of online and remote learning methods. The abundance of digital tools and platforms further facilitated this shift, providing educators with a diverse range of options for customization based on subject matter, grade level and individual teaching styles.

In the FGDs, a teacher educator with 12 years of experience noted:

“

*Our school integrated digital technology into education. Last year, we won a prize for deep integration of ICT and teaching, and it has been rated as an exemplar case. Currently, we are in the process of establishing a smart campus, featuring smart classrooms for 16 classes. We offer courses in technologies such as IoT, VR, smart robotics and coding. We would also like to make a smart transition of the students' homework.*

”

A mathematics teacher in the FGDs said:

“

*During the pandemic, there was a number of very diverse online learning platforms. Therefore students had access to diverse online resources. For instance, in 2020 in Wuhan, what impressed me was that it was my first time to use the national cloud learning platform, which is for online learning and we got very positive feedback from students. The platform was highly efficient and students were able to access the recorded courses. Some students believed the results were even better because they could rewind and revisit the courses. The platform had high-quality learning resources and created an interactive learning environment.*

”

Teachers demonstrated adaptability and innovation by integrating digital tools, such as virtual experiments and interactive quizzes, into their teaching practices.

A noteworthy outcome of this transformative period was the increased emphasis on digital literacy skills. Both teachers and students enhanced their proficiency in using digital tools for education. Additionally, a Grade 9 teacher said: “Parents became more actively involved in their children’s education, gaining awareness of the digital tools employed in the learning process.”

### **Advancements in digital education**

A common theme that emerged across the KIIs and FGDs was universal recognition of the growing importance of digital skills in education in China. National leaders have recognized the significance of digital skills and digitalization, reflected in national strategies and initiatives like Digital China (Ito, 2022). As a teacher educator in Wuhan, Hubei province, mentioned in the KIIs: “Our government pays high attention to digital literacy because even the education minister and our President Xi Jinping are all mentioning the strategy of Digital China, which is the main strategy this year.”

In a world becoming increasingly reliant on digital technology, a Grade 9 teacher in the FGDs noted:

“*Digital skills are very important. It will not only improve our teaching quality but help to improve our work efficiency. It also supports us in teaching and evaluation ... We can use cloud platforms to bring ourselves closer to the students and visualize our interaction. And after the pandemic, digital skills have become one of the essential skills teachers must have.*”

Such comments show that teachers acknowledge the need to equip themselves and students with the necessary digital competencies to improve work efficiency and make it easier for students to learn.

Student-centred approaches are replacing traditional teaching and learning approaches by using digital tools to enhance student engagement and cultivate critical thinking (UNICEF EAPRO, 2019c). An interviewee from Wuhan noted that technology has revolutionized education in China, enabling more interactive and engaging learning environments: “There are so many VR tools to help teachers to create very vivid and interactive scenarios in the classroom ... We also have the E-Schoolbag and other tools for digital teaching.”

In the FGDs, a middle school teacher in Wuhan said: “I use VR and 3D virtual experiments in chemistry to facilitate interaction. Other tools like AI, whiteboard, and digital pen are also very effective.” While being interviewed, another teacher mentioned the importance of training sessions and added that “digital skills are acquired for practical application in teaching in a three-step approach: person-to-person training, online training, and application in teaching practice. Self-initiated learning is also important.” These data from the KIIs and FGDs highlight a proactive approach where teachers actively engage in enhancing their digital literacy.

It is clear that the pandemic accelerated the adoption of digital tools and the development of digital skills among teachers. All teachers measured their progress in terms of efficiency in digital skills, indicating that these skills empowered them to find and use online resources and technologies for teaching during the pandemic. In the FGDs, one of the five teachers was confident in their digital skills. The mathematics teacher in a middle school in Jiangxi province, who was also involved in the development of digital classrooms, said: "In terms of digital skills, I am quite confident about it. Compared to my colleagues, I am ahead in digital technologies, I take part in the training of information technology, and I have also taken part in contests and won some awards." A Grade 9 chemistry teacher considered herself average, owing to the ever-evolving technology: "I would not say that I am better than everyone else as technology is changing and everyone is learning, but we have our own strengths and use tools that we are best at."

### **Strategies to foster digital skills among students**

Data from the KIs and FGDs show that teachers in China employ diverse strategies to integrate and nurture digital skills among students, and customize their approaches to enhance both digital literacy and engagement.

Teachers emphasized the importance of a structured pedagogy to integrate digital skills as essential tools for interactive learning. This represents a move away from traditional teaching methods, as educators focus on creating an environment where students actively engage with the content, collaborate with peers, and play a significant role in their own learning. This shift aligns with modern educational approaches that prioritize engaging and interactive learning experiences.

Project-based learning stood out as an effective method, as described by a middle school ICT teacher in Yinchuan, with 23 years of experience:

“*In project-based learning, we define a subject and divide students into different teams and we assign them tasks; we conduct joint exploration research. To fulfil this project, students may require a digital application as a foundation and support. Introducing various digital tools can serve as a basis for them to make progress. Throughout the project, we organize the students to evaluate results and share their findings with each other. The digital outcomes generated during this process will be further innovated ... this strategy is highly effective in arousing the students' enthusiasm for studying and promoting individual participation in learning digital skills.*

”

She gave a further example of how this strategy is used in class:

“

*We tasked the students with planning the security measures for our school, including emergency exits and evacuation procedures for up to 1,000 students. In this project, they may integrate both pictures and text to enhance their presentations. They will submit PowerPoint presentations to effectively showcase their outcomes, aiming for a very satisfactory and safe fire evacuation plan that is both realistic and effective in ensuring safety.*

”

Another approach used is the flipped classroom, where students are empowered to take initiative in their learning through self-paced exploration of digital resources, as explained by a middle school mathematics teacher from Jinan, Shandong province, with 18 years of experience:

“

*I have independently developed a class focusing on mathematics for digital literacy ... Utilizing a flipped class approach proves highly effective for students to engage in self-directed learning ... We emphasize objective-oriented teaching, fostering student initiative in studying according to the class objectives ... this teaching method offers students a valuable and enriching learning experience.*

”

A third approach mentioned in the interviews follows the Ministry of Education’s Digital Literacy of Teachers framework, which emphasizes teachers’ responsibility to impart digital skills to students (Ministry of Education of the People’s Republic of China, 2022a). Two out of five teachers in the FGDs were aware of the European Framework for the Digital Competence of Educators (DigCompEdu) and Spain’s digital competence framework, respectively. In the KIIs, three out of five interviewees were aware of China’s digital competence frameworks – the Digital Literacy of Teachers framework and the DigComp 2.2 framework (UNESCO-UNEVOC, 2022). These frameworks serve as valuable guides, highlighting diverse approaches to teaching digital skills and ensuring students acquire essential competencies for the modern world.

### **Challenges in acquiring and enhancing digital skills**

Of the numerous challenges China faced in enhancing teachers’ and students’ digital skills during and after the COVID-19 pandemic, the most common one cited by participants in the KIIs and FGDs was the limitation of time. A participant in the KII noted:

“

*The greatest challenge is time. The workload is very heavy and the duration of working hours are very long. Taking time out of my busy schedule is very limited. In reality, we need to leverage and study digital skills whenever needed to make up for our shortcomings. We cannot guarantee there is sufficient time to acquire digital skills because you can only take time off during the weekend or use your personal time to acquire digital skills. Additionally, I will work extra hours to prepare for the classes delivered, creating a conflict with the time allocated for studying digital skills.*

*We do not have enough space and time to improve our own digital skills, because as high school teachers, we need to invest a significant amount of time in lesson preparation and keeping up with the latest recommendations. Also, we do not have sufficient time to gain hands-on experience with the software, posing a major challenge for us.*

”

Finding the right balance between their teaching responsibilities and personal growth in digital literacy is a continuing challenge. Another common challenge cited was transitioning to digital platforms. Educators, in particular, shared that they initially struggled with the transition to new platforms such as Zoom, and other digital tools. As one teacher noted:

“

*I encountered challenges at the beginning. For instance, when I first used Tencent and Dingding, I did not know how to use these software platforms, but since I had to use them, I sought out information to understand their functionalities. Initially, I did not like to use these platforms, but gradually, I became more accustomed to them. By following step-by-step instructions, I learned how to use the software effectively and realized how convenient these tools are for our work. Therefore, we consider this as an opportunity to enhance work efficiency, including ChatGPT. In the initial stages, downloading the app and obtaining authorization for ChatGPT seemed challenging. I had to navigate various websites to find the unlocked version. Additionally, there are issues related to student engagement in online classes and the exacerbation of digital inequality in remote areas.*

”

Digital classrooms often fell short in replicating the level of participation and interaction of traditional classrooms. An ICT teacher noted: “Some of the students would close the link and use the tablet to play games.” Teachers also had less opportunity to identify and



respond to students' learning needs. One teacher noted: "Some families may not be economically capable of supporting students in digital skills learning. So there is a digital gap in that, and we have to work out ways to narrow the gap."

### **Geographical disparities in educational resources**

Gu and Li (2022) note:

*"Across China, educational resources in different provinces vary with respect to the quality of teaching staff, the number of digital resources available, and the ability to produce digital resources. For example, Shanghai is outstanding in terms of the quality of its teaching staff and the strong executive power of the municipal education departments."*

The city was able to rapidly develop a range of high-quality online courses, even considering the extraordinary challenges at the time. While 100 per cent of Chinese elementary and secondary schools are reported to be connected to the internet (Ministry of Education of the People's Republic of China, 2023), perceptions of the necessary infrastructure both in school and at home vary. A history teacher at a senior high school in Wenzhou, Zhejiang province remarked: "At present, development in China is unbalanced. The mid and western parts of China lack the necessary hardware and basic infrastructure required for digital education." He added that he hopes regions where educational development may not be as advanced are given enough support so that teachers and students can improve their digital skills.

### **Gender disparities in digital skills education**

The study revealed there are still gender disparities in digital skills in education in China, particularly in terms of boys' and girls' different levels of confidence and approaches to learning and using digital skills. An interviewee noted:

*"I think boys are more logical. They are more sensitive to numbers, and their thinking is deep. Female students are very interested in pictures and images. They are good at generating content relating to that, while boys are good at digital analysis. I think they can complement each other."*

In the FGDs, one out of the five teachers did not notice any difference in how boys and girls learn digital skills. Two others noted major differences. The first one, a chemistry teacher in Wuhan, said:

“*There is a difference in motivation for learning. Girls pay more attention to safety and health, so they are more prudent in choosing what content to learn and methods to use for learning digital skills. But for boys, what they like is the novel and new technologies, and they are more willing to try new adventures or create new learning opportunities. As for the acceptance of technology, girls are more open to acceptance of technology, while boys may be affected by traditional thinking and habits. I think there is quite a big difference between boys and girls and in the application and utilization of technologies. Girls believe digital technologies can be used in their personal life and learning, so they are willing to make use of social media for communication while boys want to use digital technologies for gaming or for special areas like research.*”

The other teacher, a middle school mathematics teacher in Yinchuan, Ningxia province, stated: “When teaching new skills, girls prefer to observe the teacher while boys prefer more hands-on practice, AI classes like robots, and they want to try themselves.” In the K12s, a teacher noted:

“*It is easier for boys to acquire digital skills; it is a fast acquisition compared to girls. This is just my own gender stereotype. Boys may be more interested in hands-on practice and learn faster, but for girls, they pay more attention to the details. The girls are less enthusiastic about classroom activities, but the homework provided by them is better than the boys.*”

Teachers are cognizant of the need for gender-responsive pedagogies, especially in encouraging girls to embrace digital tools and overcome initial hesitations. One teacher noted: “I focus more on encouraging girls so that they can have hands-on practice and to improve their ability. With time they become more proficient.” Another teacher said: “Both boys and girls make progress but in different aspects. Boys are more enthusiastic, so they develop digital skills faster, but girls are good at building the knowledge system and the structure.” Another teacher noted:

“*I encourage students to utilize their strengths. For example, boys are more passionate about something new, so we can invite the boys to compile the instructions, and we will use the instructions to teach girls, and the girls could help more students to learn that tool. So they can be very good teachers, and they play to their strengths. Basically, I encourage students to share their talents so that they can learn from each other.*”

While there is awareness of these gender differences, most teachers were not aware of policies that support gender-responsive pedagogies. For example, one teacher noted: “I think we should further make our pedagogical strategy more precise, and we should incorporate gender-responsive categories into the guidelines of teaching and methods.” A KII participant made a recommendation to enhance gender awareness and foster more inclusive learning environments:

“*It is necessary to improve our awareness about gender equality. Because gender stereotypes for girls in digital skills is something that we need to pay attention to. We need to think of measures to solve the digital literacy issues of growth and how to empower them.*”

Teachers also emphasized that promoting gender equality extends beyond the confines of schools, underscoring the important role of family education in shaping perceptions and expectations. A mathematics teacher with 18 years of teaching experience highlighted the need to improve awareness about gender equality, especially in addressing gender stereotypes related to digital literacy. He noted the importance of empowering girls and helping them gain confidence in digital skills. The teacher further suggested that both teachers and government agencies should pay attention to these issues and work towards improving students’ abilities and confidence.

### **Focus on online safety**

Online safety emerged as a central concern among the teachers from China who participated in this study. Teachers actively address this issue within the context of digital skills education: “Basically, we educate the students about cyber safety in class. We also have some lectures about cyber safety and let them cite the potential cyber safety issues, and this is very important for us.”

A middle school physics teacher in Wuhan, Hubei province, emphasized the critical importance of safeguarding students’ personal information:

“*I begin by locking the virtual classroom once all students are present; this restricts access to authorized participants only. I also regularly change the classroom’s password to enhance security. Real-name registration is mandatory to prevent the use of false identities. I educate students about online safety and remind them to safeguard their personal information. I also encourage my students to report any instances of online harassment or safety concerns to both parents and teachers.*”

A senior high school history teacher in Wenzhou, Zhejiang province shared how he promotes the use of cybersecurity measures: "I remind students not to expose too much individual personal information online, especially girls on their social media, not to post many of their own photos and do not expose their privacy including the home address and their contact information." A middle school mathematics teacher noted:

*"We raise awareness among the students about cyber safety. We keep the channel of communication open to the students so that if they encounter any problems, then they can talk to their teachers as a way to protect them or help them discern the possible problems."*

A teacher educator mentioned using real-life cases and role-playing activities:

*"When we install the computer system, we install antivirus software, such as a firewall. We also have the role-play to spread knowledge of online safety. There will be animations to tell the story by having people role-play as the victims and the others as cheaters or the fraud. By watching these videos, people can learn about online safety."*

According to her, this has been effective in educating students about online safety. All teachers from the study recognized the ongoing need for training and support to ensure that teachers can navigate and mitigate online safety concerns.

### **Enhancing the future of digital skills education**

When asked what could be done to further support and improve digital skills and digital literacy in China, the teachers from both the FGDs and KIs expressed a desire for increased international collaboration, recognizing the value of sharing best practices and gaining global perspectives on digital skills and gender equality. A teacher educator from Hubei province noted: "I hope that in future the United Nations can also share the very good examples and good practices from other countries in terms of digital literacy and skills to China so that we can learn from other countries."

Most teachers called for flexible, accessible and practical digital skills training programmes tailored to the specific needs of educators and the demands of their classrooms. One teacher noted: "I would also like to say that digital awareness and digital skills are important for the improvement of any individual and also important for the country to realize the development."

### 3.3 Lao PDR

In Lao PDR, the integration of ICT in schools is at a nascent stage, presenting an additional layer of complexity for educational institutions already contending with numerous challenges. Nevertheless, there is a discernible transformation in the landscape of digital education in Lao PDR (Steventon, 2023). Insights from KIIs and FGDs with teachers and teacher educators show a high level of support for digital education among educators.

A teacher educator with 11 years of teaching experience expressed his appreciation of the value of incorporating ICT in education to augment the overall learning experience: “Teachers need to adapt to the changing technology. This is important for their daily life, their professional development, and their students’ progress and future, so I would advise my fellow teachers to learn and apply digital skills.”

#### *Accelerating digital education in response to the pandemic*

As the COVID-19 pandemic accelerated the adoption of digital education, teachers in Lao PDR were faced with significant challenges, and those with lower levels of digital proficiency and literacy in English were particularly affected. A teacher educator who teaches Lao language and culture, and gave herself a score of 3 on a scale of 1–10 for digital proficiency, said: “I had very limited digital skills before the pandemic. I could not use most digital tools, but I had to learn ... English language was a challenge for me. Learning digital skills needs the understanding of English.” This experience was shared by another teacher who stated: “Language barrier was also a significant issue for me. Most online resources and tools are in English and my proficiency in English at that time was not very good, making self-learning a challenging task.” This dual English/digital literacy challenge compounded the difficulties of a swift transition to digital education.

All the participants in the KIIs and FGDs highlighted the challenges posed by the limited availability of devices and internet connectivity, which excludes some students from classes. A secondary school teacher with 12 years of experience stated:

“*Transitioning to online teaching was a challenge. Very few students have smartphones, and parents also don’t know how to support their children when it comes to digital skills. Most students could not participate in online learning like Zoom or Google Meet because of lack of devices and sometimes poor internet connectivity.*”

An article by Radio Free Asia confirms the situation in Lao PDR, based on stories their audience shared regarding poor and rural students in Lao PDR during the COVID-19 pandemic. It notes that, owing to school closures, students were expected to engage in online distance learning, but many lack access to essential resources such as computers, the internet and even electricity. The article highlights the disparity between urban and rural areas, with city students having better access to technology (Avary & Whong, 2020).



## Advancements in digital education

The KIIs and FGDs indicated that teachers and educators recognize the need for digital proficiency to effectively teach digital skills. Participants were cognizant of how their digital skills affect their teaching abilities, enabling them to foster connections with students and effectively convey information. A high school teacher and training enthusiast with 23 years of experience stated:

“*I normally use PowerPoint presentations. I do digital lessons with students when I am not near or not in the classroom. When I have to attend meetings, I use Google Meet to keep in touch with the students and keep the conversation going. Being digitally savvy has allowed me to do this.*

”

The quote highlights the teacher's awareness of the transformative impact of digital proficiency on teaching practices and educational delivery. This awareness aligns with broader educational trends, where the significance of teachers' proficiency in data literacy and digital teaching competence is increasingly recognized. As highlighted by Lin et al. (2022), ICT skills significantly predict digital teaching competence.

According to one of the teachers in a KII, “Digital skills include the capacity to utilize information and communications technology in everyday life, the ability to communicate using computers and mobile phones, and the ability to train others.” This quote suggests that the teacher has a thorough understanding of the need to effectively use various digital tools and technologies in daily activities. It implies a practical understanding of how to navigate and leverage information available through computers and other communication devices. The inclusion of the ability to train others emphasizes a broader perspective on digital skills, and implies not only personal competence but also the capacity to share and impart this knowledge to others. This teaching aspect suggests a social dimension to digital skills, recognizing the importance of spreading digital literacy and dedication in Lao PDR (UNICEF Lao PDR, 2023c).

## Strategies to foster digital skills among students

Teachers have shown considerable adaptability to learning digital skills even in the absence of formal training on the effective use of digital tools for teaching. They have self-taught and turned to user-friendly social media platforms such as WhatsApp and Messenger. For example, in one of the KIIs, a teacher said:

“*We also use Zoom, but face challenges because not all students can use it, so we resorted to Messenger and WhatsApp, but also students tend to play around with their WhatsApp or Messenger rather than study. We had to accept it more than nothing.*

”

The quote underscores the commendable efforts of teachers in adapting the learning experience for students while addressing their diverse needs. However, a challenge surfaced as some students tended to engage in non-educational activities on these platforms, prompting teachers to reluctantly accept the situation. This shows the intricate dynamics of remote learning, highlighting the necessity for innovative solutions like visual tools and monitoring mechanisms to sustain students' focus and active participation (Basengkham, 2016).

Another teacher said in the KIIs:

“*I use whatever tool or platform that students can easily access. The use of ICT depends on the capacity of different teachers and the familiarity of the teachers and students. For me, whichever way the students can easily access will be most effective. During COVID, there were issues of access in digital skills learning. It is important the tools and platforms are easily accessible and convenient for students.*

”

This statement demonstrates a flexible and student-centric approach to technology use in teaching. The teacher emphasized the importance of choosing tools or platforms based on students' ease of access. The decision on the use of ICT is seen as depending on the varying capacities and familiarity levels of both teachers and students. It is essential that the digital tools chosen are appropriate for learners at each level (Guppy et al., 2022).

### **Challenges in acquiring and enhancing digital skills**

The lack of coordination, collaboration and personal development initiatives, and the infrastructural limitations may challenge teachers in developing their digital skills and literacy (UNDP, 2022a). All the teachers and teacher educators across the KIIs and FGDs highlighted challenges in acquiring and enhancing their digital skills. They cited limited training opportunities, unreliable and expensive internet connections, language barriers in accessing online resources, and insufficient access to devices.

All the teachers interviewed emphasized the need for resources to enhance their teaching and the learning experience, including financial, technical and material resources. One teacher in the FGDs said: “Teachers need computers and fast internet because sometimes the connection can be slow. And support with budget for applications they use. We use Canvas which needs to be upgraded because some applications require money to ease the payment.” Another teacher noted: “[The government] is encouraging the use of digital tools, but the problem is there are not enough facilities to help reach this goal ... Training opportunities are not available.”

Despite these challenges, the Ministry of Education and Sports has taken a positive step towards improving digital literacy among teachers with the development of ICT standards for teachers in Lao PDR, which serve as a basis for competency-based ICT training for educational professionals in the country. The project aims to provide technical support for

national capacity-building, improve the capacity of teacher-training colleges and institutions, and develop and implement teacher-training courses that incorporate ICT competency standards aligned with national education policies and goals (UNESCO, 2022f). Most of the teachers across the KIIs and FGDs were aware of the training programme, but they have not had the opportunity to attend it yet. One teacher stated: “I have not attended any training, but I am aware of one being available at the Ministry of Education and Sports.” Another teacher said: “I have been part of the ICT standards training for Lao teachers, and I was part of one or two trainings at the beginning when they started developing the ICT standards which have been divided into various indicators, and those standards have been approved in 2022.”

In a KII, a teacher educator reflected:

“*My learning journey mostly comes from training. In digital skills and ICT there is a training from the Ministry of Education and Sports at the central level. There is a priority to train personnel to understand and be able to use the skills or use ICT in their workplace. In our teacher-training college, there is an ICT unit that is responsible for providing training for other lecturers and staff members so that they can use digital skills in the subjects that they are teaching.*

”

This statement indicates the availability of training programmes. However, there seems to be a lack of awareness around them beyond this particular educator.

### **Geographical disparities in educational resources**

Lao PDR's education system is marked by significant disparities between rural and urban areas. There is a notable contrast in school attendance rates, with only 70 per cent of children in rural areas attending school compared with 84 per cent in urban areas (Steventon, 2023). This discrepancy is mirrored in the allocation of resources by the government, with schools in rural areas receiving comparatively fewer resources. The challenges in Lao PDR, including those related to digital skills learning and COVID-19 impacts, are particularly pronounced in rural areas and are exacerbated by other issues, such as geographical constraints and a shortage of teachers (UNESCO, 2019c). While disparities exist between rural and urban areas, urban schools are also significantly under-resourced. According to UNICEF, hardly any primary or secondary schools have computers or smart devices in schools, and many still lack access to electricity. Therefore, digital literacy classes are not offered, and very few students engage in ICT-related activities (UNICEF Lao PDR, 2023c).

Referring to the peak of the COVID-19 period, one teacher remarked:

“  
*The challenges differed from urban to rural areas. I come from the urban area, but people from far away or coming from rural areas, they did not have access to devices and connectivity. Such students could not participate in online learning and it was hard for them to catch up with other students when it came to digital tools and use of digital skills.*  
 ”

The inability to participate in online learning placed these students at a disadvantage, making it challenging for them to bridge the gap in digital tools and skills compared with their urban counterparts.

### **Gender disparities in digital skills education**

The gender disparities in learning digital skills emerged as a central theme with the teachers interviewed and in the FGDs. According to the 2017 Lao Social Indicator Survey, which is the most recent major household survey available, the percentage of young men and women (aged 15–24 years) who participated in at least one ICT activity in the last three months was limited, with only 11 per cent of young men and 9 per cent of young women engaging in such activities (Lao Statistics Bureau & UNICEF, 2018). The majority of the teachers interviewed confirmed the gender disparity evident in those figures. In the FGDs, when asked if they noticed any differences in how girls and boys approach digital skills learning, one teacher said:

“  
*The boys tended to grasp concepts more quickly than the girls. While there were no differences in handling assignments, when it came to tasks like taking things out [fixing computers or manipulating hardware], male students demonstrated greater speed and efficiency compared to their female counterparts.*  
 ”

The statement suggests a perceived difference in the speed of understanding and technical skills between male and female students. It highlights that, in the context of fixing computers or handling physical tasks, male students are perceived to be faster. However, it is essential to approach such observations with caution, as individual abilities can vary widely regardless of gender. This could be due to rigid gender roles and stereotypes in society that influence girls' preferences and abilities in educational settings (Haefner, 2020). Another interesting response shared in the FGDs focused on the willingness and commitment aspect of learning:

“Boys generally demonstrate higher levels of knowledge, curiosity and eagerness to learn digital skills. They also exhibit more excitement when confronted with challenges and when learning new digital tools. However, the boys may have a shorter attention span during classes compared to girls.”

A teacher stated in a KII that she noticed distinct differences in how boys and girls approach digital skills learning. In her observations, she found that:

“Girls tend to exhibit greater focus, obedience and attentiveness when it comes to learning digital skills. They are respectful of the teacher and engage more actively with the digital lessons. Boys, in contrast, frequently struggle with distractions during digital skills learning sessions. They are more easily diverted, and some may choose to engage in gaming activities rather than concentrate on the lesson.”

Two other teachers, however, mentioned in the FGDs that they observed no discernible differences between boys and girls in their digital educational experiences. Both consistently emphasized that individual traits, such as attentiveness to learning and commitment to studies, were pivotal factors, irrespective of gender. One teacher said that “it depends on the person, not gender”, which was supported by his colleague, who added that “it depends on the attentiveness to learn and commitment to the study”.

Furthermore, when asked about the techniques incorporated to balance the gender disparity, one of the teachers mentioned that “there is nothing being done like dividing the activities based on gender”, while another teacher said that “it is achieved through giving extra explanation and working closer to the group in need”. Teachers can enhance their approach to digital skills development by incorporating gender-responsive teaching strategies. Currently, there is a lack of such strategies, resulting in a uniform instructional style for all students (Basengkham, 2016).

### **Focus on online safety**

While learning digital skills brings opportunities, it also introduces risks that need to be managed effectively (UNICEF, 2023b). It became clear that all the research participants in Lao PDR have basic awareness of the potential dangers of unregulated internet use for children, but that they lack formal training on how to teach and protect their students from risks and harms online. All the teachers and the teacher educator unanimously called for online safety training to enhance students’ digital literacy and to protect them from potential online risks and harms. None of the research participants had participated in online safety training. In the KIIs, one teacher said: “We should have more training and more opportunities for teachers to learn online safety. When teachers are aware of safety measures they will teach that to their students so it will be very helpful.”





A teacher with 23 years of experience also said: “I have not had any formal training, other than self-learning and knowledge I get from suggestions from the ICT unit regarding online safety. But there is no professional training.” This reality presents a challenge for teachers, since it is essential that they are well versed in online safety measures to impart their knowledge effectively to students and create a safer digital environment for them (Australian Council for Educational Research, 2023). In the absence of formal training, teachers are taking the initiative to upskill themselves and provide advice, tips and cautions to their students.

One teacher with 10 years of experience highlighted in the KIs:

“

*I have discussions with my students about content and posts that they share online. They say share to all genders of students, not necessarily girls alone. In the classroom, I normally tell students that they need to be safe online, especially when on social media like Facebook. Also, since we do a lot of searching on Google, I tell my students to be aware of the websites that are recommended or that are right and not get information from just any website.*

”

Another teacher said: “In our school, teachers provide a brief on how to use technology to ensure safety for not only teachers but also students. Teachers advise on the resources or websites to use. We teach students to be safe when online and also protect their privacy.” This indicates a collective commitment to fostering a safe and responsible online environment for students, emphasizing digital literacy and awareness of potential risks

associated with online content. In addition to advice, parents and caregivers need detailed information on policies and the steps to take in the event of their child experiencing online violence or if their data or privacy is being compromised (UNICEF, 2023b).

### **Enhancing the future of digital skills education**

The research participants in Lao PDR were well aware of the foundational skills and equipment required to propel education into a digitally proficient future. A high school teacher with 10 years of experience articulated a particularly important aspect of sustaining and future-proofing digital education:

“*Teachers need to research and learn more. We need more devices for students, computers and more facilities for students. We also need more access to digital devices and good connectivity. This will ensure that teaching and learning is easier and more efficient.*

”

This quote emphasizes the urgent need for teachers to engage in continuous research and learning, reflecting a proactive approach to staying abreast of advancements in education and technology. It also highlights the pressing need for additional resources and improved connectivity, essential elements for fostering efficient teaching and learning in a digitally driven educational landscape. Another teacher in the KILs noted what it will take to realize these ambitions:

“*There's a big need for digital scale in our country. It makes life more convenient. There's also a lot of need for daily life and education. This need is influenced by the outside environment where the world is evolving and we need technology which is changing very fast ... In order to catch up with the rapid change, it is necessary for the country and individuals to participate and to adapt to the change. In the technology era, digital skills are very important for professional development, communication and all other benefits that come with being digitally proficient.*

”

This further bolsters the broader narrative of fortifying the foundation of digital skills education for a more dynamic and proficient future (Reimers et al., 2021).

### 3.4 Solomon Islands

The rapid spread of digital technologies, particularly mobile phones, has been observed in Solomon Islands (G. Hobbis, 2017). This indicates the potential for leveraging digital tools for educational purposes. Strategies to enhance pre-service teachers' technological pedagogical content knowledge (TPACK) have been identified, including using teacher educators as role models, reflecting on the role of technology in education, and providing continuous feedback (Tondeur et al., 2019).

All participants in the KIs and FGDs were from Honiara, the capital city of Solomon Islands, and the teachers involved taught at secondary school. The awareness of digital competence frameworks appeared limited, with participants highlighting existing practices related to ICT literacy assessments rather than formal frameworks. In the second FGD, a MEHRD official mentioned the use of questionnaires during ICT projects, aimed at gauging teachers' ICT literacy levels. His colleague said: "I am not sure about the digital competence frameworks, I am only aware of the ICT master plan."

In the first FGD, a teacher was aware of a framework for the curriculum specifically tailored for the senior levels:

“*They do influence my teaching. These frameworks have helped me in the two years that I taught ... It has helped me grow the content that I create as well as the quality of work that I give my students ... It has helped me to use more digitized methods. So, this year, I have started using AI for my lesson plans, as well as teaching students how to use platforms such as Canva for presentations rather than only using PowerPoint.*

”

In her role as a teacher at an international school, she also mentioned being aware of an international framework: "We use a Cambridge curriculum that comes with their framework, and there is even more content, and we teach that from middle school, Year 6 right up to Year 12."

Reflecting on their journey in developing digital skills, teachers said they initially found it challenging but gradually appreciated their significance in enhancing lesson delivery. They acquired digital skills through training and self-learning. In the KIs, a teacher mentioned that he now feels confident in his digital skills proficiency and even conducts "short ICT training for colleagues". Another teacher recounted acquiring knowledge from YouTube and university studies in computing, and confidently asserted: "I am good in digital skills, compared to my students and also my colleagues." The ICT teacher acknowledged that some of his colleagues have limited digital knowledge as they only possess basic skills like typing, and lack more advanced digital knowledge.

As for a secondary school teacher teaching mathematics and computer studies, in the first FGD she noted that some of her students might be better than her in digital skills:

“*They know a bit more because they might have more access or knowledge to things I’m not aware of. This keeps me on my toes ... It does give me the challenge that I need to keep on working on my digital skills and be one step ahead of them.*

”

### **Accelerating digital education in response to the pandemic**

The rapid transformation of educational practices in Solomon Islands became imperative in response to the unforeseen challenges posed by the COVID-19 pandemic. MEHRD developed the Education System Response Scenario Plan as a rolling plan for the reallocation of education resources during the pandemic (Ministry of Education and Human Resources Development, Solomon Islands, 2020). The plan aimed to address the challenges faced by the education system in the shift to online learning, and the overall impact of the pandemic on education. MEHRD’s aim was to reinforce the areas that needed immediate attention, such as public health and safety, teaching and learning continuity and preparedness, resilience, and adaptation in response to the pandemic. The plan featured key digital solutions and approaches in four scenarios: schools reopening, schools reclosing, recovery, and adaptive should there be a need to reopen and reclose again.

A MEHRD official in the second FGD said: “The COVID-19 pandemic hit us when we least expected it.” The ministry found itself at the forefront of efforts to adapt and accelerate digital education initiatives. He added:

“*It was during the pandemic that the iResource platform was created specifically for the students to access resources like textbooks and past papers, and there are also some assimilations in that website purposely for ongoing education. That was the reaction from the Ministry of Education.*

”

In the absence of proactive measures, the ministry had to take a reactive approach, primarily relying on radio broadcasts to ensure continued learning. The other MEHRD official from the FGDs stated:

“*During that time, we had radio broadcasts from some teachers, including the MEHRD officers at the national radio station. And even though we had the broadcast on the radio, some of the students and teachers did not have the access to devices to listen to the training or teaching on the radio station. That was a big challenge for us, and somehow, it gave the ministry an idea of how we can target issues that we faced during the pandemic.*

”

This experience highlighted the urgent need for advancements in digital education to establish a resilient and responsive education system.

### **Advancements in digital education**

In exploring the incorporation of digital tools into education in Solomon Islands, the participants shed light on various initiatives. The Solomon Islands National University uses Moodle as a digital platform for teaching, illustrating the integration of learning management systems in further education. An ICT teacher interviewed stressed the importance of digital skills for both students and teachers in accessing information online, stating: “Students or learners can not only get information or skills from teachers; there is so much information on the internet, and students need to have the digital skills to access it.”

Reflecting on the ICT for Better Education project initiated in 2015, the MEHRD official in the second FGD discussed the use of KioKit tablets, which were distributed to students to support teaching and learning in five schools. Both MEHRD officials in that FGD agreed that despite facing challenges, such as a lack of sustainability plans and issues with tablet durability, some schools continue to use the KioKit device, repurposing it as a hotspot. This project aimed to assess the viability of digital solutions in remote schools, emphasizing the need for ongoing efforts and monitoring for successful implementation. According to the MEHRD official: “The project failed but it proved it is possible for remote schools to also benefit from these kinds of projects.”

While the university embraces Moodle, it seems that primary and secondary schools may not extensively use such digital platforms, highlighting potential variations in digital tools adoption across different educational levels. The FGD participants did mention the digital tools developed by MEHRD for teachers and students to access online resources. An FGD participant noted that he was involved in making the five-year ICT master plan (2019-2023) and explained: “After the pandemic, MEHRD came up with the development of one of the components within the ICT master plan. And that is [the] iResource [platform]. The ICT master plan has four components, which are iKonec, iTech, iResource and iManage.”

In the first FGD, a MEHRD official gave more information on the iResource platform, an initiative whose expansion UNICEF has been supporting, and which is used for teachers to share their best practices, contributing to teacher motivation:

“MEHRD itself has moved away from the iResource platform as a small library where they can only upload and store resources. The platform is now taking a new phase, which is more interactive with students and teachers sharing the lessons and assessments. It allows teachers to upload their lessons so that others can see and also use them. This motivates teachers to upload their best lessons for others to use as samples. So, the whole trend has taken us to a new chapter in the world of digital skills learning. Teaching is now going beyond paper and chalk on blackboard.

”



An ICT teacher in the first FGD explained how she integrates digital skills into teaching:

“

*I have mostly digitized my classes ... I have been using AI a lot this year, and since my students are also aware of it, I tell them they can utilize it, but they should not be reliant on it because sometimes even AI gets the answers wrong ... I have been creating videos for my students by using Nearpod, which is a tool that makes questions in videos ... I still use Google Classroom as well.*

”

The teacher's emphasis on the potential inaccuracies of AI-generated answers highlights the importance of cultivating critical-thinking skills alongside digital skills. To analyse the information accurately, students should not solely rely on digital tools but should also engage in critical thinking.

The two teachers in the first FGD agreed that Google Classroom was much easier to use compared with other digital platforms, and they still use it.

### **Strategies to foster digital skills among students**

A high school computer studies teacher interviewed found sharing learning materials online to be an effective strategy to facilitate individualized and personalized learning experience for students: “This method allows students to access resources through their smartphones, enabling them to learn at their own pace, which is especially beneficial for students with varying learning speeds.”

In the first FGD, a computer studies, mathematics and science teacher noted that her approach to monitoring and assessing her students' progress in developing digital skills involves providing them with instructions, typically in paper format, which they then apply electronically. The other ICT teacher described peer assessments as a tool for fostering digital skills and monitoring her students' progress: “I put them in pairs. After they do a task, they will switch to evaluate each other's work and provide feedback.” According to her, summative assessments based on assignments can help her evaluate the quality of their output.

Recognizing the importance of digital skills in the modern education landscape, the participants emphasized the need for strategic initiatives to foster digital skills among educators and students alike. Proposed strategies included collaboration with universities to integrate digital content in teacher-training programmes. Additionally, the discussion highlighted ongoing projects, such as the Improving MS Project in MEHRD (mentioned briefly by a MEHRD official in the second FGD), which is focusing on updating and maintaining data systems to support the development of digital skills. These strategies form a crucial part of the broader effort to enhance the future of digital skills education in Solomon Islands.

### Challenges in acquiring and enhancing digital skills

The discussion shed light on the persistent challenges in acquiring and enhancing digital skills, with connectivity standing out as a major obstacle. One participant noted: “The main challenge is connectivity; only some schools in town have reliable connectivity. It is a great challenge in remote areas.” Logistical issues in reaching remote schools for training sessions and the limited internet access in schools highlighted the need for comprehensive solutions to address these challenges. The participants’ acknowledgement of the ongoing backlog in updating data systems further underscored the multifaceted challenges in effectively acquiring and enhancing digital skills.

As noted by the two teachers interviewed, another challenge encountered, aside from slow internet speeds, was a lack of digital devices like smartphones among students, hindering effective communication and access to online materials: “The internet is very slow, it makes it hard to communicate on platforms like Zoom. Some students lack access to smartphones, making it difficult for them to learn online. This is still an ongoing challenge.”

An ICT teacher in the first FGD mentioned time as being a major constraint:

“*Even just preparing one lesson was very time-consuming. Preparing and uploading a one-minute video took a lot of time and resources ... The other challenge is the feedback from our students. Some parents did not think it was important to give access to their phone or laptop, and only some students were able to use platforms like Google Classroom.*

”

In the same FGD, a MEHRD official pointed out:

“*We did research throughout selected provinces and schools in the country through the use of radio and our iResource platform. Many responded that the challenge was connectivity issues ... Others have issues with devices and digital platforms; they lack knowledge on how to navigate them. Internet is also quite expensive ... Teachers also raised concerns about the cost of electricity to run computers, hosting the servers for them or even having long hours of repairing and uploading lessons. The cost of electricity is a problem – it is expensive.*

”

The observations above provide insight into some of the very real challenges in the country.

### Geographical disparities in educational resources

GSMA (2019) highlighted the geographical disparities in educational resources, particularly in terms of internet connectivity in Solomon Islands. The lack of reliable internet access in remote areas emerged as a significant barrier to the widespread adoption of digital education. In the FGDs, a MEHRD official remarked: "Only a few of the local schools in the urban areas have computer labs. As for rural schools, they have no connectivity, no digital infrastructure, and no computer labs." Addressing these geographical disparities will be crucial for creating an inclusive and equitable digital education landscape across Solomon Islands.

### Gender disparities in digital skills education

Responses and discussions within the KIs and FGDs pointed towards gender disparities in digital skills education. An FGD participant said: "Boys tend to show more interest in STEM subjects and digital skills, but currently girls are catching up and showing more interest in digital skills." This highlights the importance of fostering inclusivity and gender-responsive approaches in digital education initiatives.

In the first FGD an ICT teacher pointed out:

“*In the younger levels, I see more girls are more on to digital skills than boys. They tend to concentrate on their work. But in the older grades, boys are more knowledgeable and their perspectives and questions are outside the box compared to the girls.*

”

A KI participant noted variations in enthusiasm between male and female students in computer labs, prompting gender-specific grouping to encourage participation. One participant observed a challenge in teaching digital skills to both genders: "Boys tend to be more proactive, while girls may take more time to grasp the skills."

### Focus on online safety

Integrating online safety into digital skills training was deemed crucial to making students aware of the potential risks and benefits of online activities. To address online safety concerns, an interviewee explained that the school implemented a child safety online policy, emphasizing restricted use of monitored devices for students. The teacher suggested that "teacher-training institutions should incorporate digital skills programmes, and the government should support schools in providing adequate resources." He added: "That is why digital skills must be integrated with online safety and I think these two must go together."

In the first FGD, the two teachers noted that in Year 7 there is a topic on cyber-bullying and online safety which they teach to their students, while a MEHRD official explained:

“

*This is a big component that goes with the whole ICT master plan to adopt a cyber-bullying policy ... Telekom company here, that also has government support, has recently moved into registering SIM cards so that people are held accountable for websites that are not allowed or are not good. I think we should train our teachers and even students on online safety. This is an ongoing thing ... Telekom has strong restrictions and even keeps track of what has been going online. The tendency of cyber-bullying and online risks is still high. And this is an area in which schools have taken the initiative to take precautions and protect students.*

”

All teachers and the MEHRD officials in the KIs and FGDs noted that they have not received any formal training in online safety but would like to have this kind of training.

### **Enhancing the future of digital skills education**

Looking ahead, the participants envisioned an enhanced future for digital skills education in Solomon Islands. An ICT teacher said: “It would be good if the teacher-training institutions had training specifically for digital skills.” Another interviewee noted: “All schools should have their own websites to help teachers to teach and share learning materials with their students.” Proposals included a call for external support, particularly in ensuring quality data and addressing challenges related to connectivity. An ICT teacher noted: “Internet is very expensive ... We also lack technical resources like digital devices. If a school is offering digital devices to students, the government should have a plan to support these schools in enhancing digital skills for students.”

The commitment to collaborate with universities for teacher-training programmes and the ongoing projects aimed at improving data systems underscore a collective vision to create a robust and future-ready digital education ecosystem. The imperative lies in accelerating efforts to bridge geographical and gender disparities, ensuring a comprehensive and equitable approach to digital skills education.

## **3.5 Vanuatu**

In Vanuatu, the landscape of education has been undergoing a transformation, with a growing emphasis on digital skills to meet the demands of a rapidly evolving technological world. With varying levels of experience and expertise, the three teachers interviewed, all teaching in urban areas, highlighted the critical role digital skills play in enhancing teaching methods and improving the overall educational experience for students. One teacher pointed out: “Digital skills make life and teaching easier ... it speeds up the learning process.” All three teachers interviewed were not aware of any digital competence frameworks, showing that there is a potential gap in the awareness of digital competence frameworks among the teaching community.



### **Accelerating digital education in response to the pandemic**

The COVID-19 pandemic presented significant challenges to education worldwide, and Vanuatu is no exception. The teachers highlighted the impact of the pandemic on their teaching practices, emphasizing the shift to online and distance learning. An ICT teacher remarked:

“Face-to-face is a limiting type of learning but digital skills learning has strongly evolved this. Learning continues from contact to non-contact, and distance learning. You can also access a lot of learning resources online. This is why we need to move to digital skills learning.”

A primary school teacher noted:

“When we experienced COVID-19, schools were closed so learning stopped. It was important for teachers to have some digital skills so that they can go online to help children to continue learning ... This was to help children to continue learning or prevent disturbance in their learning even when schools were closed.”

Challenges such as poor internet connectivity, lack of access to digital devices, and the need for structured training were prevalent themes. Despite these hurdles, the teachers acknowledged the pivotal role of digital skills in ensuring the continuity of education during crises.



## Advancements in digital education

During the COVID-19 pandemic in Vanuatu, teachers had to shift from traditional to digital teaching methods in education. All the three teachers interviewed said that they had to engage in self-learning in order to improve their digital skills.

Digital proficiency was a key aspect. An ICT teacher expressed confidence in his digital skills: “I am slightly better than my colleagues and students. This is because I engage in self-learning and seek information from other platforms.”

The mathematics teacher acknowledged the significant transformation that has taken place over the past two years, particularly in ICT: “It is important to stay updated, through continuous learning, starting from teacher training and extending into real-world teaching scenarios.”

Passionately advocating for the importance of digital skills in Vanuatu, a Grade 9 teacher stressed the need for a transition to digital learning to improve accessibility and foster transformative education. She noted:

“During the pandemic we used digital skills to plan all the work that needed to be uploaded. We went from using hard copy to soft copy. For instance, students’ homework to take home, the lessons that need to be covered. And this made our work easier. After the pandemic we still apply this.

”

## Strategies to foster digital skills among students

In Vanuatu, teachers use a range of strategies to cultivate digital skills among students. The teachers interviewed provided valuable insights into their strategies for integrating digital skills into their teaching practices to boost digital literacy and encourage active participation in the learning experience. In the KILs, an ICT teacher said: “I realized I need to change the teaching approach to hands-on activities and encourage the students to explore digital skills independently while I provide guidance and support to them.” The third teacher interviewed mentioned two strategies she uses:

“The main strategy I use is face-to-face learning. Students concentrate more and I get immediate feedback when teaching digital skills. Another strategy is group discussions. Students perform during peer learning so I group them by mixing strong and weak students so that they can help each other learn.

”

From incorporating technology into lessons to fostering critical thinking and innovation, the educators emphasized the importance of hands-on activities and active student involvement. Additionally, the use of multimedia, collaborative tools, and real-life

applications like Microsoft Excel were highlighted as effective methods to engage students and enhance their digital skills. The teachers' commitment to continuous learning and adaptation to new teaching methods demonstrate a proactive approach to staying current in the rapidly changing digital landscape.

A teacher proficient in Microsoft Excel said:

**“** *I am good with Excel. I use my digital skills at school, and it helps me a lot when I create assessment tools and templates for school reporting. I have created these not only for my school, but I have shared this knowledge with seven other schools which were interested in what I have been doing with Excel.*

**”**

He further shared his success in using digital tools: “I have seen digital tools make learning more interesting and fun for students. When I use digital devices for discussions and comparisons, I see students are more interested in learning when I use these digital skills.”

A Grade 6 teacher incorporated tools like laptops, smartphones and projectors, creating a technology-rich environment. She explained:

**“** *A simple example of integrating digital skills into teaching is taking photos of students and asking them to write a personal profile of themselves. I then laminate the profile used. Another example is reading a novel. Before reading a novel, I ask the students to watch the movie. While reading through the novel, the students can predict the ending of the story. And it can also be vice versa. This makes them learn faster.*

**”**

All three teachers interviewed stressed the importance of promoting critical thinking and fostering digital innovation to enhance the learning experience.

### **Challenges in acquiring and enhancing digital skills**

The challenges faced by teachers in Vanuatu in acquiring and enhancing digital skills were multifaceted. Issues such as poor internet connectivity, financial constraints, and geographical barriers were identified as obstacles to effective digital skills learning. The teachers stressed the need for structured training and support from educational authorities, emphasizing the importance of a collaborative approach involving all stakeholders.

The experiences shared highlight the necessity of addressing infrastructure, access and capacity-building to ensure the successful integration of digital skills into education. One teacher noted: “If the webcam is not working I would not know who is on the other side

attending the quiz or exams. You might be assuming the student is doing all the work but there is someone else doing the exams for the students.”

A teacher with over 10 years of experience and two years in ICT cited a couple of challenges:

“

*I was self-learning digital skills and encountered some challenges. The training and support from the Ministry of Education to enhance digital skills is much needed. Digital skills learning is an end-to-end approach. One of the challenges I faced was obtaining agreement from superiors on the other end, where the teaching of digital skills should align with my instructions. Another challenge was finances – this was an obstacle that slowed down digital skills learning. Geographical location was a barrier. Training or capacity-building to build digital skills was also a challenge. Lastly, the other obstacle was limited access to digital hardware.*

”

A Grade 7 and 8 teacher with eight years of experience remarked:

“

*Internet connection was not stable during and after COVID-19. The other challenge was familiarity with the skills right when starting to learn about the software. I think it takes time to learn how to use a new digital tool or platform.*

”

A Grade 6 teacher navigated through the pandemic by managing both hard and soft materials, acknowledging the need for training despite access to devices: “Even though the school had some access to devices, the challenge was that we needed training so we can effectively use digital skills.”

### **Geographical disparities in educational resources**

The teachers’ experiences also shed light on geographical disparities in educational resources, particularly in terms of access to digital tools and training opportunities. The impact of geographical location on the availability of digital resources and opportunities for skill development emerged as a significant concern. An ICT teacher who had earlier noted that geographical location was a barrier added that “schools in rural areas had poor internet connection and both students and teachers had limited access to digital devices.”

Another teacher also highlighted that compared with urban areas, internet connection was not stable in remote areas and it is still an ongoing challenge: “We need an upgrade with the internet providers that can give better access to learning digital skills in rural areas.” The need for equitable distribution of resources and support structures was underscored, emphasizing the importance of addressing geographical disparities to promote a more inclusive and accessible digital education landscape.

### Gender disparities in digital skills education

Regarding gender differences in digital skills acquisition, all the three teachers interviewed observed minimal distinctions between boys and girls. An ICT teacher said: "As a teacher, I have observed there are not much differences. Both boys and girls are eager to learn while learning digital skills. Both genders involve themselves equally in learning more." They emphasized an inclusive approach in their teaching methods, ensuring that all students, regardless of gender, feel encouraged to participate. A KII participant said: "I encourage group discussions, I group students according to their abilities regardless of their gender." While the teachers largely observed few differences in how boys and girls learn digital skills, a Grade 6 teacher noted some variations in student behaviour, with girls displaying more active engagement. To address gender responsiveness, she said: "I employ strategies such as face-to-face learning, group discussions, and addressing gender-related topics through visual aids ... I also encourage all students to participate in digital skills learning activities irrespective of their gender." While all three teachers had not received specific training in gender-responsive pedagogies, they recognized the importance of creating inclusive learning environments.

### Focus on online safety

Online safety emerged as a critical aspect of digital skills education, particularly in the context of the teachers' commitment to creating a secure learning environment. In the KIIs a teacher discussed strategies he uses to address online safety:

“Safety and security is very important in learning digital skills ... in Google Chrome, I activate certain functions to ensure online safety and safe searching ... If any of the students move from the boundary of learning, a signal or response will be triggered, and the history will outline their activity ... I use the Google family link with my children at home in all the devices. This saves their history, then at the end of the day I will do an evaluation to monitor their online activities.

”

The KIIs revealed varied experiences among the teachers regarding training in online safety. Only one of the three teachers interviewed had received such training. An ICT teacher noted: "I have not had any formal training, but I am always learning digital skills every day. The internet is a teacher and can teach you anything so I do self-learning online." The teacher who received formal training in online safety stated: "I have a little bit of training. It was a short-term training organized by an NGO." While two of the three teachers had not received training in online safety, the overall emphasis was on the importance of incorporating online safety measures into digital skills training to ensure a safe and productive online learning experience, especially for girls. One teacher said: "Online safety is an important element in digital skills learning ... Online safety training should be taken into consideration."

The three teachers unanimously recognized the importance of online safety in the digital skills learning landscape. Training, both for teachers and students, is considered essential in promoting a safe and secure digital skills learning environment.

### **Enhancing the future of digital skills education**

The teachers interviewed provided valuable insights into the future of digital education in Vanuatu. They emphasized the need for comprehensive policies that guide the integration of digital skills into education. Suggestions included creating centralized platforms for educational tools, implementing guided policies, and improving internet infrastructure. The teachers also stressed the importance of continuous training for both teachers and students, ensuring they stay abreast of technological advancements: “We need more training for teachers on digital skills to apply in teaching as resources to use and to help students. Also a basic training for students at the lower classes on how to apply digital skills academically.”

Overall, their perspectives underscore the importance of a holistic approach involving government support, community engagement, and ongoing professional development to enhance the future of digital education in Vanuatu. One teacher noted: “There should be more training on online safety regarding cyber-bullying and online violence. Both boys and girls need a lot of support on online safety, from the community as a whole.”

All three teachers highlighted the need for continuous adaptation and ongoing learning in the face of technological advancements. In the KIs, one teacher emphasized the importance of collaboration among teachers and stakeholders to create an equitable online environment. A primary school teacher called for government support in providing ICT tools for both teachers and students to motivate engagement in e-learning. Lastly, a Grade 6 teacher emphasized the positive impact of digital skills:

“*Planning lessons in teaching has become easier. I no longer do a lot of writing, there are resources that I use to supplement my lessons and this helps the students’ learning ability too. Digital skills speed up the learning progress.*

”

Overall, the teachers expressed optimism about the future of digital education in Vanuatu, provided there is sustained support, training and infrastructure development.

## **3.6 Regional analysis of poll responses**

Pivoting to consider teachers’ perspectives regarding digital literacy from the macro level, a regional analysis of qualitative poll data collected demonstrates both shared and disparate experiences. Five Yes/No polls were distributed across teacher networks in Cambodia, China, Lao PDR, Solomon Islands and Vanuatu. Each poll was disseminated using the most popular digital platform within the respective country to ensure maximum reach and engagement. Overall, these polls reached a total of 6,970 respondents, with



Cambodia having the highest number of respondents. This methodological approach was instrumental in enabling insights from a wider population of teachers in each country with regard to teachers' digital literacy (see Table 7).

**Table 7. Poll responses**

|                                                                                                                                                           | Cambodia (%) |      | China (%) |      | Lao PDR (%) |      | Solomon Islands (%) |      | Vanuatu (%) |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------|-----------|------|-------------|------|---------------------|------|-------------|------|
| Poll questions                                                                                                                                            | Yes          | No   | Yes       | No   | Yes         | No   | Yes                 | No   | Yes         | No   |
| 1. Are you aware of digital competence frameworks for teachers and/or students in your country/ region/ globally?                                         | 47.4         | 52.6 | 41.8      | 58.2 | 72.2        | 27.8 | 16.3                | 83.7 | 28.6        | 71.4 |
| 2. Do you feel confident about your digital skills compared to your students and peers?                                                                   | 55.5         | 44.5 | 72.2      | 27.8 | 67.9        | 32.1 | 71.3                | 28.7 | 66.7        | 33.3 |
| 3. Have you actively used digital platforms or devices (e.g., computer, laptop, tablet, mobile) to support building digital literacy among your students? | 72.0         | 28.0 | 91.5      | 8.5  | 84.9        | 15.1 | 50.6                | 49.4 | 44.4        | 55.6 |
| 4. Have you received training on gender-responsive pedagogies for teaching digital skills, including strategies for promoting online safety?              | 36.2         | 63.8 | 52.9      | 47.1 | 56.4        | 43.6 | 11.2                | 88.8 | 5.6         | 94.4 |
| 5. Are you integrating digital skills into your teaching practices after the COVID-19 pandemic?                                                           | 75.7         | 24.3 | 87.7      | 12.3 | 85.7        | 14.3 | 50.0                | 50.0 | 52.9        | 47.0 |

The diversity of responses demonstrates the variety of teachers' perceptions throughout these five countries. A higher percentage of educators in Lao PDR reported being aware of digital competence frameworks, suggesting a greater integration or emphasis on digital literacy in their educational systems. Conversely, Solomon Islands and Vanuatu exhibited a markedly lower awareness, indicating potential areas for development and support. In Cambodia and China, the awareness is more evenly split.

The data reveal a diverse landscape of self-perceived digital proficiency. In China, Lao PDR and Vanuatu, a significant majority of respondents expressed confidence in their digital skills. The data also underscore a significant variation in the adoption of digital tools in educational practices. In Cambodia, China and Lao PDR, there is a high level of engagement with digital technology, as indicated by the large proportion of educators who affirmatively use digital platforms or devices in their teaching. On the other hand, Solomon Islands and Vanuatu display a more divided stance, with a notable percentage of educators not yet fully incorporating digital tools in their teaching.

The extent to which participating teachers across the five countries have received training in gender-responsive pedagogies for teaching digital skills, including online safety measures, varies significantly. In Cambodia, Solomon Islands and Vanuatu, a notable majority of educators report that they have not received such specialized training, highlighting a crucial area for intervention and support. In contrast, China and Lao PDR show a more encouraging scenario, with over half of the educators stating that they had received training in these critical aspects of digital education.

Also variable is the extent to which educators across the five countries have integrated digital skills into their teaching practices in the aftermath of the COVID-19 pandemic. The data highlight a notable trend towards embracing digital methodologies in Cambodia, China and Lao PDR, where a substantial majority of educators report actively incorporating digital tools and techniques in their teaching. In contrast, Solomon Islands and Vanuatu display a more evenly split response, indicating a slower or more nuanced adaptation to digital education. These variations highlight the differing impacts of the pandemic on educational systems and the diverse challenges faced in adopting digital methodologies.









# COMMONALITIES AND DIFFERENCES ACROSS COUNTRIES

The acquisition and teaching of digital skills in China, Lao PDR, Cambodia, Vanuatu and Solomon Islands present a multifaceted landscape shaped by diverse educational policies, cultural contexts and resource availability. While each country exhibits unique characteristics in its approach to digital education, some notable commonalities and differences can be analysed. This discussion aims to draw broader comparisons and contrasts among these countries, focusing on the study's three key areas of inquiry and presenting a regional analysis.



## 4.1 Teachers' acquisition of digital skills

Across the five countries, teachers' proficiency in digital skills varies widely, with direct impacts on the quality of student learning. China has a distinct national emphasis on digital literacy, with teachers actively embracing advanced technologies such as VR tools and AI to enhance their classroom instructional skills. This starkly contrasts with Cambodia and Vanuatu, where teachers often rely on self-learning and informal networks, indicating a lack of structured professional development programmes.

Resource disparities significantly influence the acquisition of digital skills. For instance, despite lacking formal training in Lao PDR, teachers have shown remarkable adaptability in integrating technology into their teaching methods. This resilience is partly supported by government initiatives like Khang Panya Lao, although the need for more structured and comprehensive training programmes is evident. In Solomon Islands, while some educators can acquire digital skills through university studies, others rely on self-learning, reflecting a disparity in access to formal training resources.

In environments where teachers are more digitally literate, as seen in China, students benefit from more interactive and engaging learning experiences. Conversely, in settings where teachers have limited digital skills, such as in some parts of Cambodia and Vanuatu, students may need more time to fully realize the benefits of digital education, potentially widening the digital divide.

These findings underscore the importance of strategic initiatives and collaboration with universities to integrate digital content in teacher-training programmes. These strategies form a crucial part of the broader effort to enhance the future of digital skills education in Solomon Islands and other similar countries.

## 4.2 Pedagogical approaches to digital skills learning

Pedagogical approaches to teaching digital skills vary widely across the countries studied. China's innovative teaching methods, supported by national digital competence frameworks, contrast sharply with the more basic, resource-constrained approaches observed in countries like Cambodia and Lao PDR. This disparity highlights the influence of national policies and resource allocations on educational strategies. Teachers in China have embraced advanced technologies such as VR tools and AI, enhancing classroom instruction, while in contrast, those in Cambodia and Vanuatu often rely on self-learning and informal networks due to a lack of structured professional development programmes.

The COVID-19 pandemic has been a significant catalyst for adopting digital teaching methods across all countries. However, this shift has been uneven, with countries like China making more substantial advances due to better infrastructure and access to digital tools. Teachers have adapted to these changes by incorporating strategies such as sharing online materials to facilitate individualized and personalized learning, which allows students to learn at their own pace and is especially beneficial for those with varying learning speeds. Additionally, peer assessments have become a tool for fostering digital skills, with students working in pairs to evaluate each other's work, thus promoting interactive learning.

The geographical disparity in digital education resources is a common challenge across all countries. Rural areas, in particular, often need to catch up to their urban counterparts regarding access to digital tools and internet connectivity, as seen in Cambodia, Solomon Islands and Vanuatu. This uneven distribution of resources results in inconsistent learning experiences and outcomes for students across different regions.

### 4.3 Gender-responsive pedagogies and online safety

Gender disparities in digital education, while varying across countries, highlight the underlying gender biases present in teaching approaches. In China and Lao PDR, differences in confidence levels and learning approaches between boys and girls are evident. By contrast, Cambodia and Vanuatu report minimal gender differences in digital skills acquisition among students. The UNICEF report on girls' digital literacy in the East Asia and Pacific region aligns with these findings (UNICEF EAPRO, 2023a).

However, these observations may not fully capture the subtleties of gender bias in educational settings. For instance, teachers often emphasize an inclusive approach in their teaching methods, ensuring all students, regardless of gender, feel encouraged to participate. However, a deeper examination reveals inherent biases. Some teachers note a faster acquisition of digital skills in boys due to their preference for hands-on practice, while girls are perceived to pay more attention to detail and be less enthusiastic about classroom activities but to excel in homework tasks. Such stereotypes, albeit unintentional, may influence teachers' attitudes and approaches towards boys and girls, potentially creating barriers to promoting truly inclusive teaching pedagogies.

The challenge lies in recognizing and addressing these biases. While teachers are cognizant of the need for gender-responsive pedagogies, most lack formal training in this area. This deficiency can inadvertently perpetuate gender stereotypes in digital skills learning environments. For instance, one teacher observed that girls tend to exhibit greater focus and attentiveness in learning digital skills, while boys may struggle with distractions. However, this observation does not translate into differentiated teaching approaches.

Interestingly, in some contexts, there's a shift in interest towards STEM and digital skills among girls, indicating a trend towards more gender balance in digital literacy. This underscores the importance of fostering inclusivity and gender-responsive approaches in digital education initiatives.

In summary, while gender differences in digital skills acquisition may exist, they are often intertwined with teachers' gender biases. Recognizing and addressing these biases is crucial for implementing truly gender-responsive teaching strategies. The need for comprehensive strategies that integrate gender-responsive pedagogies and online safety into the digital skills curriculum is apparent. A more consistent and compulsory formal training programme, coupled with consistent policies, is needed to standardize these practices across all schools and regions. This approach will not only enhance the digital literacy skills of students but also ensure that these skills are imparted in a gender-inclusive manner.



#### 4.4 Regional analysis of findings

In conducting comparative analyses across Cambodia, China, Lao PDR, Solomon Islands and Vanuatu, a multifaceted tapestry of teacher experiences in acquiring and imparting digital skills emerges. In Cambodia, educators exhibit commendable adaptability in self-directed digital skills acquisition, demonstrating a good degree of resilience (Ravy, 2019). Yet a disparity exists between their perceived and actual digital competencies (Soeung & Chim, 2022). The COVID-19 pandemic has highlighted deficiencies in preparedness and resource allocation, unearthing a division in digital infrastructure and accessibility (Heng & Sol, 2021). Cambodian teachers have employed many strategies to cultivate digital competencies while acknowledging the pressing need for more systematic and structured professional development (Bhatta et al., 2022; UNESCO, 2020b).

In China, the government's pronounced focus on digital education, epitomized by initiatives such as Digital China, has cultivated a conducive environment for technological pedagogical advancement (Ito, 2022). Educators in China proactively engage in innovative pedagogical approaches, including project-based learning and flipped classroom models. Nonetheless, these advances are tempered by significant challenges, notably time constraints and geographical educational disparities. Moreover, the emergence of gender-specific variations in approaches to digital skills acquisition underscores the need for gender-responsive pedagogical strategies (Siddiq & Scherer, 2019).

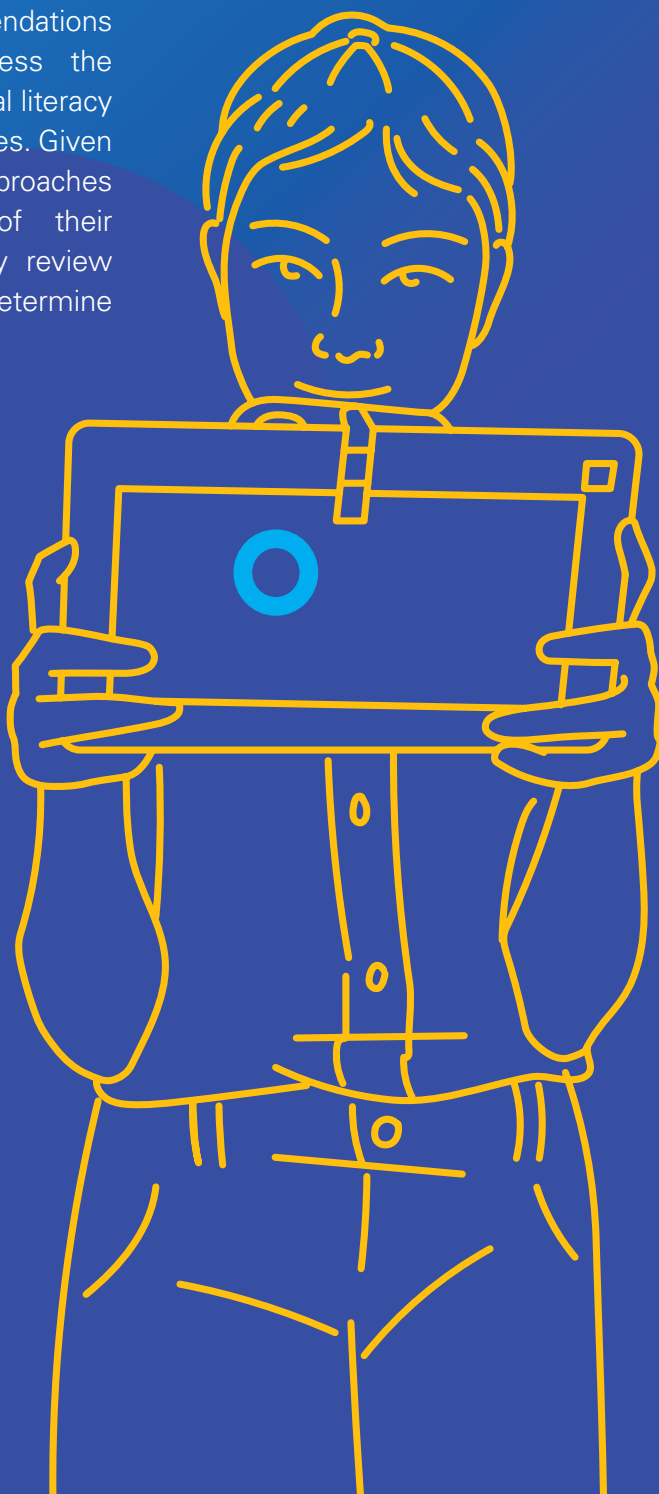
In Lao PDR, the landscape presents unique challenges characterized by a generally low digital proficiency and limited availability of online teaching and learning tools in local languages (Demas et al., 2018; UNDP, 2022a). These challenges are further exacerbated by restricted access to digital tools and internet connectivity (UNICEF & UNESCO, 2021). Despite these impediments, there is a growing acknowledgement of the importance of digital proficiency among teachers, who have resourcefully adapted by leveraging readily available tools such as PowerPoint and social media platforms (Zein, 2022).

National initiatives significantly influence digital literacy proficiency (UNICEF EAPRO, 2023a). China and Lao PDR, with structured approaches and governmental support, show higher engagement and confidence in digital skills. In contrast, the Pacific Islands lag due to infrastructure challenges, limited resources, and the absence of targeted training programmes (World Bank, 2022a). Furthermore, the pandemic has accelerated the shift to digital skills learning. Mainland Asian countries adapted more swiftly than the Pacific Islands, where ongoing challenges in infrastructure and training impede rapid digital integration (Dhawan, 2020; Firth, 2018). This disparity highlights the urgent need for supportive policies and infrastructure development in the Pacific region (Dorovolomo et al., 2021).

While there is commendable progress in digital literacy among teachers in the studied countries, significant gaps remain in structured training, gender-responsive pedagogies, online safety and infrastructural support (Hennessy et al., 2022; UNESCO, 2020a). Addressing these disparities, especially in the Pacific Islands, is crucial for the future of digital education (Pacific Community, 2023a). Enhanced government support, community involvement, and targeted training programmes are essential for equipping teachers with the necessary skills and resources to navigate the evolving digital landscape effectively (European Commission, 2023).

# POLICY RECOMMENDATIONS

The following policy recommendations highlight actions that can address the challenges impeding teachers' digital literacy development across the five countries. Given the wide range of contexts and approaches to the digital transformation of their education systems, countries may review the recommendations in order to determine their applicability.



## 5.1 Establish comprehensive training programmes for digital skills acquisition

Teachers in these countries need structured, context-specific professional development programmes. This is essential for bridging the proficiency gap in digital literacy and ensuring effective teaching of digital skills.

“ I think the main idea is to have more training provided for teachers so they can use digital skills in teaching ... In order for students to learn digital skills, it is important for teachers to first learn and become familiar with digital skills. ”

— Primary school teacher in Port Vila, Vanuatu

The 2023 Global Education Monitoring Report highlighted that some teachers lack training to use digital skills effectively (UNESCO, 2023b). UNICEF also reported that there is considerable interest in equipping teachers with the necessary skills, as young people criticized the insufficient training at schools and the teachers' lack of skills in teaching digital literacy (UNICEF EAPRO, 2021a). Both ICT teachers and teacher educators play a vital role in preparing students to meet the evolving demands of the digital age. The 2022 EduTech Roadmap in Cambodia stresses the importance of capacity-building including digital literacy and hybrid learning pedagogy training (UNESCO, 2023i).

Training programmes for digital skills acquisition in East Asia and the Pacific should adopt a dual approach to child-centred, gender-sensitive teaching to promote transferable and foundational skills (UNICEF EAPRO, 2019c). This entails flexible training content for in-service teachers, tailored to the specific needs of participants, alongside standardized frameworks and guidelines to ensure consistency and quality across programmes for pre-service teachers. This approach aims to balance adaptability with cohesion, promoting effective and inclusive digital skills development in the region (Yang et al., 2023).

Teacher support should include teacher training in ICT competencies, assessment and ICT-integrated pedagogical skills that are learner-centred and interactive (UNESCO, 2022g). Training programmes should emphasize a targeted, context-specific approach, incorporating successful case studies as practical guides (Soekamto et al., 2022). Consideration of geographical challenges, resilience-building modules, and insights from real-world adaptations will enhance a comprehensive and adaptive digital skills training programme (Tenuta et al., 2022).

**Example**

The Malaysia Education Blueprint 2013–2025 prioritizes the integration of digital skills into the country's education system. It emphasizes digital literacy for teachers, encouraging them to seamlessly incorporate technology into instructional practices (Ministry of Education, Malaysia, 2013). The blueprint includes training programmes for educators in using digital tools, with a focus on creating engaging lessons. Infrastructure and resource support ensure schools are equipped for the digital age. Collaboration among teachers is encouraged, fostering a community that shares best practices in using digital skills. The blueprint aims to prepare educators for the evolving landscape of technology in education through training and continuous upskilling for teachers.

**Example**

UNESCO (2023b) reports that the Telesecundaria programme in Mexico, combining televised lessons with in-class support and extensive teacher training, increased secondary school enrolment by 21 per cent. This success highlights the effectiveness of teacher-training programmes in digital skills development, which in turn enhances student learning outcomes.

**Example**

In the Republic of Korea, the SMART Education initiative involves immersive and interactive training programmes for teachers' continuous professional development, and the use of digital content through smart classrooms, tablets and online platforms to enhance the learning experience for students (UNESCO, 2019a). The training programmes for teachers are designed to equip them with the necessary skills and knowledge to effectively integrate technology into their teaching practices. These programmes often include workshops, seminars and hands-on training sessions that focus on using digital tools and resources in the learning environment.

Furthermore, the Republic of Korea's emphasis on continuous professional development ensures that teachers are constantly updating their skills and knowledge to keep pace with the rapidly evolving technological landscape. This commitment to ongoing training and development is crucial in ensuring that educators remain adept at leveraging digital tools to facilitate effective learning experiences for their students.

## 5.2 Expand access to digital resources and digital teaching infrastructure

Improving access to digital devices and reliable internet service, especially in rural and under-resourced areas, is a prerequisite for digital teaching and learning to be a success nationwide. This access ensures equitable opportunities for all teachers to develop and use digital skills effectively.

“ The government should provide stable internet connection because without internet, online learning cannot take place. Digital devices should also be provided to both teachers and students. ”

— Secondary school teacher, Lao language and history, in Lao PDR

Ensuring reliable internet and digital devices in rural areas is crucial for providing equitable opportunities in education (Trojan et al., 2023). Furthermore, the development of effective pedagogy supported by digital resources, policy guidelines, curriculum, assessments and professional development is essential for achieving equitable quality education, especially in the context of distance learning (Durrani, 2023).

Bridging the digital divide and enabling effective use of ICT facilities in education require the formulation and implementation of ICT policies, adequate funding for libraries, education and training of teachers, and curriculum innovation (Idiegbeyan-Ose et al., 2016). Additionally, strategies like infrastructure improvements, financial assistance, digital literacy programmes, customized curricula, and sustainable technology adoption are crucial to empower rural higher education institutions (UNICEF EAPRO, 2019c).

Government approaches should articulate a clear national vision for digital education. This vision should emphasize equity, diversity and accessibility, acknowledging the varying stages of schools in their digital journeys. A comprehensive policy framework should outline specific goals, guidelines and standards for integrating digital resources into education, and should strongly encourage cooperation between ministries, particularly ministries of education, ICT and infrastructure.

There should be targeted support based on schools' digital readiness. This could involve providing tailored resources, training programmes and financial assistance to schools at different stages of their digital transformation.

Additionally, rather than imposing a one-size-fits-all model, there should be flexible standards that allow schools to evolve at their own pace. Governments are also encouraged to establish monitoring and evaluation mechanisms to assess the effectiveness of these approaches, ensuring continuous improvement in access to digital infrastructure (Alam, 2020).



### Example

Singapore's ICT in Education Masterplan has evolved through several iterations, all characterized by a national vision for ICT in education and a commitment to enhancing the integration of ICT in schools. The Ministry of Education notes:

*The four ICT in Education Masterplans and Educational Technology (EdTech) Plan 2020 have built a strong foundation in the use of EdTech in teaching and learning. The new 'Transforming Education through Technology' Masterplan 2030 (or EdTech Masterplan 2030 for short), builds on the previous plans, and addresses the opportunities and challenges of the post-COVID landscape, where technology has become a critical enabler of learning.*

— (Ministry of Education, Singapore, 2023)

The FutureSchools project, a key initiative under the masterplan, has continued to provide access to digital resources and create a technology-rich environment in schools, aligning with the plan's broader goals (Natarajan et al., 2021).

## 5.3 Provide financial support for teachers' professional development

Given the financial constraints faced by teachers in acquiring digital skills, governmental financial aid is crucial. This support can be in the form of subsidies, grants or stipends for training and purchasing digital equipment. This support is critical for teachers, particularly in low-income and rural areas, allowing them to acquire digital tools, participate in professional development programmes, and eventually use digital teaching methods and facilitate digital skills learning.

“ The government should encourage the use of technology by providing enough ICT tools not only for teachers but also students. At the moment most teachers are using personal ICT tools to carry out tasks, and internet is also expensive. If the government provided ICT resources, teachers would be motivated to use digital skills. There should be a budget in place to support teachers. ”

— Primary school teacher in Vanuatu

Financial support should include establishing the financial basis for implementing educational strategies, providing subsidies or grants for training, and ensuring access to digital equipment for teachers (Budnyk & Kotyk, 2020).

Additionally, governments should allocate a specific portion of their education budgets to fund ongoing professional development initiatives, ensuring a dedicated focus on enhancing teaching skills and adapting to evolving educational needs. International organizations should actively engage in partnerships, providing technical expertise and financial support to bolster regional efforts.

Furthermore, governments, international organizations, NGOs and educational institutions need to collaborate to establish comprehensive funding frameworks. Public–private partnerships (PPPs) can also facilitate the design and implementation of tailored teacher-training initiatives. Creating transparent reporting mechanisms and evaluation processes will help ensure accountability and the efficient use of funds.

### Example

The education sector in Cambodia, led by MoEYS, has made some progress in terms of decentralization and equity of budget allocation. Particularly, more funds have been allocated directly to the school level through the implementation of the School Operational Fund (Royal Government of Cambodia, 2020). The creation of the school operational fund in Cambodia has been recognized as a key policy in elevating the quality of education and ensuring education for all (Royal Government of Cambodia, 2020).

## 5.4 Incorporate gender-sensitive pedagogy in teacher-training modules and ongoing professional development programmes

Training and professional development programmes should include modules on gender-sensitive teaching strategies in digital environments, with acknowledgement of different learning behaviours and potential preferences of boys and girls. This approach will promote inclusivity and equal learning opportunities in digital teaching and learning.

“ There was gender mainstreaming during my pedagogy training. It was part of the curriculum when I was in teacher-training college, and it is very important for all teachers. ”

— Female teacher in Cambodia

According to the girls' digital literacy report, teachers are key to combating gender stereotypes regarding technology in the classroom, where they can support the development of digital skills. Policy dialogue should align curriculum, learning materials, teacher development and assessments, for foundational and transferable skills with gender equity in mind (UNICEF EAPRO, 2019c).

Gender-sensitive training programmes should prioritize enhancing teachers' digital competence and raising awareness of gender-inclusive pedagogy methods (Falloon, 2020). Additionally, gender-sensitive pedagogy should integrate inclusive teaching practices and accessibility awareness into teacher-training programmes (Sarju & Jones, 2021).

These programmes should include instructional, pedagogical and curricular knowledge, encouraging continuous reflection at various levels. Funding and institutional support for these initiatives should be prioritized, to ensure sustained and effective implementation of gender-sensitive pedagogy in teacher-training modules and ongoing professional development programmes. Monitoring and evaluation mechanisms should be established in all countries to assess the effectiveness of these approaches, ensuring continuous improvement of gender-sensitive pedagogies and digital literacy.

### Example

India's commitment to gender-sensitive pedagogy is formalized in programmes such as 'Gender-Sensitive Pedagogy Training', which aims to develop teaching and learning materials that challenge gender stereotypes and promote gender equality in education. This initiative includes teacher-training modules that provide workshops on gender sensitivity, fostering an inclusive environment and addressing societal biases. The success of this commitment can be evaluated through various indicators such as changes in teaching practices, student outcomes and societal attitudes towards gender equality (Ministry of Education, India, 2023).

Pal and Mondal (2022) observed an increase in female literacy and a reduction in gender disparity in rural India due to the initiation of the Sarva Shiksha Abhiyan programme, a flagship government programme for achieving universal elementary education.

## 5.5 Strengthen online safety education for teachers and students

Formal training for teachers in online safety will empower them to create a safe and secure digital skills learning environment for students. Teachers will also understand why it is imperative to safeguard students in digital environments. This training should cover aspects like cybersecurity, digital citizenship, data privacy and responsible internet use.

“ It is important for online safety to be integrated into teaching. It is very necessary especially for girls. All students should be aware of online safety and cyber-bullying. This awareness will be possible if teachers receive formal training on online safety.

— Grade 6 teacher in Vanuatu

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Considering online safety concerns such as stalking and unwanted sexual messages (UNICEF EAPRO, 2020a), it is important to integrate online safety training into programmes for both teachers and students.

Strict privacy policies must be in place, granting individuals control over their data. Furthermore, the use of secure communication platforms and regular software updates to address vulnerabilities should be encouraged.

Robust user authentication measures, like two-factor authentication, should be implemented to prevent unauthorized access. Digital citizenship education should be integrated into the

curriculum, fostering responsible online behaviour and ethical technology use. Developing and implementing cyber-bullying prevention programmes will maintain a safe and inclusive online environment.

Collaboration between educators and ICT professionals is essential for addressing cybersecurity incidents promptly. Regular security audits of digital education platforms are necessary to identify and rectify vulnerabilities, ensuring a secure environment. Parents should be engaged in discussions about online safety and provided with resources to enhance their understanding and ability to support their children in practising safe online behaviours. Funding and institutional support should also be directed towards ensuring the sustainability and effectiveness of online safety training initiatives for teachers.

### **Example**

In Thailand, the Ministry of Digital Economy and Society leads comprehensive awareness campaigns to promote safe internet practices and online safety. These initiatives include participation in global events like Safer Internet Day, workshops and seminars. The campaigns target students, educating them on cyber-bullying prevention and safe online practices, while also emphasizing the crucial role of parental involvement. Thailand recognizes the importance of media literacy and collaborates with NGOs and industry partners to enhance the impact of these campaigns. Additionally, the country observes a National Cybersecurity Awareness Month, showcasing its commitment to raising awareness about online threats. These efforts collectively contribute to fostering a secure and informed digital community in Thailand.

### **Example**

The eSafety agency in Australia has been instrumental in promoting online safety and providing resources to various stakeholders, including educators and students. It was tasked with developing a national framework for online safety education (Walsh et al., 2022).

The 'eSafety for Schools' programme, specifically tailored for teachers, aims to enhance their capacity to navigate the digital realm safely and to effectively educate students on online safety. The online safety education for teachers includes comprehensive resources, training modules and workshops that cover a wide range of topics such as cyber-bullying, privacy protection, digital citizenship and safe online communication.

The programme addresses the evolving challenges posed by the digital landscape and equips educators with the necessary knowledge and skills to foster a safe online environment for their students. By empowering teachers with the requisite knowledge and tools, the programme seeks to enable them to effectively integrate online safety education into their teaching practices and guide students in making responsible choices in the digital space.

## 5.6 Enhance language accessibility in digital resources

Given the dominance of digital teaching and learning resources in English, providing resources in local languages will help reduce the reliance on such resources, making digital skills learning more accessible and effective for teachers and students. This recommendation is especially relevant for Cambodia and Lao PDR since English is not a lingua franca in either country, and nor are the countries' technology ecosystems sufficiently established to have a wide variety of mother tongue digital resources.

“Most digital tools and online resources are in English, so the language barrier makes teachers not able to learn digital skills effectively, especially when self-learning.”

— ICT teacher educator in Lao PDR

Enhancing language accessibility in digital resources across East Asia and Pacific countries requires a targeted approach, particularly in Cambodia and Lao PDR, where English is not widely spoken and technological infrastructure is still developing (Orsolini et al., 2021). There should be collaborative effort from the stakeholders, including the education ministry, government agencies, educators and NGOs, to create and disseminate digital resources in local languages, addressing both linguistic and technological barriers to educational engagement.

Moreover, international schools in East Asia continue to require resources for English language learners (Lehman, 2021), underscoring the diverse cultural and linguistic content needed in educational resources and the importance of policy initiatives that foster inclusivity and diversity in digital materials. Policies should prioritize foundational subjects, integrate local languages and foster collaborative curriculum design. By developing and endorsing such policies, stakeholders can contribute to shaping a targeted and effective approach to subject-level priorities in the digital education landscape of these countries.

Stakeholders should be mindful of the diverse needs of teachers and learners at different levels of education, and emphasize subjects that are locally relevant and aligned with global skills requirements, such as STEM subjects and digital literacy. Regular reviews and adjustments should be made, based on evolving educational needs.

### Example

Canada's bilingual education initiatives, such as the 'Official Languages in Education' protocol, go beyond English and French to support indigenous languages, ensuring language accessibility and cultural inclusivity in digital resources. This involves creating resources, curriculum materials and teacher-training programmes that include and promote indigenous languages alongside English and French. These efforts reflect a commitment to cultural diversity and linguistic heritage in Canada's education system.



## 5.7 Make time for digital skills development

Policies should recognize the time constraints faced by teachers and provide dedicated time within their schedules for digital skills development and planning of digital teaching strategies. Teachers also experience time constraints in preparing digital content. Potential policy solutions could reduce workload or allocate additional time for professional development.

“ There is limited time for us to study digital skills. As for resources, I hope that there will be flexible courses available online and teachers can select the suitable time other than the fixed time that the courses are available. For example, during the weekend there is a training we should attend, but that is the only time we have to rest. Sometimes it is a burden for the teachers and they will be affected emotionally. If these resources are flexible, teachers can select which time they prefer and they will be more interested to learn. And in the future they will be willing to apply to practice. I think to acquire new skills we need to figure out not to make it a burden considering the time limitation. ”

— Physics teacher in China

Flexible training programmes and online courses should be provided and be easily accessible, allowing teachers to navigate the content at their own pace. Moreover, a personalized learning path system would enable educators to tailor their digital skills development to diverse schedules and preferences. To further support teachers, specific time off should be allocated for digital skills development. This would ensure that educators are not burdened with additional responsibilities during these periods.

Integrating digital skills development into regular school schedules is also desirable, ensuring that teachers can allocate time without additional strain. Professional development days should be strategically aligned with opportunities for digital skills enhancement.

To address teachers' time constraints in digital content preparation, a comprehensive approach should be considered. First, additional resources, such as support staff and tools, should be allocated to aid teachers in creating content more efficiently. Second, centralized storage of pre-approved digital content should be established for easy access and adaptation. Additionally, the use of collaborative platforms should be encouraged, where teachers can share and co-create content, fostering a culture of resource sharing and collective effort. This will streamline content creation, making it more manageable for teachers within their busy schedules.

### Example

In Japan, the Time for ICT policy designates specific time for teachers' digital skills development. The programme not only allocates time but also incorporates collaborative efforts with technology companies, ensuring teachers receive hands-on training aligned with the latest technological advancements (Teach for Japan, 2020). This comprehensive approach has contributed to the effectiveness of the policy in enhancing teachers' digital skills and ultimately improving the quality of education in Japan.

One of the key factors contributing to the success of the Time for ICT policy is the dedicated time allocated for teachers' digital skills development. By designating specific time for this purpose, the policy demonstrates a commitment to prioritizing the professional development of educators in the realm of digital skills. This deliberate allocation of time allows teachers to focus on enhancing their technological competencies without detracting from their other responsibilities, thereby fostering a conducive environment for skills development.

## 5.8 Encourage public–private partnerships for resource allocation

Collaborative efforts between educational institutions, governments and the private sector can facilitate resource sharing, infrastructure development and broader access to digital tools. Collaborations with private entities can help in resource allocation – for example, by providing digital devices and internet access, especially in under-resourced areas.

“ Telekom, with support from the government, has recently moved to registering SIM cards so that people are held accountable for their online activities ... The company has a strong restriction around areas and even keeps track of what has been going online.

”

— MEHRD official from Solomon Islands

In East Asia and the Pacific, public–private partnership (PPP) investments can raise the quality of education, while targeted support can guarantee equitable access to non-state schools (Asian Development Bank, 2017). For example, the Our Telekom company in Solomon Islands upgraded internet service, which has aided online education and is also highly beneficial to the Solomon Islands National University (OurTelekom, n.d.).

There should be strategies to effectively manage risks and resource allocation in PPP projects. It is important to establish clear regulations governing the ownership and protection of students' data, particularly within digital systems such as an education management information system (EMIS). These regulations should prioritize privacy, transparency and accountability, addressing concerns related to the sensitive nature of educational information.

A strategic approach to infrastructure maintenance within PPP agreements is crucial, and regular assessments of partners' capacity to meet these standards should be integrated to ensure the capacity to maintain digital infrastructure. To prevent inadvertent disparities in education access, measures safeguarding equitable distribution of benefits across socio-economic groups should be incorporated. Monitoring systems should also be implemented to identify and rectify any potential exclusions, aligning PPP initiatives with the overarching goal of providing equal educational opportunities.

### Example

Tencent, one of China's technology companies, has been involved in various educational initiatives. Tencent Classroom, for instance, is an online education platform that facilitated remote learning and virtual classrooms during the COVID-19 pandemic. The platform provides a virtual classroom environment with features such as live video streaming, real-time interaction, and collaborative activities. Integrated with Tencent's widely used messaging app WeChat, Tencent Classroom offers educational resources, digital textbooks and assessment tools, allowing teachers to conduct quizzes and assignments. The platform prioritizes security measures to protect user privacy and has been implemented in collaboration with educational institutions and government agencies to support the integration of technology in education across China.

### Example

Al-Samarrai (2015) notes that:

*Indonesia's School Operational Assistance programme (Bantuan Operasional Sekolah) encourages private sector involvement in education. Over a period of 10 years, the programme has continually improved and channelled ever larger amounts of funding directly to primary and junior secondary schools. Its success in delivering operational funding to schools has been replicated in other parts of the system and by many local governments.*

*This initiative, which was introduced in 2005, has provided financial assistance to schools, which has enabled them to improve their infrastructure and facilities (Al-Samarrai, 2015). This has made the schools more attractive to potential private sector partners, as they can see the tangible impact of their investments. Additionally, the programme has also focused on improving the quality of education, which has further incentivized private sector involvement.*

## 5.9 Standardize digital literacy education across regions and countries

Implementing consistent standards and practices for digital literacy and skills teaching and learning will help minimize disparities between urban and rural areas, and even within regions and between different countries, and promote quality digital teaching and learning across contexts.

“ I created our school website ... I think it is one of the structures that all education institutions in Solomon Islands need to have ... ICT should also be part of the curriculum in all schools. ”

— Computer studies high school teacher in Honiara, Solomon Islands

Research by Maji and Laha (2021) emphasizes the importance of integrating digital literacy skills into the curriculum as a fundamental step. This integration not only equips students with essential skills for the digital age but also promotes consistency and quality in digital teaching and learning across diverse contexts.

There should be a curriculum and assessment framework of digital competencies that is broad – not attached to specific technology – and that takes account of what is learned outside school. It should enable teachers and learners to benefit from technology’s potential in education, work and citizenship (UNESCO, 2023c). Digital literacy education programmes should comprehensively outline how digital literacy will be incorporated into both curricular and extracurricular activities.

Furthermore, in response to the changing educational landscape after COVID-19, there is an urgent need to equip educators with digital literacy skills (Sinaga & Dewanti, 2021). Ensuring that teachers are trained to master ICT is a key recommendation to prepare skilled educators for the evolving work environment.

### Example

Thailand’s ‘Digital Literacy for All’ initiative involves a standardized curriculum that covers digital literacy skills. The programme reaches urban and rural areas, ensuring a consistent quality of digital education across the country and contributing to Thailand’s digital literacy goals (Temdee, 2021). By establishing a set of uniform learning objectives and educational materials, the programme ensures that all participants receive a comprehensive education in digital literacy skills. This approach helps to standardize the quality of digital education across different geographical areas, thereby contributing to the programme’s overall success.

The ‘Digital Literacy for All’ initiative has also enabled the effective implementation of teaching methodologies and the use of appropriate educational technologies. By employing pedagogically sound approaches to digital literacy instruction and leveraging relevant educational tools, the programme enhances the learning experience for participants and facilitates the acquisition of essential digital skills.

## 5.10 Promote community involvement and awareness

Engaging local communities in digital teaching and learning processes can aid in understanding specific regional needs and challenges, leading to more effective and targeted digital literacy initiatives being developed and implemented.

“ It is important to have a supportive community where teachers can ask questions and seek assistance from others when needed ... Parents should also support students in learning digital skills. ”

— High school teacher in Cambodia

Promoting community involvement and awareness in East Asia and Pacific countries involves a tailored approach that engages local communities in digital teaching and learning processes. T. Tran et al. (2020) stress the importance of understanding specific regional needs and challenges to develop more effective and targeted digital literacy initiatives. The involvement of communities in these processes is crucial for ensuring that the initiatives resonate with the local context and effectively address the unique challenges faced by each area.

Strategies that ensure the sustainability of community engagement efforts should be prioritized, particularly in the context of evolving economic conditions influenced by external factors. Policies for promoting community involvement and awareness in East Asia and Pacific countries should prioritize engaging local communities in digital teaching and learning processes, consider the impact of regional climatic variations, and explore alternative revenue sources in response to external factors like the COVID-19 pandemic. Policymakers should craft initiatives that are adaptable, context-specific and resilient to ensure the effectiveness and sustainability of community engagement efforts.

### Example

In New Zealand, the ‘Community of Learning’ (Kāhui Ako) model is supported by the government’s commitment to creating a more inclusive and collaborative education system. This approach recognizes the importance of engaging various stakeholders, including schools, parents and the local community, in the educational process. By fostering collaboration and shared responsibility, the model seeks to create a supportive environment that nurtures students’ digital skills learning journeys.

One of the key principles of the ‘Community of Learning’ model is the promotion of collaboration among schools. This involves sharing best practices, resources and expertise to improve teaching and learning outcomes (Constantinides & Eleftheriadou, 2023). By working together, schools can leverage their collective strengths and address common challenges more effectively. This collaborative approach also extends to parents and the local community, who are encouraged to actively participate in the educational process. By engaging with the local community, schools can also tap into additional resources and expertise to support students’ digital skills learning needs. This initiative has encouraged increased parental involvement, community engagement and a shared responsibility for student success. Additionally, it emphasizes support for digital skills learning, professional development opportunities and cultural responsiveness, collectively contributing to a more adaptive and inclusive education system.







# CONCLUSION



Perspectives shared by teachers, teacher educators and education authority representatives in Cambodia, China, Lao PDR, Solomon Islands and Vanuatu have informed the findings of this research. While common themes emerge, each country presents a unique set of challenges in its digital education journey. The study nevertheless yields valuable insights for tailored strategies to address challenges and harness opportunities in each distinctive context.

The comprehensive analysis of the digital education landscape in East Asia and the Pacific in the introduction provides valuable insights into the challenges and opportunities for enhancing digital literacy and skills among teachers and students. The report sheds light on the multifaceted nature of digital education, emphasizing the critical role of teachers in acquiring digital skills, implementing pedagogies related to digital skills learning, and understanding gender-responsive pedagogies in the context of digital skills acquisition.

**Chapter 1** of the report provides an overview of the research methodology. **Chapter 2** discusses digital education in East Asia and the Pacific. It looks at how COVID-19 affected digital education and what governments are doing to reduce inequalities. The chapter emphasizes the importance of teachers in teaching digital skills for online and blended learning. It also talks about specific challenges and opportunities in Cambodia, China, Lao PDR, Solomon

Islands and Vanuatu. The chapter shows that each country's level of digital advancement affects education differently, highlighting the need for tailored strategies in each country.

**Chapter 3** provides a comprehensive understanding of teachers' perspectives on digital skills in the East Asia and Pacific region. The results across the five countries highlight the varying levels of digital skills proficiency among teachers, emphasizing the need for targeted professional development and training initiatives, and the necessary awareness-raising that needs to come with it. The qualitative data analysis delves into the specific challenges and opportunities faced by teachers in each country, shedding light on the diverse contexts within which digital skills acquisition takes place. The chapter underscores the importance of tailored approaches to digital skills development, taking into account the unique educational landscapes and cultural contexts of each country. It also emphasizes the need for inclusive and equitable strategies to ensure that all teachers have the opportunity to enhance their digital skills, ultimately contributing to the advancement of digital education in the region.

**Chapter 4** delves into a discussion of the intersection of teachers' digital competency and its profound influence on shaping effective digital teaching methodologies. The chapter emphasizes the need for pedagogical strategies and approaches that integrate digital skills into teaching, creating engaging and interactive learning experiences for students. Furthermore, it underscores the importance of gender-responsive pedagogies, particularly in the context of online safety and inclusivity, providing insights into how teachers in the region address gender disparities in technology use and create inclusive learning environments.

The report presents a set of **policy recommendations** derived from the insights and findings of the research. The recommendations provide practical guidance for each country to enhance digital education and literacy. The overarching policy recommendations advocate for establishing comprehensive training programmes to bridge the digital literacy gap, enhancing language accessibility and cultural diversity in educational resources, mandating teacher-training programmes that address gender disparities for equitable digital education, and prioritizing sustainable community engagement efforts.

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