CAMBODIA

DIGITAL EDUCATION LANDSCAPE SCAN

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ACRONYMS

CPD	Continuous Professional Development
COVID	Coronavirus Disease
DEWG	Digital Education Working Group
DIT	Department of Information Technology
GSED	General Secondary Education Department
ICT	Information and Communications Technology
KAPE	Kampuchea Action to Promote Education
MoEYS	Ministry of Education, Youth, and Sport
NEP	NGO Education Partnership
PED	Primary Education Department
TTD	Teacher Training Department
UNICEF	The United Nations International Children's Emergency Fund
WE	World Education

ACKNOWLEDGEMENTS

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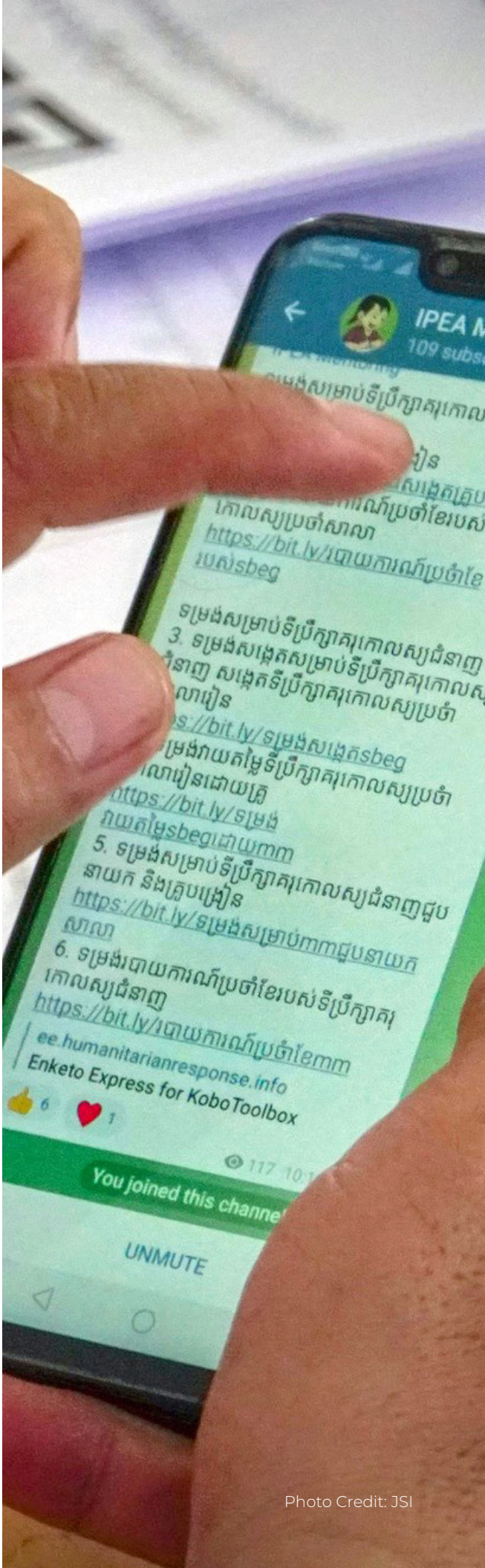

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EXECUTIVE SUMMARY

The Cambodian Ministry of Education, Youth and Sport (MoEYS) is committed to increasing the efficiency and effectiveness of teaching and learning across classrooms, school libraries, teacher training centers, and other educational institutions by leveraging digital tools and resources. In August 2022, MoEYS shared a draft National Statement of Commitment To Transform Education System in Cambodia in which advancing digital education is one of eight top priorities.[1] In line with MoEYS's national priorities, World Education, (WE) has been contracted by UNICEF under CDPF III to support the design and development of an improved digital educational environment for educators and learners that will enhance outcomes by encouraging active learning, enabling greater differentiation and personalization in instruction, improving cooperation among learners, educators, students, and increasing positive attitudes towards learning.

From October 2022 to January 2023, WE conducted a Cambodia Digital Education landscape scan to map existing efforts and assess their quality, effectiveness and impact, accessibility and adoption, and efficiency and sustainability. The goal of this national landscape scan was to gain a deeper understanding of the existing or emerging digital learning interventions for teachers and students, including platforms and centers, that were or are in use and for whom and in what contexts they are effective or not. WE employed a mixed-methods approach that featured key informant interviews, online surveys, desk research, focus group discussions with teacher educators and general education teachers. In total, research was conducted with over 500 stakeholders in diverse education settings across 20 provinces. It is important to note that there were two limitations of our study: the first that there was a high proportion of teacher educators (approximately 62%) from our sample in comparison to general education teachers (30%), which skewed results and made it difficult to generalize; the team sought to mitigate this by disaggregating responses by teacher role where possible. The second limitation is that the online surveys were distributed digitally so teachers in rural areas where internet access is limited would not have been able to access the online survey.

The landscape scan culminated in a co-design workshop in February 2023 bringing together 25 participants from technical departments of MoEYS, other relevant government agencies, and development partners to triangulate findings and co-develop recommendations.

This report provides a summary of key findings, a description of innovative efforts and practices, and targeted recommendations, as well as a live database, the Digital Education Inventory, that contains a searchable repository of digital tools and interventions used to promote digital education in Cambodia.

1 Cambodia National Statement of Commitment, 2022

Findings

Several challenges and barriers emerged in advancing digital education in Cambodia across five main areas: (1) digital infrastructure and access to the Internet, (2) digital literacy levels of teachers, students and parents, (3) teachers capacity for effective ICT integration, (4) supports needed for teachers' CPD, and (5) coordination across providers and stakeholders. High-level findings from the report are included below:

Digital Access and Inclusion. Access to technology and the Internet is a major barrier to digital learning. Internet access was cited as the top challenge in the integration of ICT in education among educators (77%, n=337), followed by comfort using technology devices (41%, n=181). Access to the Internet was a system-wide barrier, not just at the school or class level, with many students, teachers, caregivers and other community members having unreliable, limited or no access at home. Finally, our research underscored that many educators in Cambodia are smartphone reliant; data based on teachers' responses in our survey, roughly half (n=130) of general education teachers do not own a computer. Across all survey participants, approximately one in four (28%, n=437) do not own a computer.

Key Takeaways:

- Lack of student access to technology impacts the decisions that teachers make in terms of what tools or resources they use with students, their eagerness to integrate technology, as well as their effectiveness when they do.
- Mobile-only access for teachers and learners creates challenges including insufficient stability, speed, and data usage caps. Additionally, lack of both teacher and student access to computers greatly limits the strategies for ICT integration in instruction that teachers can use, and thereby creates inequities in learning and digital skill development.

Digital Literacy and Effective ICT integration. Teachers' lack of comfort or difficulty in using technologies was the second top challenge (41%, n=181) for using technology for teaching. Our research uncovered that English language skills are a barrier and contribute to the lack of comfort using technology. Digital literacy skills were also a barrier for educators' participation in their own CPD. Findings also underscored the need for effective ICT integration beyond just addressing teacher's difficulty in using technologies, and more training and guidance on effective instructional models, strategies, and practices for technology integration. While 73% of all participants (n=322) responded that they do integrate ICT tools into their teaching, the number drops significantly for primary school teachers with only one in three integrating technology in their teaching. Roughly half of all general education teachers are integrating technology into their teaching, and our research showed that the top tools teachers are using are social media and mobile messaging tools.

Key takeaways:

- Teachers are using social media, mobile messaging technologies and content organization/ sharing tools, but there is little indication they are leading deep integration of technology into their instructional practices to accelerate learning.
- Effective technology integration is significantly lower for primary school teachers with only 33% of primary school teacher respondents reporting they integrate ICT tools in their teaching.

Key stakeholders coordination on digital learning. Research found that there are gaps in collaboration across MoEYS departments as well as across Ministries and the private sector leading to silos, fragmentation and resources not being known about or effectively used.

Key takeaways:

- There is a need to consolidate, integrate and enhance MoEYS digital learning systems as well as improve processes for streamlined coordination towards fostering shared ownership of digital platforms and tools.

Recommendations

The recommendations below were developed collaboratively with key stakeholders through a co-design workshop:

Improve Digital Inclusion and Digital Infrastructure at the School-Level

Improving access to the Internet and devices as well as broader digital infrastructure at the school level is paramount towards ensuring equitable and inclusive learning opportunities across Cambodia. A core element of digital infrastructure is access to power for operating or charging devices; more research is needed to understand how different school environments can support use of technology in classrooms for teaching and learning.

While public-private partnerships can amplify MoEYS investments into digital infrastructure, MoEYS could look to nurture and support community-based partnerships as a strategy for digital inclusion. Local community groups can play a crucial role in bridging last-mile access by providing a range of services such as device loaning or giving programs, digital literacy training, in-person support and more.

Digital Skills Development and ICT Integration Training as a Foundation for A Strong, Resilient Digital Education Ecosystem

There is a need to prioritize teacher professional development efforts focused on helping teachers and education staff develop their own digital skills and capacity to support their students' digital skills development, including through effective integration of technology in instruction. Results from the teacher surveys and FGDs indicate that teachers are predominantly using digital technologies for lesson planning, locating and sharing resources, but not necessarily integrating them intentionally into their classroom instruction and teaching. A national digital skills and ICT integration framework to guide education and workforce development, but aligned with other adopted frameworks (e.g. Cambodia's National Media, Information Literacy, and Digital Literacy (MIDL) Competency Framework), can serve as a blueprint for MoEYS and help educators understand effective strategies for ICT in education, what types of tools support them, and what digital skills and students can develop while engaging with them for learning.

Supporting Meaningful Participation in Teachers Continuous Professional Development

A consistent theme that emerged from our research was that teachers' CPD needs to be connected to teachers' performance and professional goals or career advancement. Findings from this research and others indicated that teachers wanted opportunities to engage regularly with appropriate, needs-based CPD. Participants in the co-design workshop affirmed the need for a government strategy wherein CPD is available to directly address teachers' a professional needs and goals that are identified through regular performance evaluations.

As the MoEYS looks to implement reforms to the CPD system to ensure a high-quality teaching force, thinking through the supports and incentives needed for teachers to meaningfully participate in online professional development opportunities will be an important consideration. Our findings pointed to more consideration of the digital access and supports that teachers need to access online or blended CPD, as well as financial support, such as stipends or paid time for learning. Teachers from focus group discussions cited technology devices, better internet service and digital literacy skills as three of the four top resources needed to participate in online professional learning opportunities.

Consolidate and Enhance MoEYS eLearning Platforms

Findings from our research pointed to the need to consolidate and enhance MoEYS eLearning platforms. Teachers are accessing MoEYS eLearning platforms but the perceived usefulness of the platforms is only moderate.

During the co-design workshop, participants voted on the top 3 features to prioritize based on findings from the requirements gathering and user mapping process. The top priority is to set up the integration with HRMIS CPD Module, followed by improving the course development process for training providers and creating self accessible support for users.

Strengthen Cross-department Coordination and Private Sector Engagement on Digital Learning

There is a need to harmonize and strengthen cross-department and private sector coordination on digital learning to have a cohesive strategy. Our findings underscored the opportunity for MoEYS to better leverage funding sources to support cohesive, integrated systems. To support this, standardized processes and procedures towards fostering joint investment and shared ownership of digital learning platforms and tools are also needed. One example is the need for standards.


Photo Credit: JSI

INTRODUCTION

Established in 2018, the Cambodian Ministry of Education, Youth and Sport's Policy and Strategy on Information and Communication Technology in Education aims to integrate information and communications technology (ICT) as a teaching, learning, and knowledge sharing tool across the education sector to improve access to and impact of instruction and to equip students with the ICT knowledge and skills needed to transition to the 21st-century world of work. Effective ICT integration can also help address the challenges Cambodia's education system faces, such as high student-teacher ratios, low contact time-especially in schools with double or triple shifts, limited access to secondary schools, low parental literacy levels, spotty attendance especially in rural areas and in rainy seasons, and the challenge of continuing learning during school closures. Digital learning interventions can also help differentiate learning and provide personalized supports, such as customized resources and activities to address students' unique learning needs and other adaptive learning interventions that differ from the one-size-fits-all traditional model. For example, ICT-enabled learning activities can provide targeted remediation and extended learning to students who have been left behind and can also help prevent drop-out.

In pursuit of the goal of leveraging ICT to improve access to education and learning outcomes, MoEYS has committed to increasing the efficiency and effectiveness of teaching and learning in teacher training centers, schools, and other educational institutions by using ICT tools and e-resources and using e-learning to support the delivery of education services to all sub-sectors in education. In August 2022, it shared a draft National Statement of Commitment To Transform Education System in Cambodia in which advancing digital education is one of eight top priorities.[2]

To date, MoEYS and its partners have developed the Ubiquitous Learning (U-Learning) platform, Open Education Resources site, other educational platforms and channels and digital education content, as well as the Digital Education Center. However, MoEYS recognizes that this fragmented approach will not succeed in harnessing the full potential of these platforms and contents to improve the quality and effectiveness of teaching and learning in Cambodia. MoEYS also recognizes the need to reform the Continuous Professional Development (CPD) system toward supporting teachers' career development and enabling them to engage in regular, meaningful professional learning opportunities.

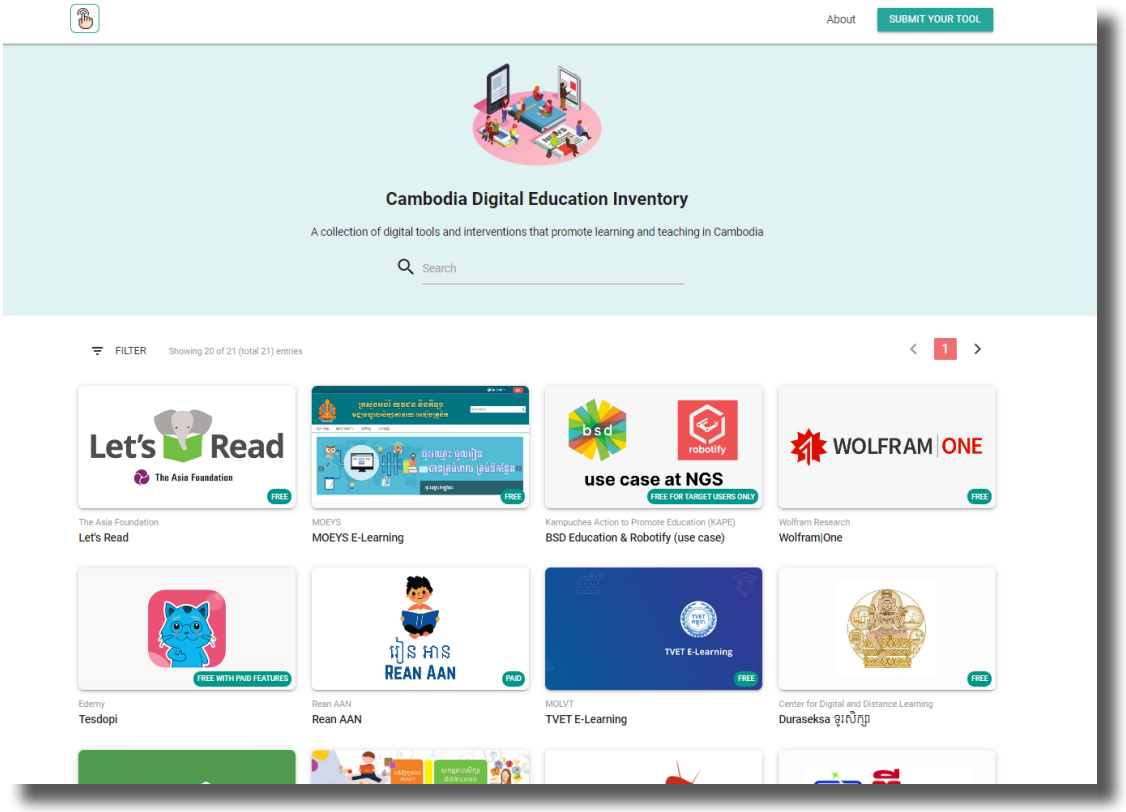
2 Cambodia National Statement of Commitment, 2022

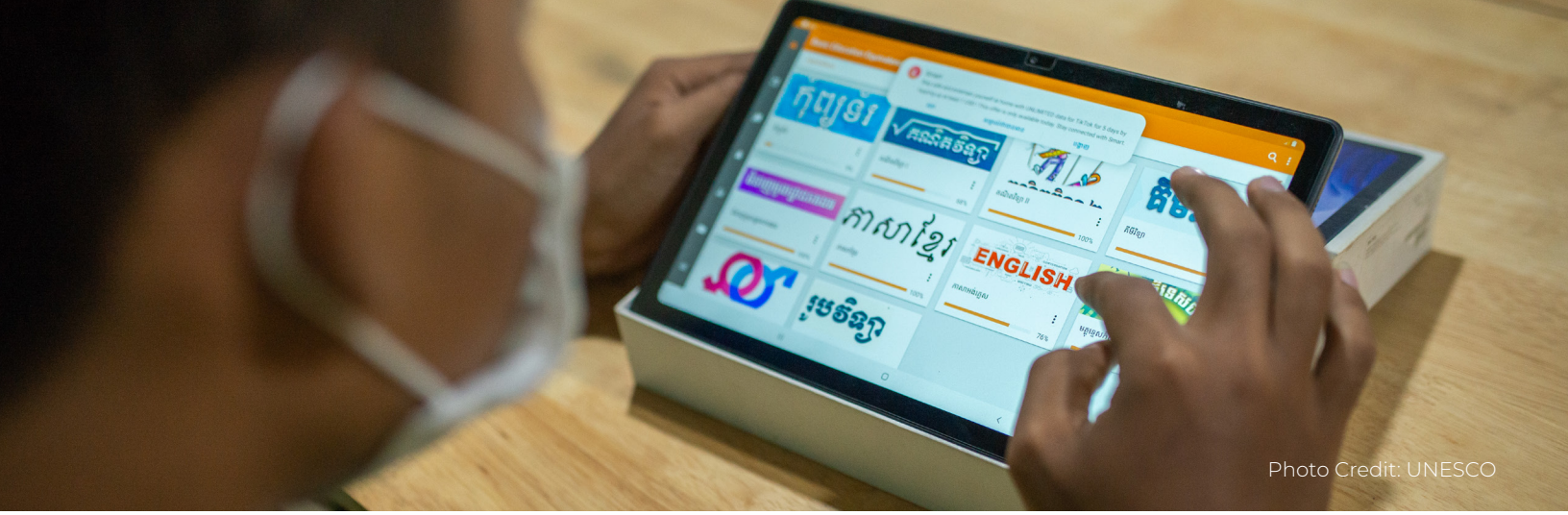
In line with MoEYS's national priorities, WE is working to support the design and development of an improved digital educational environment for educators and learners that will enhance outcomes by encouraging active learning, enabling greater differentiation and personalization in instruction, improving cooperation among learners, educators, students, and increasing positive attitudes towards learning. Specifically, WE will assist MoEYS in the design and development of an integrated online platform for teacher and teacher educator continuous professional development and accreditation.

Over a period of three months from October 2022 to January 2023, WE conducted a Cambodia Digital Education landscape scan to map existing efforts and assess their quality, effectiveness and impact, accessibility and adoption, and efficiency and sustainability. This report provides a situational analysis including a summary of key findings, a description of innovative efforts and practices, and targeted recommendations. It also provides a Digital Education Inventory - a live database to be updated regularly of interventions used to promote digital education in Cambodia, including information on their purpose, impact, accessibility and more. It is crucial to maintain a strong pulse on the digital platforms and tools teachers have available for use in teaching and students have for learning. An evidence-based best practice involves having teachers participate in their professional development using the same platforms and tools as their students, thus enhancing their familiarity with the solutions as well as features within them and ways to adapt learning experiences. This equips them with a deeper understanding of how to design instruction within these digital environments.[3]

WE is now using the findings and recommendations for Cambodia digital education in this report to strategize with MoEYS, including members of the Digital Education Working Group, on recommendations for what platform to invest in for providing Continuous Professional Development to educators.

3 ProLiteracy, 2020





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METHODOLOGY

The landscape scan used a mixed-methods approach seeking to combine insights from a wide range of sources. These include:

Knowledge Inventory & Mapping

Partner body of knowledge inventory and mapping: the project team gathered team members' body of knowledge inventory via contributions directly from the team by asking the team to share resources it is aware of for inclusion in the study. This included websites, publications, instructional materials and resources, professional development resources and other topic-related resources. WE also asked other colleagues and partners to contribute. The processes and documents used to organize and gleam learnings from resources the team contributed are also used for processing new resources submitted by others.

Rapid Literature Review

Rapid literature review of scholarly and grey literature: the project team reviewed literature recommended by stakeholders through the Partner Body of Knowledge Inventory and Mapping method as well as open online searches. The search included "grey literature", which included technical reports from government agencies, working papers, white papers, conference proceedings, workshop, theses and dissertations, or unpublished research reports.

Key Informant Interviews & Engagement

Subject matter expert insights via interviews, workshops and email correspondence: the project team carried out key information interviews (KIIs) in the field to explore trends, initiatives and emerging efforts, to get detailed information and insights about the digital education landscape in Cambodia, and to delve deeper into topics that arose in the literature review. To reach the key informants for interview, the project team used a snowball sampling method, known as a chain referral sample – meaning that the potential informants are introduced by the previously contacted informants through their social networks. The project used unstructured questionnaires. In total, 8 key informants, including government counterparts and NGO partners, were interviewed in addition to data collected from key workshops and meetings.

Digital Tools Submission Form

Digital Tool Submission Form for Cambodia Digital Education Inventory: the project developed a digital tool submission form to request relevant stakeholders initiating and developing digital tools and platforms used to promote digital education in Cambodia to submit their tools and some key information of the tool to be included in Cambodia Digital Education Inventory. To receive digital tool submission, multiple approaches were used: 1) assistance from the Department of Information Technology (DIT) and UNICEF to send out the digital tool submission form to target stakeholders, and 2) posting and sharing the submission tool form online.

Canvass of the Field Survey

Canvass of the Field online survey: an online, semi-structured questionnaire was used for surveying the education field via the Kobo Toolbox application. The questionnaire was disseminated to education practitioners and relevant stakeholders with support from DIT and NGO Education Partnership (NEP). Additionally, WE leveraged existing platforms, social media and other channels to reach the target audience. The data collection period was between 15 and 29 December 2022. As a result, 46 respondents from different backgrounds, including NGOs staff working in the education sector, MoEYS officials, and teachers from Teacher Training College and Center and schools in Cambodia, completed the survey form.

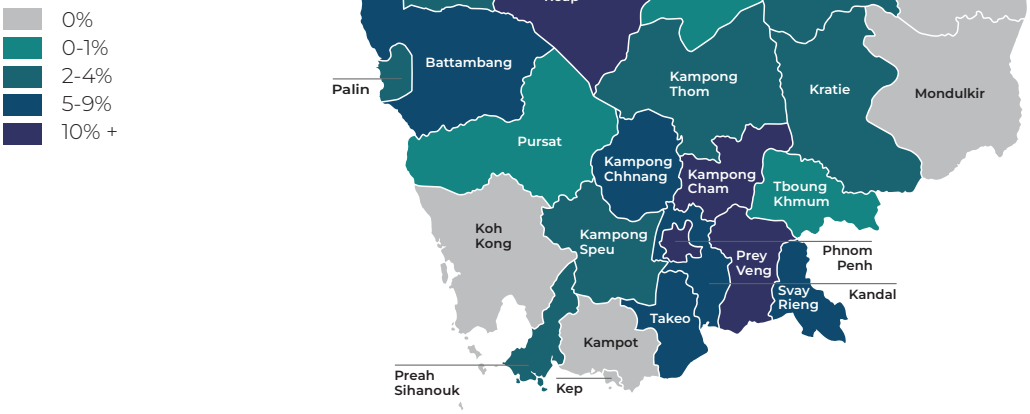
Teacher Survey

Online Teacher Survey: the online semi-structured questionnaire was used to survey teachers through the Kobo Toolbox application and a convenience sampling approach was applied to reach out the teachers across the different regions of the country. We deployed the online teacher survey questionnaire in collaboration with and support from the Primary Education Department (PED), Teacher Training Department (TTD), General Secondary Education Department (GSED), and Department of Information Technology (DIT) to send out the survey link through their existing platforms and channels with teachers to complete the questionnaire. Additionally, WE also used its existing platforms to share the survey through Telegram groups with teachers. The data collection period was between December 2022 and January 2023. In total, 437 teachers participated in the survey across 20 provinces.

Focus Group Discussions

Focus Group Discussions with Teacher Educators and Teachers: the project conducted focus group discussions with teachers who have experiences with eLearning and teachers who have no or limited experience with eLearning to gather comprehensive and in-depth information from both types of teachers. In total, five focus group discussions with teacher educators and teachers were conducted at Kandal, Takeo, Prey Veng, and Svay Rieng provinces in November 2022 and January 2023, with 46 participants attending the discussions.

Number of Teacher Respondents by Provinces:



In line with our human-centered design approach, the project team planned to host the co-design workshop to present research protocols and research tools to key stakeholders from different departments under the Ministry of Education, Youth, and Sport (MoEYS) to collect comments, feedback, and inputs on the questionnaire design and instrument. Unfortunately, the project team could not arrange the co-design workshop because of the unavailability of key stakeholders and officials in November and December 2022 due to the schedule of Grade 12 exam. So, in order to push the work forward, the project team used an alternative approach through sending the research design and tool/ questionnaire to each relevant department and asked for their input and comments. The project then incorporated their inputs into the final versions.

Finally, on February 16, 2023, the project team held a co-design workshop to present findings, bring key stakeholders together to discuss major themes surfaced and above all, collaboratively develop and refine recommendations set forth in this report. A total number of 25 participants from concerned MoEYS departments, other government agencies like Cambodia Academy of Digital Technology (CADT) of Ministry of Post and Telecommunications (MPTC), development partners and education researchers.

Limitations of the Study

This research, however, is subject to several limitations. First, since the research questionnaire was created, disseminated, and completed online through digital channels and platforms with teachers across Cambodia, some teachers in rural areas or remote areas where internet access is limited would not have been able to access the online survey form. Additionally, teachers without foundational digital literacy skills would not be able to complete the form online.

Secondly, the sample size for the study, and teacher respondent types are not equally distributed. This limits the ability to generalize the results. Furthermore, teacher educators were over-represented in the study, making up 62% of respondents for the online teacher survey. And only 30% of the online teacher survey participants were primary or secondary school teachers. Whenever possible, the team disaggregated responses by teacher role to accommodate for this. For further studies, we would suggest having a sample size distributed equally among regions and teacher types from different levels so that the findings of the study are more generalizable and accurate.

Photo Credit: JSI

FINDINGS

Across our qualitative and quantitative research methods, several key challenges and barriers emerged in advancing digital education in Cambodia across five main areas: digital infrastructure and access to the Internet, digital literacy levels of teachers, students and parents, teachers capacity for effective ICT integration, supports needed for teachers' CPD and coordination across providers and stakeholders. The following sections will explore some of these top challenges in detail as well as existing assets, emerging initiatives and/or promising practices to address them.

Digital Access and Inclusion

Digital inclusion is defined as equitable, meaningful, and safe access to use, lead, and design of digital technologies, services, and associated opportunities for everyone, everywhere.[4] Access to technology and the internet was a top theme that emerged across several sources and a pressing need. Access to technology devices and the Internet was a barrier not just at the school and classroom level, but also existed system wide. Our research found that technology and internet access are also barriers for educator participation in their own professional development, with teachers citing technology devices and better internet service as two of the four top resources needed to participate in professional learning opportunities.

Across focus groups and surveys with teachers, internet access was cited as the top challenge for teachers followed by lack of comfort or difficulty in using technologies as shown by Table 1 below. Table 1 below shows teachers' responses disaggregated by teaching level or respondent types from the Online Teacher Survey.

4 UN, n.d.

Table 1: Challenges in digital education adoption and integration of ICT

Challenges in digital education adoption and integration of ICT	Type of Respondents[5]						
	PS Teacher (n=76)	LSS Teacher (n=28)	USS Teacher (n=26)	Teacher Educators (n=274)	Other (n=10)	Prefer not to answer (n=23)	Total (n=437)
Internet access	75%	61%	77%	80%	70%	70%	77%
Internet affordability	49%	39%	46%	45%	40%	57%	46%
Difficult to use technology device (smartphone, computer, tablet...)	47%	61%	46%	37%	40%	48%	41%
Digital literacy skill and knowledge	29%	21%	23%	43%	30%	48%	38%
English Language barrier	26%	25%	23%	38%	30%	39%	34%
Difficult to get support when learning about a new tool	26%	21%	15%	32%	40%	30%	30%
Accessibility of device	13%	7%	12%	15%	0%	4%	13%
Other	0%	0%	0%	1%	10%	0%	1%

This need was confirmed by responses in the Canvass of the Field, many who emphasized how rural areas are much less likely to have the needed internet access. One respondent wrote, "The gap is huge! Teachers and students in rural areas which account for nearly 80% of the national population might not benefit from the luxury of digital investments yet."

A report published by the Technology-Enabled Innovating in Education in Southeast Asia (TIESEA) project in Cambodia of March 2022 found that: "The lack of computers, no or inadequate Internet access, particularly unstable and/or insufficient bandwidth, are all major impediments to EdTech use in schools. There is also a scarcity of qualified personnel to administer EdTech infrastructure and provide support to users in schools. Only 17% of upper secondary schools and 5% of lower secondary schools have computer labs, according to MoEYS (2019). 40% of upper secondary schools have internet connectivity; yet, in most cases, the internet is only used for administrative purposes in the school administration office."[6]

Research published by UNICEF, MoEYS and SCI at the end of 2022 corroborates this concern and found that 76% of teachers and 75% of school directors reported that lack of access or limited or expensive internet connectivity was the biggest challenge to accessing distance learning opportunities, and 36% of parents specifically cited not being able to afford high internet plans as a top reason. [7] Other research led by UNICEF

5 PS = Primary School; LSS = Lower Secondary School; USS = Upper Secondary School
6 ADB, 2022
7 Forthcoming. Joint research by MoEYS, UNICEF and SCI

in 2021 on digital learning and ICT at teacher education institutions underscored similar findings, with roughly half of teachers reporting that their institution did not have the devices needed to provide online learning or access to a strong, reliable internet connection.[8]

Device access also arose as a critical need, with research indicating that overall 28% of the students do not have access to an online device.[9] Computer access is much lower, and respondents to the Online Teacher Survey mentioned the need for budgeting for device purchasing for schools.

However, device access as a main barrier to digital education adoption was only mentioned by 13% of educators, which is much less than the need for the internet, perhaps due to high smartphone penetration. The storage capacity of devices students, parents, and teachers currently own can also limit learning. In interviews with educators in late 2022 conducted by UNICEF, MoEYS and SCI, many spoke of how some were challenged to download the Home Learning Packages since the files were too big and their internet connection too slow to download them, and some teachers reported having to spend money to buy external memory to store data, to buy a wireless Wi-Fi Router, and other expenses.

During school closures, it was reported that smartphones (51%), television (32%) and social media, chat platforms and mobile phones were the technology that most respondents relied on during school closures. Rural and mountain regions had to rely much more on radio and less on smartphones due to lack of internet and device access. [10] A teacher in Kampong Chhnang estimated that perhaps one student in a group of up to ten might have access to a smartphone belonging to their parents, but even then, that phone would have to be shared among all siblings as well as the parents.[11] Teachers in the UNICEF, MoEYS and SCI study also attributed lack of or limited access to a device and internet access to low student participation in Telegram groups during

8 Frawley, 2021
9 Forthcoming. Joint research by MoEYS, UNICEF and SCI
10 Forthcoming. Joint research by MoEYS, UNICEF and SCI
11 Forthcoming. Joint research by MoEYS, UNICEF and SCI

Digital Inclusion Spotlight

The Basic Education Equivalency Programme (BEEP) is a joint initiative of the Ministry of Education, Youth and Sport (MoEYS) and the Ministry of Labour and Vocational Training (MoLVT) with UNESCO support to provide flexible alternative education to out-of-school youth to complete lower secondary/basic education, equivalent to grade 9. BEEP is an online-based program aiming at helping young Cambodians aged 14 and older, especially those who drop out from lower secondary education, to complete their basic education through online courses in ways that will not affect their ability to work while pursuing their education. Learners who complete the BEEP will receive a certificate which enables them to enroll in skills training either at TVET Institutes or at Technical High Schools. Learners who do not have a personal smartphone or computer can come to any BEEP learning center, where they can get access to tablets and computers, the Internet, and trained facilitators for support.

COVID. Overall, the study showed very limited participation in online learning, with 20% of students participating in distance learning 2-3 days per week, 11% once a week, 10% once a day, and 10% 4-5 days a week. The findings indicated that 21% of students never participated in online learning during the COVID school closure period.

Lack of student access impacts the decisions that teachers make in terms of what tools or resources they use with students, their eagerness to integrate technology, as well as their effectiveness when they do. International research underscores the need for large screen device ownership as small screens dramatically limit a users' experience, the software functions they use, and more broadly, limit the range of one's online activity and one's digital skills.[12]

Many educators in Cambodia are still smartphone reliant according to teachers' responses in our survey, with 28% not owning a computer as indicated in Table 2 below. When examining the results by teaching level or respondent types, we found that nearly 1 in 2 teachers from primary school, lower secondary school, and upper secondary school did not own a computer. Table 2 displays the detailed disaggregated result by type of teacher respondents.

12 Gonzales, 2021

Digital Literacy & ICT Integration Spotlight

In some of its programming, KAPE has outfitted schools with digital devices coupled with 1-3 hours per week of digital literacy and ICT classes for primary and secondary levels. KAPE provides devices, digital literacy instruction and on-site support. M-learning is also a key strategy employed by KAPE using its 21st Century Library facilities. Digital literacy instruction is provided to both teachers and students. KAPE provides incentives and support for teachers that want to pilot new tools or for relevant special projects. SeeBeyondBorders was another organization that also pairs technology access with digital literacy instruction and teacher professional development.

Table 2: Teachers Ownership of Devices

Technology devices that respondents own, by type of respondents

Digital Devices	Type of Respondents[13]						
	PS Teacher (n=76)	LSS Teacher (n=28)	USS Teacher (n=26)	Teacher Educators (n=274)	Other (n=10)	Prefer not to answer (n=23)	Total (n=437)
Smartphone	99%	86%	100%	95%	90%	87%	94%
Computer	51%	57%	54%	81%	80%	74%	72%
Tablet	8%	29%	27%	51%	0%	22%	38%
Smart TV	4%	11%	12%	15%	0%	9%	12%
Other	0%	0%	0%	1%	0%	0%	1%

13 PS = Primary School; LSS = Lower Secondary School; USS = Upper Secondary School

Lack of both teacher and student access to computers greatly limits the strategies for ICT integration in instruction that teachers can use, and in turn, creates inequities in learning and digital skill development. At the same time, it is worth noting that smartphones have been proven to be a valuable stopgap in getting people online and providing access to learning content, whether online or by making it available for use offline, as the Basic Education Equivalency Programme (BEEP) has done for out of school youth.

Digital Literacy & Digital Skills

Digital literacy and digital skills are increasingly vital for all members of society and in most aspects of life. Within the education context, children and adolescents need to have digital literacy skills for technology-enabled learning; teachers need digital literacy skills to guide their students and integrate technology in their teaching effectively; and caregivers need digital literacy skills to support and engage with their children's technology-enabled learning.

Building on UNESCO's definition of literacy that is also adopted by USAID[14], this report defines digital literacy as: The ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital devices and networked technologies for participation in economic, social, and political life.[15]

When surveying teachers, we found that across focus groups and surveys, teachers' lack of comfort or difficulty in using technologies was the second top challenge for using technology for teaching. Our research found that digital literacy is also a barrier for educator participation in their own continuous professional development, with teachers citing ICT training as one of the four top resources needed to participate in CPD. An NGO respondent to the Canvass of the Field shared what many others said in their response, that Cambodia should start its digital education "journey by building digital literacy among teachers and educators first."

ICT Integration Spotlight

Though predominantly in urban environments, New Generation Schools can serve as a model for investing in the professional development of educators on effective ICT integration. Technology is infused in the schools, and all teachers receive a laptop and are trained in using the Google suite and other tools as a core strategy in their teaching, and are expected to use technology in application of project-based and problem-based learning across all subjects, particularly STEM. Students learn how to use new educational software that will enhance teaching, learning, and assessment (e.g., Robotify, Build Something Different or BSD, and more). Teachers can take part in a Professional Learning Community (PLC) through an online teacher learning platform to post questions, share resources or practices and more.

14 USAID, 2022
15 UIS, 2018

Our research also found that language is a barrier and key contributor to lack of comfort using technology, as shown in Table 1 in the previous section. This point was raised across surveys and FGDs; many shared that their limited knowledge of English posed challenges in the integration of ICT into their teaching and CPD since using the technology devices and tools requires a basic understanding of English.

The challenge of low digital literacy in Cambodia is well-known. The Ministry of Post and Telecommunications recently publicly stated that "about 30 percent of Cambodians have a basic level of digital literacy and access to the internet and digital technology while around 70 per cent do not."[16] Fortunately this statement was made in the context of announcing a new five-year $15 million initiative launched by USAID and the University of California, Berkeley in collaboration with the MoEYS focused on digital literacy in youth education.

The need for parents to advance their digital literacy and know how to use digital devices for supporting their children's learning also was raised by some respondents to the Canvass of the Field.

Our research indicated that students, educators, and parents alike would all benefit by improving supports for the digital literacy skills needed to engage in or support youth in their digital learning.

A best practice in ensuring digital literacy supports is providing timely or even drop-in digital skill/ICT support services in person, or when that is not possible, by phone or virtual connection. A 2021 UNICEF Cambodia report on Digital learning and ICT concerning capacity development for educators highlighted the need for a help desk to facilitate and enable student digital learning and engagement.[17] Responses to the teacher survey indicated their hope to improve the support systems as well as increase the capacity of the support team(s) at MoEYS to ensure users are supported in a timely manner.

MoEYS shares an understanding of the need to prioritize investment in digital skills development and supports, and it is included as one of eight priority areas it shared in September 2022 at the Transforming Education Summit is ensuring teaching and students are equipped with digital skills.[18]

It is important to add that, within the context of teaching digital skills, there must now be intentional development of "digital resilience," which is defined as having the awareness, skills, agility, and confidence to be empowered users of new technologies and adapt to changing digital skill demands. Digital resilience improves the capacity to problem-solve and upskill and navigate digital transformations, and be active participants in society and the economy."[19] Shifting the goal from digital literacy or skills to digital resilience requires that educators evolve their mindset and pedagogy from teaching specific digital skills to building learners' confidence and ability to adapt to and use new technologies on their own, including understanding how to transfer skills learned on one platform to new devices or applications they may encounter in the future.[20]

16 The Phnom Penh Post, 2022
17 Frawley, 2021
18 Cambodia National Statement of Commitment, 2022
19 EdTech Center, 2022
20 EdTech Center, n.d.

ICT Integration Capacity

MoEYS also understands that digital skills are not enough, and that educators must be trained in effective ICT integration for the potential power of technology to be fully leveraged to increase access and improve learning outcomes. MoEYS' Education Strategic Plan (ESP) 2019-2023 states that an element of teacher training reform at Teacher Education Institutes is to develop teachers' capacity and teacher education centers for effectively integrating ICT and digital resources to increase efficiency and effectiveness of teaching and learning.

Effective ICT integration must go beyond just addressing teachers' comfort or difficulty in using technologies; it requires guidance and training on effective instructional models, strategies, and practices for technology integration. Research by UNICEF, MoEYS and SCI at the end of 2022 on distance learning and digital education in Cambodia highlighted that 70% of teachers rate their level of competency in using digital learning technologies and resources as good.[21]

Additionally, the Joint Back to School Research report conducted by UNICEF, MoEYS and SCI found that 63% of teachers and 78% of school directors reported not having received adequate distance learning guidance.[22] The report added, "Only 9% of teachers and 6% of school directors reported being fully proficient in the required skills to support distance learning methods....Further, an important quantitative finding is the low percentage of teachers (9%) and school directors (5%) who reported being fully proficient in the required skills to support distance learning lessons." The report added that 64% of school educators and directors stated that they needed but did not receive support with distance learning lesson planning and material development training, and 57% wanted but didn't receive training on using social media to support students and caregivers.[23]

While challenges with digital inclusion and digital skills certainly play a big factor as previously discussed, it is clear that educators' feeling that they lack guidance and training in ICT integration is one of the causes of the low rate of use of ICT tools and technology in teaching. As Figure 1 and Table 3 show below, 74% of teachers who responded to our survey do integrate ICT tools and technology in teaching, but the numbers are much lower for lower levels with only 33% of primary school teacher respondents reporting they integrate ICT tools in their teaching compared to 61% for lower secondary school teachers. The numbers are much higher for teacher educators ranging between 75%- 91%. Additionally, it is important to note that the teacher survey was online and largely distributed through digital means so it is probably skewed by the fact that responders are likely to already be more digitally savvy and confident than the average teacher in Cambodia, and especially teachers in rural areas.

21 Forthcoming. Joint research by MoEYS, UNICEF and SCI
22 Forthcoming. Joint research by MoEYS, UNICEF and SCI
23 Forthcoming. Joint research by MoEYS, UNICEF and SCI

Figure 1: Teachers Integration of ICT tools and technology in teaching

Do you integrate ICT tools and technology in your teaching? (by type of respondents)

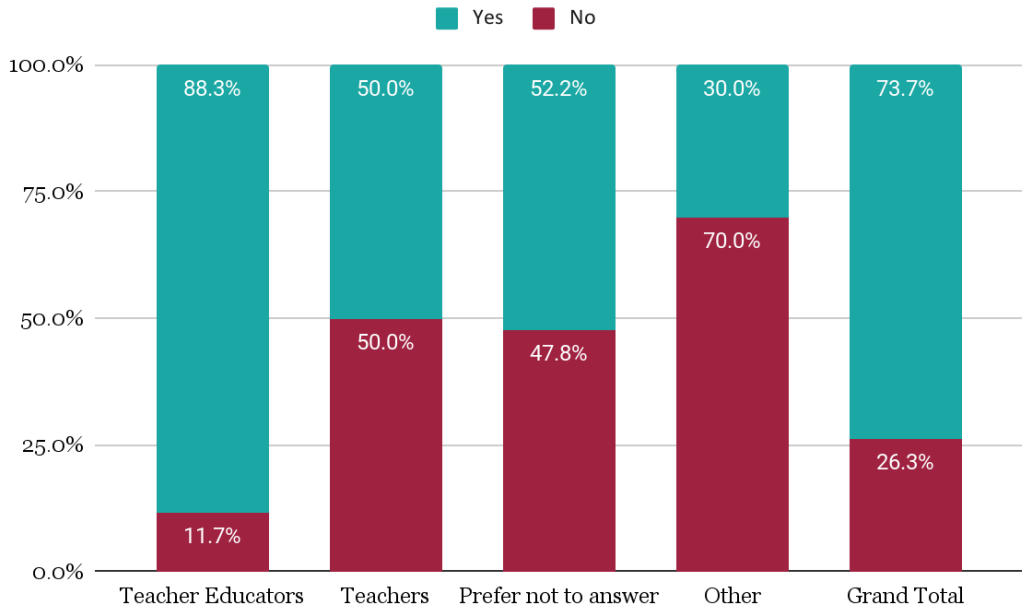


Table 3: Teachers Integration of ICT tools and technology in teaching (by teacher role)

Do you integrate ICT tools and technology in your teaching?	Total Respondents	No	Yes
Primary school teacher	76	67%	33%
Lower secondary teacher	28	39%	61%
Upper secondary teacher	26	12%	88%
NIE lecturer	27	22%	78%
PTTC teacher educator	109	9%	91%
RTTC teacher educator	87	10%	90%
TEC lecturer	47	13%	87%
PTTC teacher educator	4	25%	75%
Other	10	70%	30%
Prefer not to answer	23	48%	52%
Total	437	26%	74%

Recent UNICEF research on usage of ICT tools corroborates the need to increase use as it found that during COVID-related school closures only 53% of teachers utilized any digital resources and only 46% of educators engaged in the collecting and sharing of online learning modules.[24] The report's recommendation is that professional development should include strengthening knowledge of theory, principles and practice of integrating digital learning into classroom teaching and learning.

This recommendation is also backed by responses to our qualitative and quantitative research. Responses cited issues such as limited or lack of: ICT training; ICT professional teachers at the secondary level; integration of ICT tools, digital skills and ICT teaching strategies into curriculum; and wide dissemination of information related to digital education to teachers, students, parents, particularly those who live in rural or remote areas.

In addition to investing in professional development for educators and administrators at all levels on effective ICT integration, the need to develop a national digital literacy and ICT integration framework or frameworks for digital skills development and ICT integration strategies that can be used to guide integration in all subject areas was raised by education leaders attending the Digital Education Strategy Kickoff Workshop held in October 2022. Such a framework can guide educators and teacher educators on how they can intentionally integrate edtech routines into their instruction to improve learning outcomes, the tools they can use for this, and how and when they are providing learners with opportunities to develop specific digital skills. An example of such mapping between teacher ICT integration strategies with a digital skills framework is available through the EdTech Center @ World Education's EdTech Integration Strategy Toolkit.

Educators in Cambodia would benefit from training specifically on strategies such as increasing learner engagement, formative assessment of students, differentiating or extending learning, as well gaining proficiency in utilizing digital tools that facilitate the application of these strategies.

Digital Tools Used by Teachers

Across multiple surveys and Focus Group Discussions with teachers, we found that education staff and teachers of all ages and experience levels are using mobile messaging and social media platforms like Telegram, Facebook and YouTube to find content, resources and/or information related to their teaching as shown in Table 5. Ease of use is one of the main reasons for this, as educators cited as their top two reasons for using the apps is that they are easy to use to share information and communicate (78%) and that they are easier than other apps (58%) which are presented in Table 6.

The team also sought to get feedback from teacher and teacher educators through its Teacher Survey as well as from other educator staff including staff from NGOs and educator practitioners through its Canvass of the Field Survey. The majority of respondents from the Teacher Survey reported accessing MoEYS eLearning (52%), followed by MoEYS Facebook Page (47%) and MoEYS Krou Website (38%). It is important to note that these responses include a disproportionately higher number of teacher educators. When adjusted for this, the MoEYS Facebook Page demonstrated more usage than the MoEYS Learning site. This adjustment correlates more closely with responses from the Canvas of the Field survey, in which the majority of respondents reported accessing the MoEYS Facebook Page (89%), followed by the MoEYS Krou Website (80%) and the MoEYS YouTube Channel (80%)[25]. Table 4 illustrates the responses from the Teacher Survey.

24 Forthcoming. Joint research by MoEYS, UNICEF and SCI
25 More data from the Canvass of the Field survey can be found in Table 10 on Annex.

Table 4: % of respondents who access specific tools/platforms (respondents from Teacher Survey)

Access Digital Tools	Type of Respondents[26]						
	PS Teacher (n=76)	LSS Teacher (n=28)	USS Teacher (n=26)	Teacher Educators (n=274)	Other (n=10)	Prefer not to answer (n=23)	Total (n=437)
MoEYS eLearning	17%	39%	50%	64%	50%	48%	52%
MoEYS Facebook Page	46%	18%	54%	50%	50%	39%	47%
Krou website	34%	11%	8%	46%	40%	30%	38%
Krou Cambodia Facebook Page	42%	14%	23%	38%	40%	26%	36%
MoEYS Youtube Channel	26%	21%	35%	31%	50%	13%	29%
MoEYS Telegram Channel	20%	25%	15%	24%	60%	17%	23%
Open Educational Resources	4%	18%	15%	22%	20%	13%	18%
MoEYS Instagram	0%	7%	0%	5%	10%	0%	4%
Duraseksa Website	1%	4%	4%	3%	0%	0%	3%
Sangapac Website	0%	0%	0%	7%	10%	9%	5%
None	21%	29%	8%	8%	10%	13%	12%

26 PS = Primary School; LSS = Lower Secondary School; USS = Upper Secondary School

Table 5: Three most frequently used technology tools/apps (respondents from Teacher Survey)

Three most frequently used technology tools/ apps	PS Teacher (n=76)	LSS Teacher (n=28)	USS Teacher (n=26)	Teacher Educators (n=274)	Other (n=10)	Prefer not to answer (n=23)	Total (n=437)
Telegram	100%	100%	100%	99%	100%	100%	99%
Facebook	76%	57%	38%	53%	90%	35%	56%
Facebook Messenger	68%	64%	35%	46%	50%	43%	50%
Zoom	14%	14%	42%	26%	30%	39%	25%
Youtube	22%	18%	27%	20%	0%	17%	20%
Google Meet	9%	11%	27%	22%	30%	26%	19%
Google classroom	1%	4%	8%	21%	0%	13%	15%
Microsoft Teams	0%	4%	4%	2%	0%	0%	2%
Moodle	0%	0%	4%	3%	0%	9%	3%

Table 6: What are the reasons you use a technology application or tool most frequently in the context of your work? (respondents from Teacher Survey)

Reasons for most frequently used technology tools/apps	# of Respondents	Percentage
Easy to share information and communication	339	78%
Easy to use compared to other apps	253	58%
Furnishing a big space for sharing files, images, videos	191	44%
Common app that every teacher uses	181	41%
Easy to have conference or meeting online	186	43%
It's required by place of employment and free of charge	167	36%
Other	3	1%

Research led by the Technology-Enabled Innovating in Education in Southeast Asia (TIESEA) surfaced similar themes: teachers tend to use social messaging apps such as Telegram or social media apps such as Facebook to share files among themselves or with students.[27]

27 ADB, 2022

Based on these survey results, if the tools are broken out by type, a majority of them are tools for organizing and sharing of content but not digital learning content for teaching specific topics or subjects, which does not promote effective and active learning. It was noted by survey respondents that some platforms are sharing the same content. These results tell us that while teachers are using social media and mobile messaging technologies and content organization and sharing tools for various reasons, there is no indication that they are leading deep integration of technology into their instructional practices to accelerate learning. This could be for various reasons, including the ease of use and comfort with using these tools compounded by not knowing where to go to find, access and/or get support on digital learning resources and content. In our teacher survey, we found that 47% of teachers surveyed did not know where or how to access digital teaching and learning materials.

Another finding was low usage by teachers of using simple tools that provide interactive activities, embedded questions, and quizzes so as to make learning more engaging and improve instruction through formative assessment. UNICEF, MoEYS and SCI's Joint Back to School research also showed low usage by students of assessment tools (such as the http://exam.moeys.gov.kh/) that could help teachers and students target their instruction and learning time to accelerate learning. As discussed in the previous section, intentional integration of digital tools to improve instruction is an area of opportunity and improvement for teacher professional development.

Table 7: Types of ICT Tools and Technologies Teachers Use in Teaching (Teacher Survey)

Technology tools and apps	PS Teacher (n=25)	LSS Teacher (n=17)	USS Teacher (n=23)	Teacher Educators (n=242)	Other (n=3)	Prefer not to answer (n=12)	Total (n=322)[28]
Computer	68%	82%	57%	90%	100%	83%	85%
Slide presentation	32%	53%	61%	87%	67%	92%	79%
Smartphone	76%	65%	70%	77%	67%	58%	75%
Zoom/Google Meet/Skype	24%	35%	39%	61%	0%	42%	54%
Projector	20%	47%	39%	72%	67%	75%	64%
Google Classroom	20%	29%	30%	62%	0%	42%	53%
Google Drive/Dropbox	12%	24%	13%	45%	0%	25%	38%
Tablet	16%	24%	22%	41%	0%	17%	35%
Kahoot/Mentimeter	0%	6%	0%	19%	0%	0%	14%

28 It should be noted that there are only 324 teacher respondents among 439 reported integrating ICT tools and technology into their teaching.

Microsoft team	4%	0%	9%	14%	0%	17%	12%
Microsoft 365	0%	0%	0%	6%	0%	8%	5%
Other	0%	0%	0%	1%	0%	0%	1%
Prefer not to answer	0%	0%	4%	0%	0%	0%	0%

Additionally, the respondents from its Canvass of Field Survey reported that social media platforms were also where they spent more time, with one in four respondents reporting they spend at least three or more hours per week on the MoEYS Facebook Page and one in three reporting spending at least three hours on the MoEYS Telegram Channel. One in three respondents also reported spending more time in a full online course, such as the online courses run by Royal School of Administration, Royal University of Phnom Penh, and Royal University of Law and Economics and by other learning platforms through Coursera and Udemy. Table 8 depicts the frequency of their access per week to each specific platform or tool.

Table 8: How often do respondents access these tools/platforms? (Canvass of Field Survey)

Digital tools/platforms	Less than 1 hour/week	1-3 hours/ week	3 and more hours/week	Missing
MoEYS elearning	56%	25%	19%	0%
Open Educational Resources	45%	34%	14%	7%
Krou Website	62%	32%	3%	3%
Durakseka website	58%	32%	11%	0%
MoEYS Youtube Channel	49%	32%	16%	3%
MoEYS Facebook Page	34%	39%	24%	2%
MoEYS Telegram Channel	35%	29%	32%	3%
Mobile Learning Apps	41%	37%	15%	7%
Digital Libraries	48%	32%	16%	4%
Full Online Course	42%	26%	32%	0%
Other	38%	38%	21%	4%

In addition to the frequency of accessing these tools/platforms, respondents were also asked about why they used them the most, and to rate how useful these tools/platforms are.

For usefulness, the respondents from its Canvass of Field Survey were asked to rate how useful these tools/platforms are. We had a five-scale rating from not useful at all to extremely useful. The responses of their rating is depicted in the Table 9 below.

Table 9: Rating how useful these tools are (Canvass of Field Survey)

Digital tools/platforms	Not useful at all	Slightly useful	Moderately useful	Very useful	Extremely useful	Missing
MoEYS eLearning	0%	9%	44%	31%	16%	0%
Open Educational Resources	0%	3%	34%	45%	10%	7%
Krou Website	0%	5%	54%	35%	3%	3%
Durakseka website	0%	5%	53%	32%	5%	5%
MoEYS Youtube Channel	0%	0%	38%	43%	14%	5%
MoEYS Facebook Page	0%	0%	37%	37%	27%	0%
MoEYS Telegram Channel	0%	3%	39%	29%	29%	0%
Mobile Learning Apps	0%	4%	44%	41%	11%	0%
Digital Libraries	4%	4%	52%	28%	12%	0%
Full Online Course	0%	11%	37%	42%	11%	0%
Other	0%	0%	50%	25%	17%	8%

There are other important themes that emerged from our research findings. Firstly, MOEYS platforms (OER, Krou, E-Learning) lack effective support or documentation to help teachers learn how to use them. In terms of the type of supports, teachers mentioned that tutorial videos are more effective than texts and images, which respondents said the platforms also lack.

Secondly, the lengths of video lessons are too long, and it would be difficult for teachers to integrate the whole lesson into their instruction. To support maximum usability and engagement, the videos should be shorter and skill-based as opposed to lesson-based so educators can use videos to demonstrate certain concepts they are teaching in class. Khan Academy videos were offered as an example by one respondent. Teachers can integrate these short videos at any part of their lesson and in different ways depending on their needs of the class or just assign them for specific students for differentiation.

Lastly, media content shouldn't include any specific information or context that will make it outdated or not relevant to others. For instance, at the beginning of all videos produced by the MOEYS during the pandemic, teachers always recommended viewers to keep their hands clean, wear masks, etc. After COVID-19, these recommendations may not be relevant anymore.

Teachers' Attitudes, Behaviors and Experiences in Continuous Professional Development

A consistent theme that emerged from our research was that teachers' CPD should be connected to teachers' performance and professional goals or career advancement. In the online questionnaire, teachers cited improvement of their teaching practice and career advancement as the top two reasons for enrolling in CPD. Findings from the CPD and HRMIS pilot also found that teachers had a positive attitude towards CPD in general, and the endpoint report showed that 90% of teachers in micro-pilot schools agree that teachers need the opportunity to engage regularly with appropriate, needs-based CPD, and 97% believe that teachers should be life-long learners."[29]

Table 10: Motivation factors to enroll in CPD

Motivation factors to enroll in CPD	# of Respondents	Percentage
Improvement of teaching and practice in classroom	327	74%
Career-related purpose and career advancement	303	69%
It is mandated by MoEYS that every teacher need to continue professional development	273	62%
Personal interest in continuous professional development	217	49%
Principals requesting or advocating that teachers to engage in continuous professional development	103	23%
Peer takes the course and talks about the course	56	13%
School provides financial support for continuous professional development	55	13%
Having incentives and rewards for engagement in continuous professional development (verbal rewards, public recognition, personal attention, special privileges.....)	50	11%
Occupational promotion	46	10%
Having less workload in school and adequate time during the school time	30	7%
Other	3	1%

When we asked teachers what factors would incentivize them to participate in CPD, a majority cited financial support or resources, such as scholarship, stipend and/or paid time off. As one teacher shared in a focus group discussion, "In order for teachers in the country to participate in CPD, I think that teachers should be provided with stipend for their participation as well as with the scholarship for CPD."

As noted previously, our research found that digital literacy, technology and internet access are the main barriers for educator participation in professional development offered through digital means, with teachers citing technology devices, better internet service and digital literacy skills as three of the four top resources needed to participate in professional learning opportunities. A previous study on improving

29 MoEYS, 2022

teacher education quality in Cambodia found that while technology did not play a significant role in Teacher Education Institutes (TEI) coursework and teaching, all TTC trainers feel that upgraded digital learning resources would stimulate student interest and lessen the work burden on teacher educators.[30] Teacher educators themselves believe that technology improves teachers motivation and self-efficacy.

In terms of teachers' experiences in CPD, a few salient themes emerged from our FGDs. Teachers wanted more options that were connected to their core subject areas and based on their professional learning needs and goals. The teachers also pointed out that the course duration is short and the terminology used in the courses was sometimes hard to understand. Some teachers who participated in the previous TED courses pointed out that the content of the training is too broad and isn't quite relevant to their needs. Other feedback on the TED courses was concern about less experienced trainers in the course.

Language was again a challenge for meaningful participation in digital literacy and ICT integration CPD offerings. The final evaluation report of Pilot of CPD and HRMIS System pointed out that there is a need for criteria to assess CPD training providers' English proficiency and ICT skills for education to deliver CPD training in addition to the knowledge of their expertise.[31] But teachers in the FGDs mentioned that proficiency in Khmer is equally important to deliver the lessons and explain key technical words effectively.

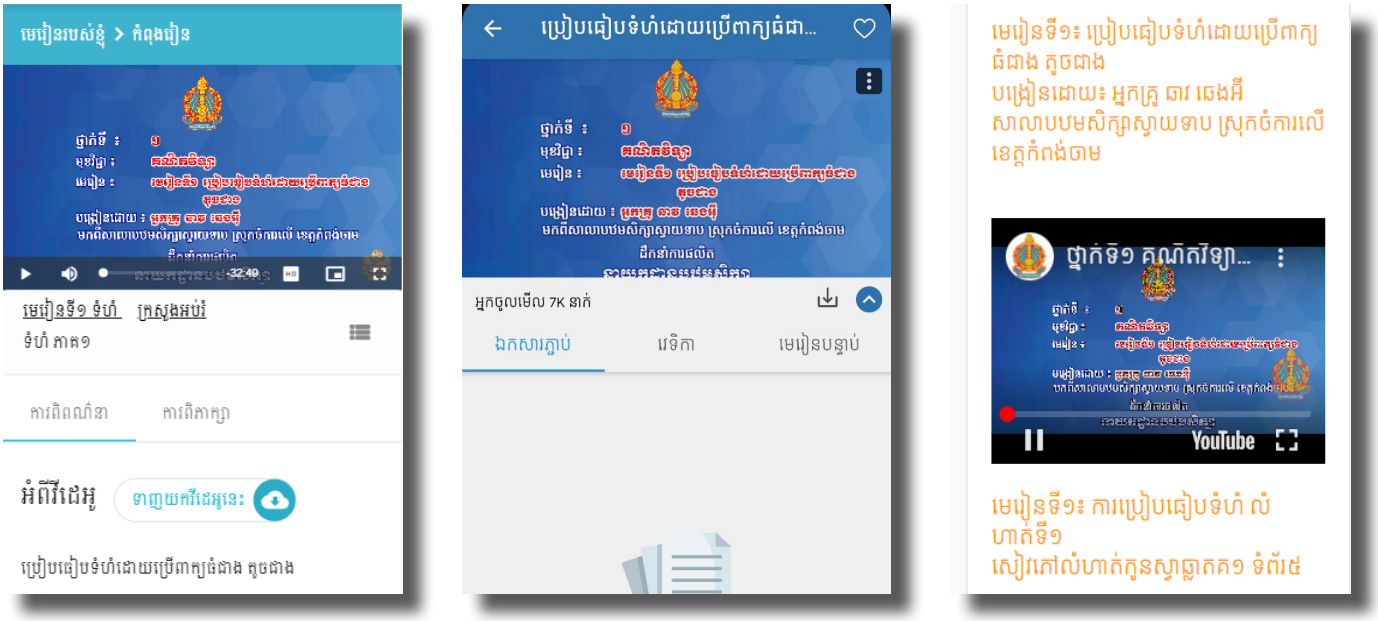
As the MoEYS looks to implement reforms to the CPD system to ensure a high-quality teaching force,[32] thinking through the supports needed for teachers to meaningfully participate in digital learning and online professional development opportunities will be an important consideration.

30 Tandon and Fukao, 2015
31 MoEYS, 2022
32 Cambodia National Statement of Commitment, 2022

Key Stakeholders Coordination on Digital Learning

In our key informant interviews and other research efforts, we found that there are gaps in collaboration across MoEYS departments as well as across Ministries and the private sector leading to silos, fragmentation and resources not being known about or effectively used.

Figure 2: Same video in three different platforms (Duraseksa, MoEYS E-Learning app, E-Learning (Moodle)



Despite many platforms created by the MoEYS, not many people are aware of or using the platforms based on results of the surveys and focus group discussions. In addition, there are several different learning management systems promoted by the MoEYS and some that are sharing the same content. For instance, Duraseksa ទូរសិក្សា launched in late 2021 by the Center of Digital and Distance Learning and MoEYS E-Learning app កម្មវិធីស្វ័យសិក្សា created with the support from the Union Youth Federations of Cambodia in mid 2021 serves a very similar purpose – to promote access to quality learning content in response to COVID-19 pandemic. Both platforms also have very similar content, and in some cases the same videos from classroom teaching. Both platforms have document library features that share reading materials including MoEYS textbooks and worksheets. Although both platforms include features for assessments, there is a very limited number of such resources available to promote meaningful learning in addition to watching video lessons. Another platform under MoEYS supported by UNICEF also shared the same lesson videos. Finally, we received reports that some teachers preferred to record their own video lessons and resources to share with their students over the video lessons produced by the MoEYS.

While the MoEYS took an approach to make learning content as accessible as possible by sharing the same content to multiple platforms, these examples show a need for better coordination in investments. A coordinated approach would mitigate redundancies and inefficiencies due to having many similar platforms operating, which do not complement one another and require a huge maintenance effort.

Overall, there is a need to consolidate, integrate and enhance MoEYS digital learning systems as well as improve processes for streamlined coordination towards fostering shared ownership of digital platforms and tools.


Photo Credit: JSI

DIGITAL EDUCATION INVENTORY

The Digital Education Inventory is an open database of interventions used to promote digital education in Cambodia, including information on their purpose, impact, accessibility, sustainability, challenges and more. The goal of the inventory is to provide quick access to reliable information for individuals and organizations seeking to understand what is happening in the digital education arena in Cambodia. Contact information is also provided in each entry page for visitors if they would like to find out more about the interventions of interest.

The interventions are grouped into different filterable categories including types, target users, pricing, status, and accessibility features.

Table 11: Information and Criteria for Each Digital Education Tool in Digital Education Inventory

Types	Target users	Pricing	Status	Accessibility
• Android app • iOS app • Desktop app • Web app or website • Digital learning material (e-learning courses, videos, podcasts, ebooks, etc.) • Interactive resource (SCORM, H5P, IMS packages, etc.) • Education game • Hardware device	• Students • Kids (pre and primary school) • Teachers • Parents/ guardians • School principals/ administrators • Librarians • General public	• Free • Free for target users only • Free with paid features • Paid	• In development • In service • Concluded	• Offline access • Mobile friendly • Cross-platform compatibility • Ethnic minority languages • Visual impaired friendly • Auditory impaired friendly • Power-saving

To build this inventory, the team began by distributing submission form through various channels with the support from NGO Education Partnership (NEP), UNICEF, and various departments in the MoEYS. However, the number of submissions was very low. The project team then conducted desk reviews and reached out directly to the key persons in different institutions for information and reports on their digital education interventions. The final result is a database of over 20 tools.

To guarantee its sustainability and maintainability, the inventory was built using free and widely-used collaborative tools including Google Forms, Google Sheets, and Blogspot. The list of entries in the inventory is by no means exhaustive. Therefore, the link to submit new interventions is included on the inventory page to allow future submissions from governmental entities, private companies, and non-governmental organizations who are interested to showcase their interventions and share lessons learned. The submissions will be reviewed and assessed by the World Education team and tentatively, for longer-term sustainability, relevant departments of MoEYS. The inventory is accessible at this address: https://cambodiadigitaleducation.blogspot.com/

Figure 3: Home page of the Digital Education Inventory

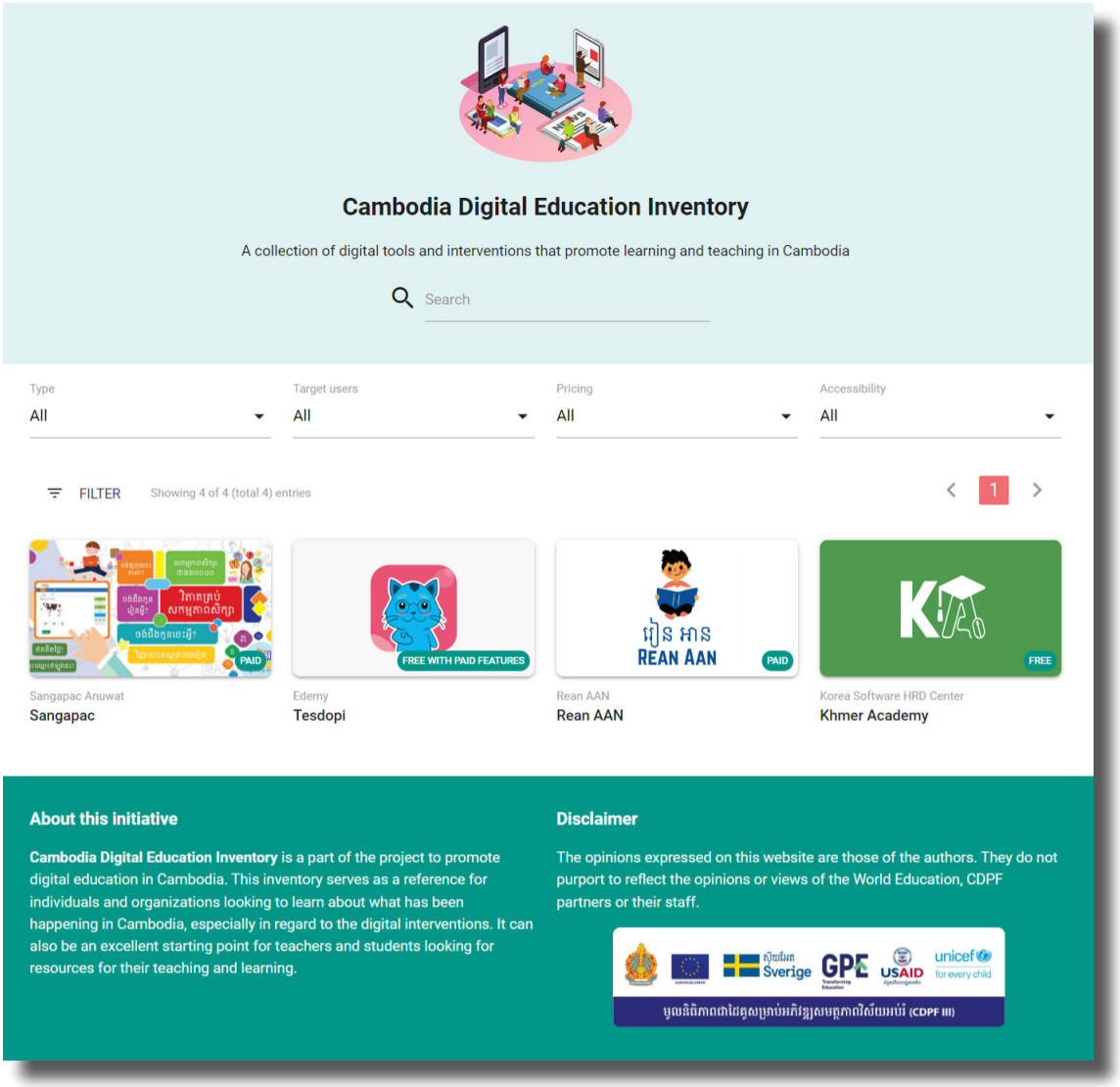
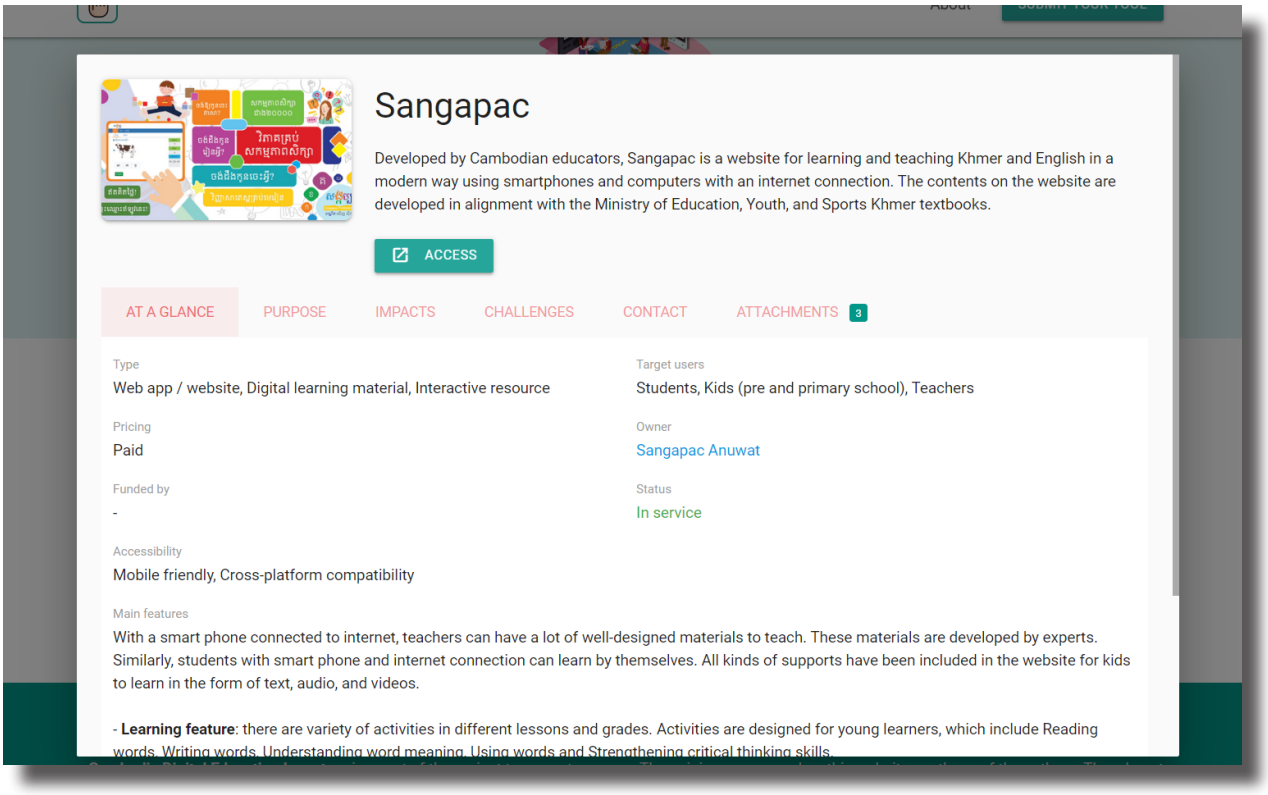


Figure 4: Detail view with information on each intervention



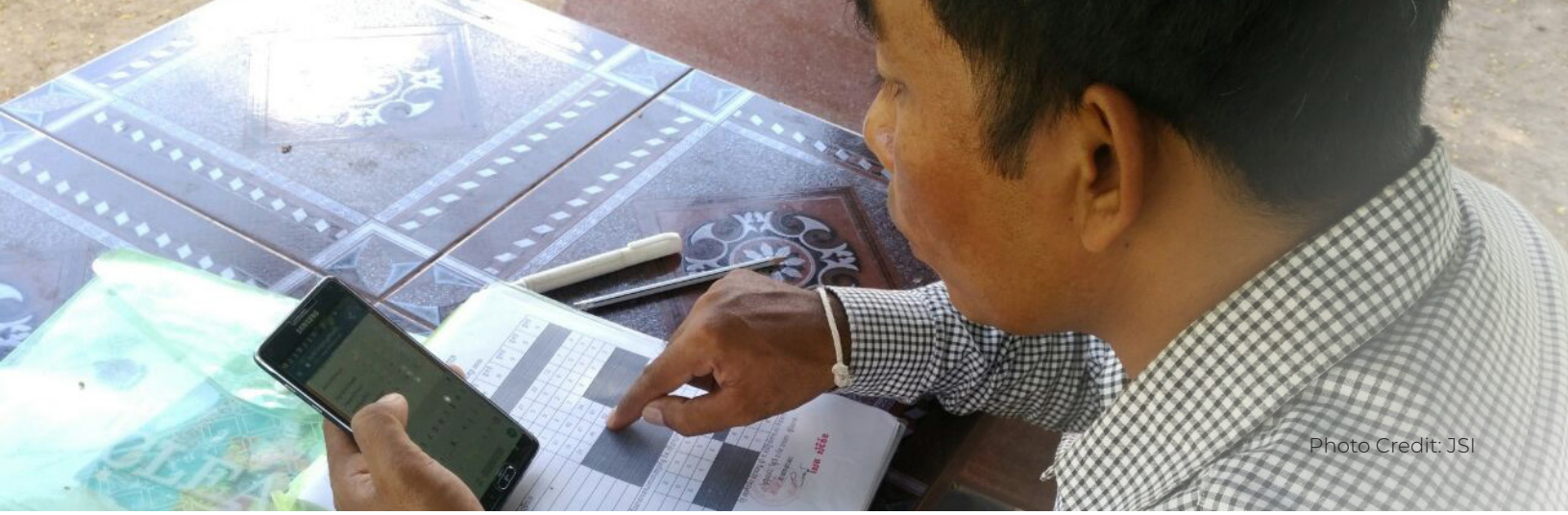


Photo Credit: JSI

KEY CONSIDERATIONS AND RECOMMENDATIONS

The recommendations below are possible directions and/or steps to capitalize on opportunities and/or address the key barriers found in this research. The recommendations were jointly and collaboratively developed with MoEYS, UNICEF and other key stakeholders during the co-design workshop held in February 2023.

Improve Digital Inclusion and Digital Infrastructure at the School-Level

There is a need to improve access to the Internet, devices and broader digital infrastructure at the school level towards ensuring equitable and inclusive digital learning opportunities across the country and especially in rural areas. Additionally, digital tools and resources should be mobile-optimized, user-friendly and easy to use, and whenever possible, accessible in no and low-bandwidth environments.

A core element of digital infrastructure is access to power for operating or charging devices, and more research is needed to better map communities' and schools' digital infrastructure and readiness. This data will help identify how different school environments can support the use of technology in classrooms for teaching and learning. Cambodia can look to international efforts to connect every school to the internet for models of mapping schools' needs across a country, such as UNICEF-ITU's joint investment in the Giga initiative working to connect every school.[33] Public-private partnerships can amplify MoEYS investments in this area.

Alongside investments to infrastructure, MoEYS could look to nurture and support community partnerships as a strategy for digital inclusion. Local community groups can play a crucial role in bridging last-mile access by providing a range of services such as device loaning or giving programs, digital literacy training, in-person support and more. One evidence-based approach is to embed provision of "digital navigator" services into trusted community venues, such as health clinics, workplaces, faith-based organizations and schools- especially for training parents or caregivers. Staff or volunteers with language and cultural competency are trained to act as digital

33 UNICEF and the International Telecommunication Union, n.d.

navigators, providing adults with customized just-in-time supports to secure affordable internet access, devices, and foundational digital literacy skills to meet their goals.[34] In the U.S., the first digital navigator pilots were funded by foundations and internet service providers - due to their interest in internet adoption - before digital navigators became a proven model now supported at scale through U.S. federal digital infrastructure and equity funding.

Digital Skills Development and ICT Integration Training as a Foundation for Strong, Resilient Digital Education Ecosystem

There is a need to prioritize both pre-service and in-service professional development efforts focused on helping teachers and education staff develop their own digital skills and capacity to support their students' digital skills development, including through effective integration of technology in instruction.

Results from the teacher surveys and FGDs indicate that teachers are predominantly using digital technologies for lesson planning, locating and sharing resources, and for their own professional development, but not necessarily integrating them intentionally into their classroom instruction and teaching. As noted in the findings, a few organizations- such as KAPE and New Generation Schools- are providing teacher professional development and coaching on digital pedagogies, alongside DIT who have also been providing professional development on specific tools such as G-Suite applications and tools freely available to teachers through MoEYS Google Workspace. This is a key area of opportunity for the MoEYS as it looks to invest in digital education.

A national digital skills framework and an ICT integration framework can be used to guide education and workforce development, and they should align with other adopted frameworks (e.g. Cambodia's National Media, Information Literacy, and Digital Literacy (MIDL) Competency Framework). Frameworks can serve as a blueprint for MoEYS and help educators understand effective strategies for ICT in education, what types of tools support them, and what digital skills and students can develop while engaging with them for learning. Additionally, educators can be guided on how in their instructional methods to move beyond teaching specific digital skills- that can quickly become outdated- to instead fostering their students' "digital resilience." Existing quality international frameworks for this exist and are recommended for use by UNESCO and USAID, such as the European Union's Digital Competence Framework for Citizens (DigComp 2.2[35]), and they can be adapted to Cambodia's local context, as other countries such as Saint Lucia, Austria, and many more have done.

Finally, our research pointed to language barriers that exacerbate existing digital divides and it will be important for MoEYS to consider how to address this in their planning.

34 Digital US., n.d.
35 Vuorikari, Kluzer, and Punie, 2022

Supporting Meaningful Participation in Teachers Continuous Professional Development

A consistent theme that emerged from our research was that teachers' CPD needs should be connected to teachers' performance and professional goals or career advancement. Findings from this research and others indicated that teachers wanted opportunities to engage regularly with appropriate, needs-based CPD. During the co-design workshop, participants strongly affirmed the necessity of implementing a strategy that mandates the evaluation of teachers' performance over a defined timeframe. This strategy should also prioritize providing CPD that is closely aligned with each teacher's individual needs and goals.

As the MoEYS looks to implement reforms to the CPD system to ensure a high-quality teaching force, thinking through the supports and incentives needed for teachers to meaningfully participate in online professional development opportunities will be an important consideration. Our findings pointed to more consideration of the digital access and supports that teachers need to access CPD as well as financial support, such as stipends or paid time for learning. Teachers must see the value and want to implement newly acquired skills coupled with having time, support and other opportunities to apply new skills.

Consolidate and Enhance MoEYS eLearning Platforms

Findings from our research pointed to the need to consolidate and enhance MoEYS eLearning platforms. Teachers are frequently accessing MoEYS eLearning platforms but their perceived usefulness is generally moderate.

In addition to researching some of the top challenges in digital learning now in Cambodia, WE collected feedback from teachers and other users on desired features and functionalities. Top recommendations from teachers include: improving ease of use, operating in low-bandwidth or offline settings when needed, effective support or documentation in the form of tutorial videos, integration with Telegram and responsiveness to multiple devices (computer, tablet, smartphone).

A comprehensive list of feedback from our requirements gathering and user mapping was shared during the co-design workshop and participants voted on the top 3 functionality/ features to prioritize. Table 18 in the annex shows the results of this activity, which has also been incorporated into another document outlining platform design and development options and recommendations. The results show that the top priority is to set up the integration with the CPD Module, followed by simplifying the course development process for training providers and creating self accessible support for users.

Additionally, our findings pointed to the opportunity to better leverage funding sources to support cohesive, integrated systems, which connects to the finding #5 on strengthening MoEYS-wide coordination and the need for standardized processes and procedures on the provision and ongoing management of digital learning.

Strengthen Cross-department Coordination and Private Sector Engagement on Digital Learning

Our findings demonstrated a need to harmonize and strengthen cross-department and public and private sector coordination on digital learning to have a cohesive strategy. Participants in the co-design workshop shared the need for better coordination among donors, specifically to avoid funding the development of similar or duplicate platforms, and the need for donors to work with core MoEYS departments.

A key recommendation that came out of the co-design workshop was the need for establishing clear standards and/or guidelines as part of the MoEYS digital education strategy. An example where this is needed is setting guidelines on what types of systems or tools are supported by the MoEYS and which are not, as well as prioritizing tools that are interoperable to support improved data management and enable the easy collection and analysis of complete and reliable data from various sources. Additionally, findings pointed to the need to develop standardized processes and procedures towards fostering joint investment and shared ownership of digital learning platforms and tools.

Photo Credit: UNICEF

CONCLUSION

While progress has been made in recent years in building an enabling environment for digital education in Cambodia, there are still significant barriers. The findings and recommendations in this report point to key challenges, promising practices, and priorities for MoEYS as it looks to advance inclusive and equitable digital learning opportunities. While work ahead is significant, an asset that can be strategically leveraged is that top public and private sector leaders in Cambodia express awareness of many of these needs and a willingness to support the MoEYS in efforts to address them. “The barriers that hinder Cambodia in the process of building itself up in the field of digital education” said Chhort Bunthong, head of the Culture, Education and Tourist Relations Department at the Royal Academy of Cambodia (RAC), “is that the knowledge most teachers in Cambodia have on the subject is still limited, while some students have digital knowledge but face a shortage of digital education materials, combined with limited internet and telecommunications services in the more rural parts of Cambodia.”[36] The findings and recommendations in this report present the opportunity to unite all key stakeholders for designing a shared digital education vision and strategy. Through innovative partnerships and shared efforts, Cambodia can close digital divides and significantly strengthen the reach and impact of digital education..

36 The Phnom Penh Post, 2023

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ANNEX

Annex 1: Data Summary from Online Teacher Survey

Table 1: Number of Teacher Respondents by Provinces

Province	# of Respondents	Percentage
Banteay Meanchey	7	2%
Battambang	22	5%
Kampong Cham	44	10%
Kampong Chhnang	37	8%
Kampong Speu	9	2%
Kampong Thom	18	4%
Kandal	35	8%
Kratie	18	4%
Phnom Penh	42	10%
Preah Vihear	6	1%
Prey Veng	55	13%
Pursat	6	1%
Siem Reap	42	10%
Preah Sihanouk	7	2%
Stueng Treng	8	2%
Svay Rieng	39	9%
Takeo	32	7%
Palin	7	2%
Ouddor Meanchey	1	0%
Tboung Khmum	2	0%
Total	437	100%

Table 2: Number of Teacher Respondents by Regions

Regions	# of Respondents	Percentage
Mountain	41	9%
Plain	249	57%
Tonle SAP	140	32%
Coastal	7	2%
Total	437	100%

Table 3: Educational Level of Teacher Respondents

Educational Level of Respondents	# of Respondents	Percentage
Secondary school	4	0.9%
High school	77	17.6%
Associate's degree	2	0.5%
Bachelor's degree	202	46.2%
Master's degree	148	33.9%
PhD	3	0.7%
Prefer not to answer	1	0.2%
Total	437	100.0%

Table 4: Occupation of Teacher Respondents

Occupation of Respondents	# of Respondents	Percentage
Primary school teacher	76	17.4%
Lower secondary teacher	28	6.4%
Upper secondary teacher	26	5.9%
NIE lecturer	27	6.2%
PTTC teacher educator	109	24.9%
RTTC teacher educator	87	19.9%
TEC lecturer	47	10.8%
PSTTC Teacher Educator	4	0.9%
Other	10	2.3%
Prefer not to answer	23	5.3%
Total	437	100.0%

Table 5: Technology Devices Teacher Respondents Own

Technology Devices	# of Respondents	Percentage
Smartphone	413	94%
Computer	315	72%
Tablet	166	38%
Smart TV	53	12%
Other	3	1%
None	0	0%

Table 6: Technology Tools and Apps Teacher Respondents Have Currently Used

Technology Tools and Apps	# of Respondents	Percentage
Telegram	436	99.3%
Facebook	381	86.8%
Facebook Messenger	375	85.4%
Youtube	305	69.5%
Zoom	322	73.3%
Google Meet	299	68.1%
Google classroom	268	61.0%
Moodle	130	29.6%
Microsoft Teams	86	19.6%
Line	50	11.4%
Whatsapp	46	10.5%
Twitter	39	8.9%
Skype	34	7.7%
Wechat	14	3.2%
LinkedIn	20	4.6%
Snapchat	5	1.1%
Other	7	1.6%

Table 7: Three Most Frequently Used Technology Tools and Apps by Teacher Respondents

Technology Tools and Apps	# of Respondents	Percentage
Telegram	433	98.6%
Facebook	247	56.3%
Facebook Messenger	219	49.9%
Zoom	108	24.6%
Youtube	89	20.3%
Google Meet	85	19.4%
Google classroom	65	14.8%
Microsoft Teams	7	1.6%
Moodle	11	2.5%
Whatsapp	1	0.2%
Twitter	1	0.2%

Table 8: Reasons for Most Frequently Used Technology Tools and Apps by Teacher Respondents

Reasons for Most Frequently Used Technology Tools and Apps	# of Respondents	Percentage
Easy to share information and communication	339	77%
Easy to use than other apps	253	58%
Furnishing a big space for sharing files, images, videos	191	44%
Common app that every teacher uses	181	41%
Easy to have conference or meeting online	186	42%
It's required by place of employment and free of charge	157	36%
Other	3	1%

Table 9: Accessing MoEYS Digital Learning Platforms and Other Digital Learning Platform by Teacher Respondents

Access Digital Tools	# of Respondents	Percentage
MoEYS Facebook Page	206	46.9%
MoEYS eLearning	229	52.2%
Krou Cambodia Facebook Page	157	35.8%
Krou website	168	38.3%
MoEYS Youtube Channel	127	28.9%
MoEYS Telegram Channel	101	23.0%
Open Education Resource	78	17.8%
MoEYS Instagram	18	4.1%
Duraseksa Website	11	2.5%
Sangapac Website	21	4.8%
Other platform	1	0.2%
None	53	12.1%

Table 10: Accessing MoEYS Digital Learning Platforms and Other Digital Learning Platforms by Teacher Respondents from Canvass of Field)

Access Digital Tools	# of Respondents (n=46)	Percentage
MoEYS Facebook Page	41	89%
Krou Website	37	80%
MoEYS Youtube Channel	37	80%
MoEYS eLearning	32	70%
MoEYS Telegram Channel	31	67%
Open Educational Resources	29	63%
Mobile Learning Apps	27	59%
Digital Libraries	25	54%
Durakseka website	19	41%
Full Online Course	19	41%
Other platforms	24	52%

Table 11: Do you know where to access digital teaching and learning resources? (Teacher Respondents)

Responses	# of Respondents	Percentage
No	205	46.91%
Yes	232	53.09%
Total	437	100.00%

Table 12: Have you ever studied online? (Teacher Respondents)

Responses	# of Respondents	Percentage
No	91	20.82%
Yes	346	79.18%
Total	437	100.00%

Table 13: Do you integrate ICT tools and technology in your teaching? (Teacher Respondents)

Responses	# of Respondents	Percentage
No	115	26.32%
Yes	322	73.68%
Total	437	100.00%

Table 14: Do you integrate ICT tools and technology in your teaching? (Results by Type of Teacher Respondents)

Type of Teacher Respondents	Total Respondents	No	Yes
Primary school teacher	76	67%	33%
Lower secondary teacher	28	39%	61%
Upper secondary teacher	26	12%	88%
NIE lecturer	27	22%	78%
PTTC teacher educator	109	9%	91%
RTTC teacher educator	87	10%	90%
TEC lecturer	47	13%	87%
PSTTC Teacher Educator	4	25%	75%
Other	10	70%	30%
Prefer not to answer	23	48%	52%
Total	437	26%	74%

Table 15: Technology Tools and Apps Teacher Respondents Integrate in Their Teaching

Technology tools and apps Teacher Respondents integrate in their teaching	# of Respondents	Percentage
Computer	274	84.6%
Smartphone	242	74.7%
Slide presentation	255	78.7%
Zoom/Google Meet/Skype	174	53.7%
Projector	207	63.9%
Google Classroom	172	53.1%

Google Drive/Dropbox	122	37.7%
Tablet	115	35.5%
Kahoot/Mentimeter	46	14.2%
Microsoft team	38	11.7%
Microsoft	16	4.9%
Other	2	0.6%
Prefer not to answer	1	0.3%

Table 16: Challenges Teacher Respondents Faced in Adoption to Digital Education

Challenges in adoption to digital education	# of Respondents	Percentage
Internet access	337	77%
Difficult to use technology device (smartphone, computer, tablet...)	181	41%
Internet affordability	199	45%
Digital literacy skill and knowledge	167	38%
Language barrier	150	34%
Difficult to get support when learning about a new tool	130	30%
Accessibility of device	57	13%
Other	3	1%

Table 17: The Most Challenge Teacher Respondents Faced in Adoption to Digital Education

Most challenge in adoption to digital education	# of Respondents	Percentage
Internet access	142	32.49%
Difficult to use technology devices (smartphone, computer, tablet...)	99	22.65%
Digital literacy skill and knowledge	65	14.87%
Language barrier	48	10.98%
Internet affordability	35	8.01%
Accessibility of device	26	5.95%
Difficult to get support when learning about a new tool	20	4.58%
Other	2	0.46%

Table 18: Motivation Factors for Teacher Respondents to Enroll in CPD

Motivation factors to enroll in CPD	# of Respondents	Percentage
Improvement of teaching and practice in classroom	327	74%
Career-related purpose and career advancement	303	69%
It is required and mandated by MoEYS that every teacher needs to complete professional development	273	62%
Personal interest in continuous professional development	217	49%
School Principals requesting or encouraging teachers to engage in continuous professional development	103	23%
Peer takes the course and talks about the course	56	13%
Occupational promotion	46	10%
School provides financial support for continuous professional development	55	13%
Having incentives and rewards for engagement in continuous professional development (verbal rewards, public recognition, personal attention, special privileges.....)	50	11%
Having less workload in school and adequate time during the school time	30	7%
Other	3	1%

Table 19: Voting on Top Three Priorities for Teacher Training Platform

Item	Priority 1	Priority 1 Score	Priority 2	Priority 2 Score	Priority 3	Priority 3 Score	Other	Total Score
Create self accessible support for users (learners/ guests)	3	9		0	2	2		11
Create training for trainers	1	3	2	4		0		7
Create Playground for training providers to create course	1	3	1	2	3	3		8
Set up integration with CPD Module	10	30	2	4	4	4	1	38
Simplify and improve LX for learners across devices	1	3	4	8	2	2	1	13
Simplify course creating experience for training providers		0	4	8	2	2	1	10
eCertificate	2	6	5	10	1	1	1	17
Simplify user account creation + password management	2	6		0	2	2	1	8
Fix UI issues		0	2	4	2	2		6
Create a way for learners to easily find relevant courses		0	3	6	1	1	1	7
0TP Integration		0		0		0		0
Train all involved ministry staff so that they can support and maintain and continue independently without needing external TA and fund		0		0		0	1	0