ICT4D Cambodia Network

Open Development Cambodia

FINDINGS REPORT

THE ICT-ENABLED DISTANCE LEARNING RESPONSE TO COVID-19 IN CAMBODIA

JULY 2021

Report produced by Júlia G. Puig for Open Development Cambodia (ODC)
and the ICT for Development Cambodia Network (ICT4D)

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Report reviewed by THY Try

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The views expressed in this paper are the views of the author and do not necessarily reflect the views or policies of Open Development Cambodia (ODC) or the ICT for Development Cambodia (ICT4D) Network.

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1. INTRODUCTION

With the objective of curbing the spread of the COVID-19 pandemic, the Royal Government of Cambodia (RGC) announced the closure of all educational institutions, both public and private, as of 16 March 2020. Over three million students were affected by the three-month nationwide closure of schools and other successive school shutdowns at local level.

The abrupt closure of educational institutions shook the entire sector as distance education became a reality for millions of students and teachers overnight. In Cambodia – where the presence of digital learning remains extremely low and internet connectivity issues remain, especially in rural areas and among low-income communities – the closure of schools disrupted the learning of most students and contributed to persistent socioeconomic inequalities. In this context, the sudden closure of schools required an unprecedented effort from schools, teachers, students and their families to avoid a total halt of their activity.

The education sector did not have the time or the resources to define and roll out a comprehensive plan to gradually shift from traditional lessons to remote education. The Ministry of Education, Youth and Sport (MoEYS), in collaboration with development partners, worked to facilitate distance learning and support teachers and students during this period. Nevertheless, the lack of adequate equipment and internet connectivity, the low levels of digital literacy, the limited communication and availability of digital educational resources in Khmer posed significant challenges.

This research was conducted with the objective of understanding the role of information, communication and technology (ICT) tools during the distance learning period and identify the impacts, limitations and opportunities that derived from the nationwide closure of educational institutions. The present findings report reflects the experiences of respondents when learning and teaching in an online environment. Ultimately, the findings seek to contribute to advance the capacity of the education sector – including schools, teachers and students – to adapt and integrate ICT tools for a more innovative and inclusive education system.

The following section of this report provides an overview of the profile of the 436 respondents who participated in a survey. Section 3 assesses the direct impact of the closure of schools and the increased role of ICT. Section 4 identifies the kind of tools and platforms that were used and compares it to the pre-pandemic situation. Section 5 delves into the views of respondents with regard to the challenges as well as the benefits of digital education. Section 6 explores the attitudes and preferences of students and teachers concerning the future role of ICT in education. Finally, the last section outlines the most important priorities and compiles recommendations to enhance the integration of ICT in education.

2. THE SAMPLE OF RESPONDENTS

With the objective of understanding the ways in which the COVID-19 pandemic affected both the supply and demand of education, respondents in this research included teachers and students. The data collection process was conducted through online surveys that were disseminated by Open Development Cambodia (ODC) and its partners.

The study covers Phnom Penh and the province of Svay Rieng. The choice was based on the importance of the capital city and the ability of the research team to engage respondents. The sample sought gender parity in the number of respondents in order to capture any gender-based differences in the answers. The findings presented in this report reflect the ideas and feedback provided by a total of 436 respondents, 295 of whom were students and 141 teachers.

2.1. The profile of student respondents

The 295 students who participated in the study consisted of 148 women, 142 men and 5 who preferred not to disclose this information. 260 respondents are currently enrolled in educational institutions in Phnom Penh and 35 in Svay Rieng.

Respondents include students in lower secondary school and above, with the objective being to ensure that they would adequately understand the questions and reflect their experience in using ICT. In breaking down the numbers, 125 students are from lower secondary school (grades 7-9), 104 from upper secondary school (grades 10-12) and 64 from universities (including bachelor, master's and PhD programs). Two other respondents preferred not to share this information.

Figure 1. Student respondents by grade.

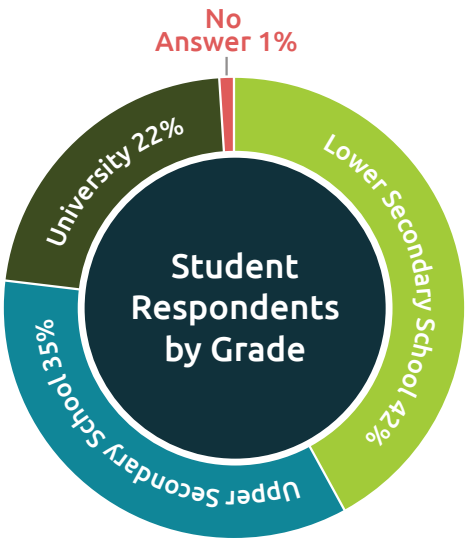


Figure 2. Primary medium of instruction of student respondents.

Given the predominance of government-run education centers in Cambodia, the main targets of the survey were public schools. Hence, the vast majority of students in the survey (259) attended public institutions, although there were a few respondents from private schools (27) and NGO/not-for-profit education centers (6). Another three respondents preferred not to answer this question. Khmer is the primary language used for learning by the vast majority of students (79%) while English is the primary language of instruction of the remaining 21%.

2.2. The profile of teacher respondents

As for teachers, the survey gathered insights from a total of 141 respondents working in Phnom Penh (121) and Svay Rieng (20). Gender balance was also broadly achieved among teachers; the sample contains 66 women and 75 men.

In addition to the grades covered by the students' sample, the teachers' sample includes respondents teaching in a primary school. Teacher respondents are disaggregated by the grade taught as follows: 8 from primary school (grades 1-6), 27 from lower secondary school (grades 7-9), 88 from upper secondary school (grades 10-12) and 16 from university (including bachelor, master's and PhD programs). Two other respondents preferred not to state this information. The share of teachers using Khmer as their primary language of instruction is virtually the same as for students; 81% of teachers use Khmer and 19% use in English.

Figure 3. Teacher respondents by grade taught.

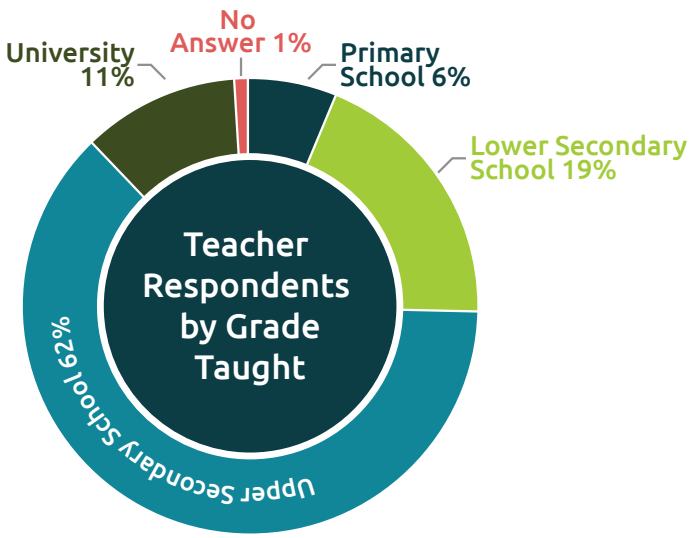
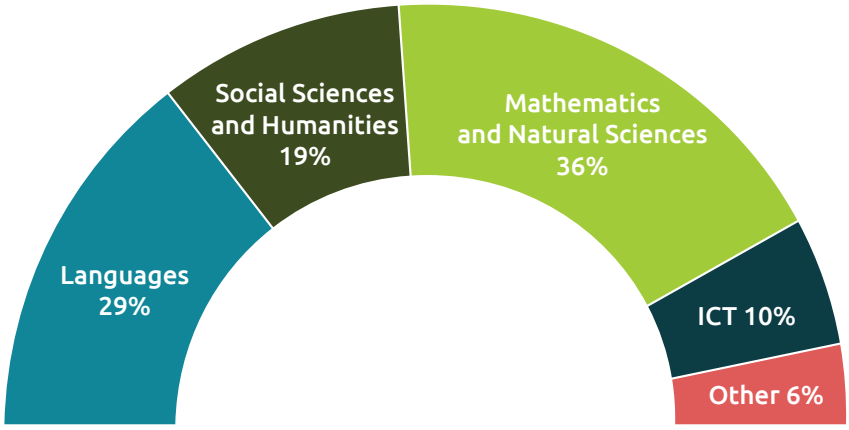


Figure 4. Primary medium of instruction of teacher respondents.

The sample has a good representation of teachers in the age bands of 18-29 (49% of the total) and 30-59 (45%). The share of teachers over 50 years old accounts for just 5% of the total sample, which poses a limitation to the study. However, respondents over 50 years old did provide some insightful information, as will be discussed in the following sections of the report.

The sample reflects a varied representation of the subjects taught by teachers: mathematics and natural sciences (36%), languages (29%) – including both Khmer and foreign languages – social sciences and humanities (19%), technology and ICT (6%) and others (6%).

Figure 5. Teacher respondents by subject taught.



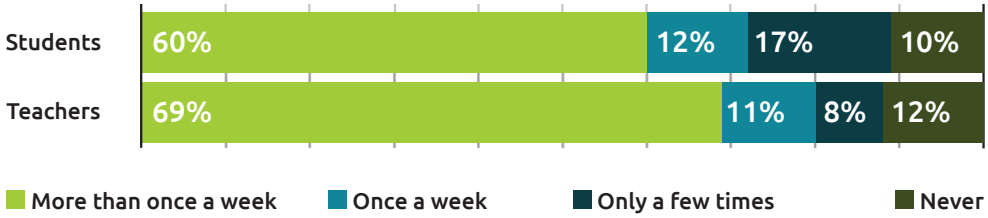
As in the case of students, most teacher respondents (129) come from a public institution. A few respondents worked in private schools (10) and other types of institutions (2), such as not-for-profit organizations.

3. THE IMPACT OF THE CLOSURE OF SCHOOLS

In the pre-COVID-19 baseline scenario, the use of ICT in education was common among most respondents.

As seen in Figure 6, before the COVID-19 outbreak, the large majority of students and teachers used some sort of ICT tool on a regular basis, especially the teachers. 60% of students and 69% of teachers made use multiple times a week while 12% of students and 11% of teachers used them on a weekly basis. However, an important share of respondents had never, or only a few times, used any of these tools in the context of education, which shows an absence of readiness and expertise by the time that the closure of schools was announced.

Figure 6. Frequency of ICT use in education in the year preceding the COVID-19 pandemic.



The survey results indicate that gender does not play a significant role in determining the frequency of ICT use. In general, ICT use is higher among respondents who have a stable internet connection at home compared to those who do not. Nevertheless, half of respondents lacking connectivity did use ICT more than once a week before the COVID-19 outbreak as they had access to the internet at other locations. Student respondents from upper secondary schools showed the highest use of ICT tools before the pandemic (74% of them used ICT more than once a week), followed by students in lower secondary schools (58%) and universities (41%).

In contrast, in universities teachers were the group that used ICT tools more often, with 88% of them doing so more than once a week. The younger generation of educators are more open to the expansion of digital education and show better digital competencies. While 78% of teachers aged between 18-29 made use of ICT in their teaching activity multiple times a week, the figures are 61% for teachers 30-49 and 43% for those over 50.

The kind of subject taught appears to be a relevant factor in determining the level of ICT use and certain subjects tend to facilitate the integration of technology in their curricula. Virtually all ICT and technology teachers (93%) were already using ICT to teach more than once a week before schools closed. In contrast, the figure goes

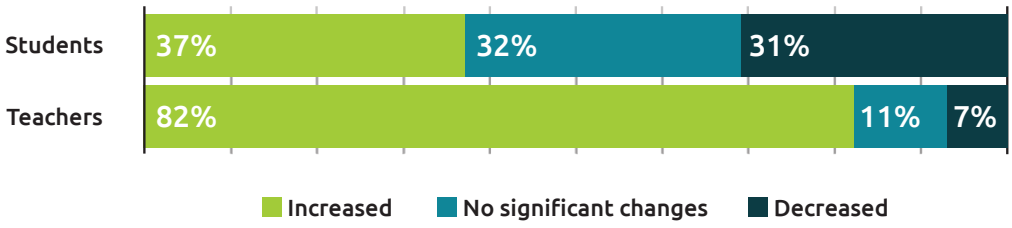
down to 61% for teachers in languages, mathematics and natural sciences and 74% in social sciences and humanities.

Two considerations need to be made with regard to these results. The first, as will be discussed in the following sections, is that most students and teachers were familiar with fairly basic tools rather than with more complex solutions, which could fully replace traditional learning, such as virtual classrooms and virtual reality. The second is that these answers primarily reflect the experiences of respondents in urban areas, where access to technology and the internet is greater compared to other regions in Cambodia.

The closure of schools triggered a sharp expansion in the use of ICT and digital tools.

The acceleration of ICT use applies to different demographics and is fairly equally distributed between male and female. Figure 7 illustrates the variations in ICT use among students and teachers as a result of the closure of educational institutions. Overall, teachers experienced a considerably greater increase in the use of ICT compared to students. The substantially larger increase of ICT among teachers (82%) compared to students (37%) is partially explained by the fact that teachers relied on ICT not only for their teaching activity per se, but also for the coordination with other teachers, administrative tasks, evaluation, lesson planning and the preparation of study material. When disaggregating answers by grades, the largest increases in ICT use were reported at the highest levels of education, namely among university students and professors.

Figure 7. Change in ICT use for education since the closure of schools.



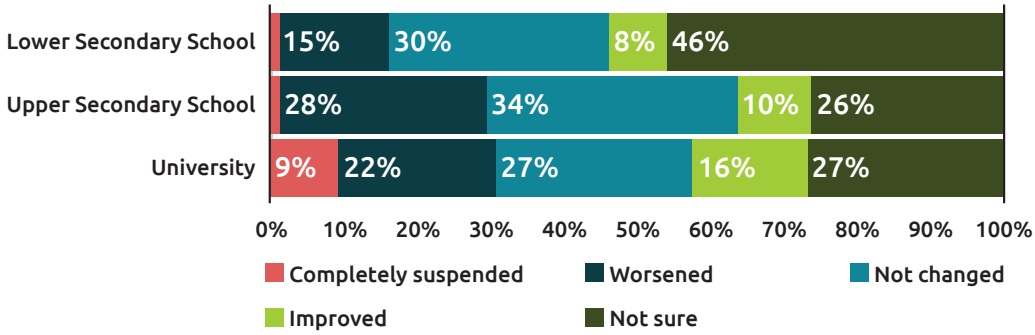
Students' answers are almost evenly distributed among the three options, with the share of those who had increased their use slightly higher. When disaggregating data by the level of education, the use of ICT intensifies the higher the grade. Hence, university students report a larger use of ICT during the closure of schools than upper secondary and lower secondary school students. This may be explained by the fact that older students have, in general, stronger skills to adapt to new methodologies and require less oversight and support than younger ones. At the other end, the use of ICT actually decreased for almost one third of students compared to their traditional activity. As discussed in the following sections, this is rooted in several causes, including connectivity issues, limited technical skills of students and their families, and communication challenges with teachers.

There is a negative correlation between teachers' age and their use of digital resources during the pandemic. The vast majority of teachers reported an increase of ICT use since the outbreak – 87% in of those aged 18-29 and 83% of those 30-49. In contrast, only 43% of teachers over 50 reported an increase. Teachers in the latter age bracket had a notable lower frequency of ICT use before COVID-19. In the baseline, the share of teachers using ICT more than once a week was 78% in the age group 18-29, 61% for ages 30-49 and 43% for those over 50 years old. Despite the unforeseen and immediate closure of schools that shook the entire education system, teachers who were less familiar with digital technologies showed a particularly limited capacity to integrate new resources and increase the use of digital tools in such a short span of time.

Both students and teachers experienced increased difficulties in their learning and teaching activities when schools closed.

In the case of students, a significant proportion of respondents (35%) were not able to assess how the closure of schools had affected their learning, especially students in the lower grades. This raises concerns over the high degree of uncertainty among students and the potential implications in the mid and longer-term. Despite only 3% of students reporting that their education was completely suspended while schools remained closed, 21% believed that their learning activity had worsened. Almost one third thought their learning had not significantly changed and 10% said it had actually improved compared to their previous learning experience.

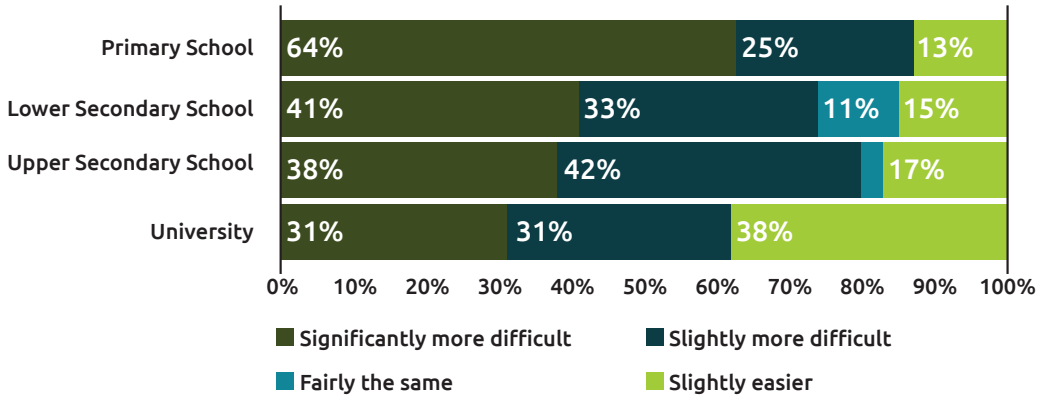
Figure 8. Impact on the learning of students due to the closure of schools.



Teachers reported facing larger difficulties in continuing their activity in comparison to students. The vast majority of teachers overwhelmingly agreed that their teaching conditions had worsened. In particular, the teaching activity became significantly more difficult for 40% and slightly more difficult for 38% of teachers. Only a small share (4%) did not face any major changes. In contrast, the remaining 18% of teachers reported that their teaching activity had actually become easier. When disaggregating the data, it is seen that this mostly corresponds to technology and ICT teachers, given that their courses were already fundamentally based on digital tools. In addition, their digital skills facilitated a better response to the shift to distance learning.

As shown in Figure 9, there is a negative correlation between the level of education taught and the teaching difficulties faced. While 64% of primary school teachers reported significant difficulties, the figure goes down to 41% for lower secondary school teachers and 38% and for upper secondary school teachers. Fewer than one third of university professors and lecturers (31%) believed that their teaching activity had become significantly more difficult.

Figure 9. Change in the degree of difficulty of the teaching activity since the COVID-19 outbreak.



The relatively fewer challenges faced by university teachers is underpinned by several factors. Firstly, the traditionally higher levels of ICT use among university professors before the pandemic enhanced their preparedness to embrace remote education. Secondly, the maturity and autonomy of university students requires less supervision from professors compared to students in lower grades of education, who are more reliant on the support from their teachers and families. Thirdly, the fact that university students are generally more familiar and experienced in the use of ICT facilitated the response of their professors. There was a higher capacity for university professors to adapt to the new situation and coordinate for remote education.

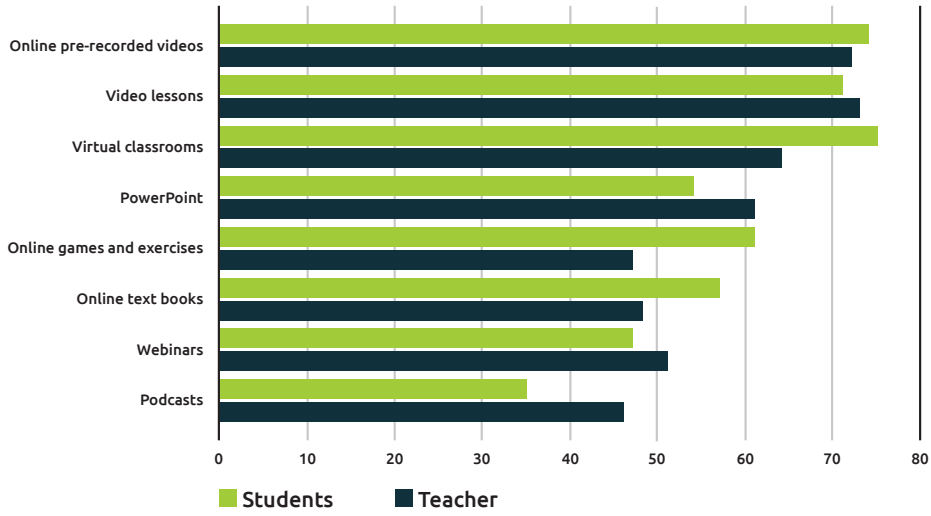
4. THE ROLE OF ICT AND DIGITAL SOLUTIONS

The surge of ICT use during the closure of schools was accompanied by a shift in the kind of digital resources used. This section identifies the most commonly used tools and platforms during distance learning and assesses the changes compared to traditional education.

In the first place, digital resources provided alternatives to the regular classroom setting and teaching methodology in face of the impossibility of attending school. Among those who managed to embrace distance learning, this was generally based on asynchronous learning tools. In contrast to synchronous learning, asynchronous teaching and learning activity is not in real-time, implying that users do not need to be present in the same place or at the same time. Instead, educational materials are accessible at any time and students can work at their own pace. Despite this format facilitating coordination and accessibility, it limits the communication between students and teachers as well as among classmates.

Figure 10 shows the share of respondents who employed various tools during distance learning, used to replace traditional lessons. With the exception of virtual classrooms, all of these fall under the category of asynchronous tools. Online pre-recorded videos, video lessons, webinars and podcasts are the closest to regular teaching activity. Video lessons, webinars and podcasts have the advantage that they can be pre-recorded and launched via streaming. Over 60% of students got to practice their knowledge and skills through online games and exercises. All of these educational materials and resources can be produced by the teachers themselves or found on educational online platforms.

Figure 10. Share of respondents who used the following digital products and resources to replace traditional lessons.



In the second place, ICT tools were crucial in mitigating the lack of face-to-face interaction during distance learning. Online chats were the most widely used tools to communicate, reported by 68% of students and 72% of teachers, closely followed by group video calls and mobile phone messaging.

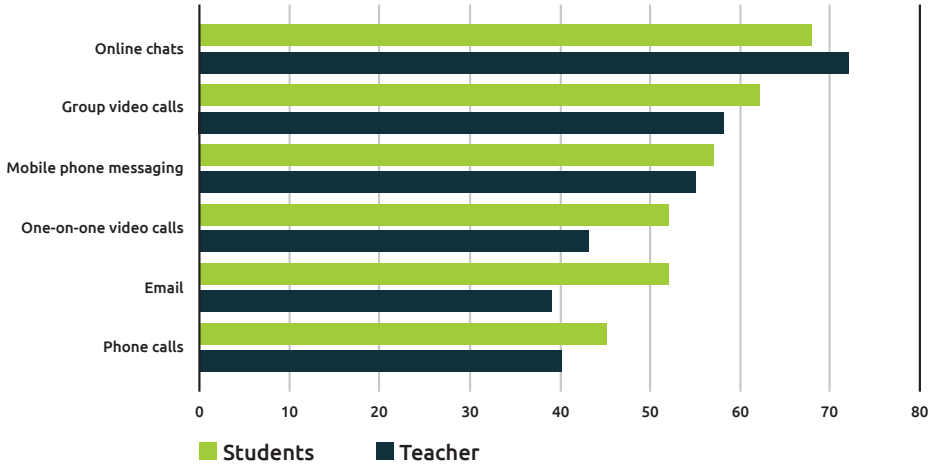
These communication tools can be divided into three categories based on the availability and quality of the internet connection:

- Firstly, video calls are internet-enabled tools that allow for real-time and direct interaction between users who have simultaneous access to the internet, including in group and one-on-one calls.

- Secondly, when the connectivity is unstable, other internet-enabled tools, such as online messaging and emailing, allow users to have a non-simultaneous indirect communication.

- Finally, when an internet connection is unavailable, phones are a suitable option to call or send text messages (SMS).

Figure 11. Share of respondents who used the following tools, digital products and resources to communicate during distance learning.

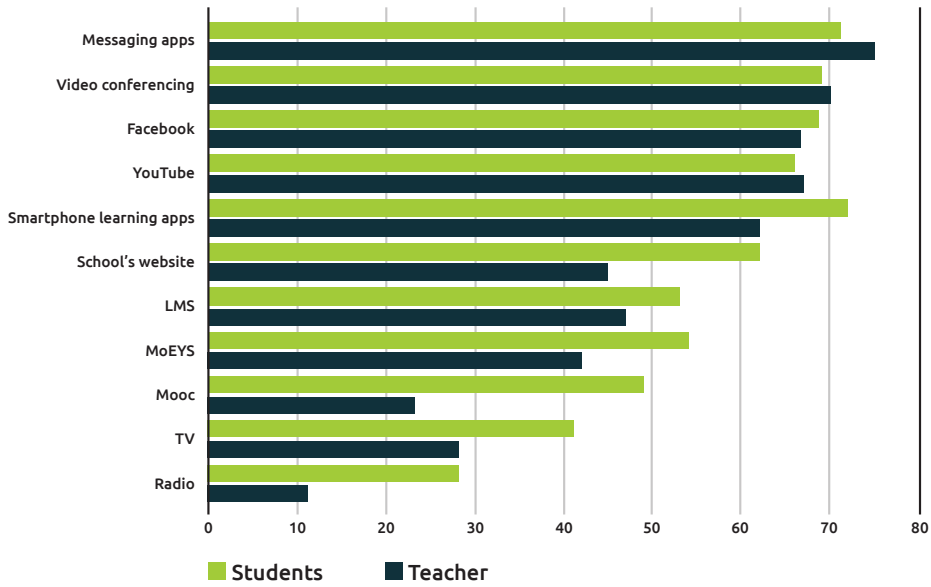


In comparison to the pre-pandemic situation, there has been a dramatic increase in the use of tools that present an alternative to in-class teaching activity. Overall, the largest increases are observed with tools that were not regularly used in the Cambodian education sector before the pandemic. As a result, certain tools, such as video calls and online pre-recorded videos, went from being among the least-used to the most widely used. The tools that experienced the largest increases in use among students were pre-recorded videos (54%), video lessons (45%), virtual classrooms (58%) and group video calls (39%). For teachers, the highest increases were for pre-recorded videos (52%), video lessons (43%), virtual classrooms (37%) and webinars (40%).

It is worth noting that a significant number of respondents never used some of these tools, either before or during the closure of schools. Many students had never used group video calls (23%), online chats (19%) or virtual classrooms (16%). One third of teachers had never used group video calls, 26% virtual classrooms, 22% pre-recorded videos and another 22% PowerPoints.

The tools and services used to communicate, teach and study are supported by certain platforms and digital applications (Figure 12). The platforms mainly used to interact are messaging apps (WhatsApp, Telegram) and video conferencing programs (Skype, Zoom). The most common platform to share documents – teachers disseminating content and students sharing their work with teachers – was Facebook, followed by schools' websites. Finally, the remaining platforms were essentially used to retrieve educational material and content in various formats and do exercises and coursework. These consist of YouTube (in video format), smartphone learning apps, school's learning management systems (LMS), the MoEYS website and its Open Educational Resources (OER), Massive Open Online Courses (MooC such as Coursera, edX), television and radio.

Figure 12. Share of respondents who used the following digital platforms and applications during distance learning.



5. ASSESSING THE USE OF ICT DURING REMOTE EDUCATION

5.1 Challenges

The closure of schools intensified existing challenges and generated new ones. Figure 13 and 14 show the share of students and teachers who reported facing various issues during remote education. While just 7% of students and 4% of teachers did not face any major challenges, the great majority of respondents experienced multiple challenges simultaneously. Among those, internet and communication issues stand as the two largest obstacles. The increased online activity led to growing concerns over online privacy and security. Nevertheless, despite the fact that the increase in ICT use was significantly more time-consuming than traditional education, the decline in the motivation of students and teachers was moderate.

Figure 13. Challenges faced by students during the closure of schools.

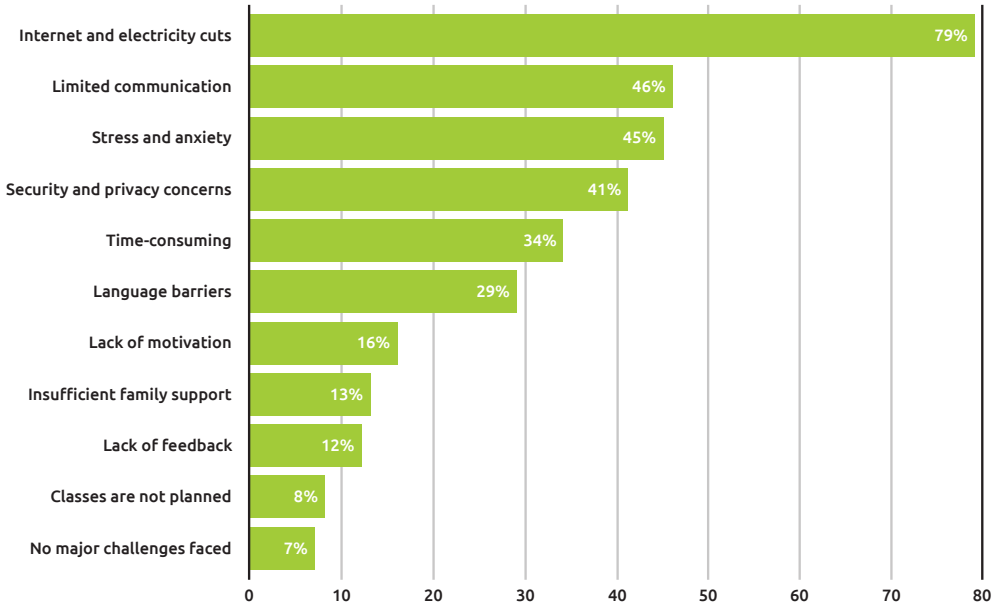
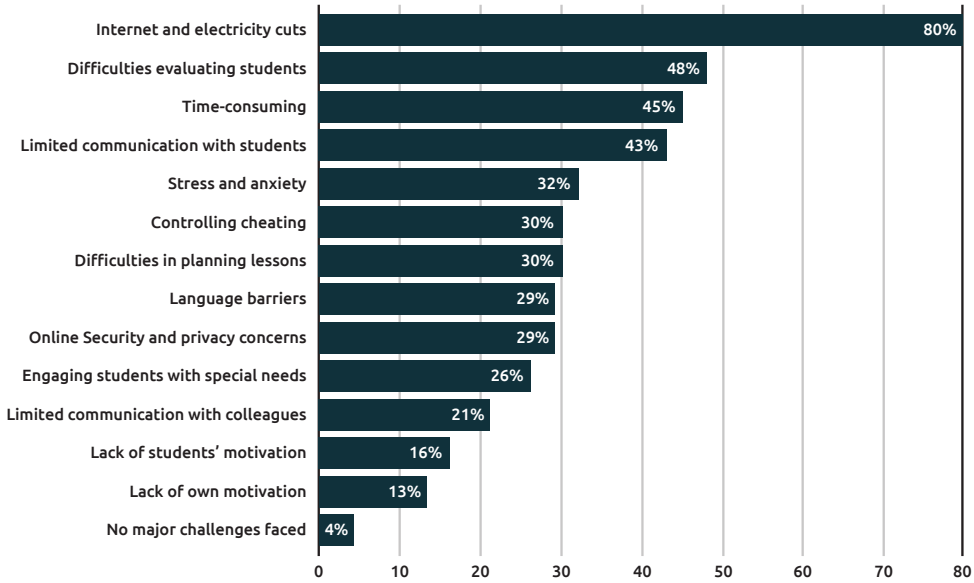


Figure 14. Challenges faced by teachers during the closure of schools.



Limited internet access and electricity cuts

While 76% of students and 82% of teachers reported having an internet connection at home, connectivity issues are by far the biggest challenge faced by respondents. Recurring power outages and electricity cuts explain why 80% of total respondents experienced problems with their connectivity. It is important for the education sector to acknowledge that even in those households with a high-quality connection, the internet might only be accessible for part of the day.

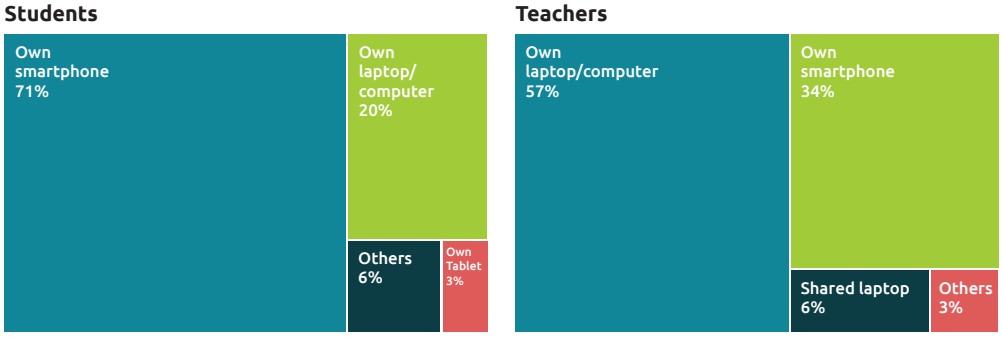
A solution to mitigate the recurrent internet issues are digital educational resources that do not require a permanent connection to the internet, such as downloadable materials and pre-recorded videos. This is a good option under normal circumstances, in which students can download the digital material once connected to the internet and work offline afterwards. However, at a time when education was solely remote and mobility was restricted, having internet at home was indispensable for students. The lack of internet prevented students accessing online educational materials, joining virtual classrooms and videocalls and sharing their work with teachers. On the other side, teachers with limited or no access to the internet were unable to share material with their students, assess their performance or run lessons using communication technologies.

Inadequate equipment

The digital equipment at the respondent's disposal was often not adequate. Smartphones were the most widely used devices by students during distance learning (71%). However, even if they used their own smartphone – and did not have to share it with other family members – it is not an adequate option. The small size of the screen and the limited features hinder the ability of students to conduct coursework and navigate online resources. Only 20% of students used their own computer or laptop to study from home.

Teachers had better access to adequate equipment, with over half of them using their own laptop or desk computer. Nevertheless, even though 70% of the surveyed teachers were provided with some sort of physical equipment by their schools, only 31% believed that the equipment they had at their disposal was very good. The majority (57%) reported it was adequate and 12%, insufficient.

Figure 15. Primary equipment used to continue education during distance learning.



Lack of communication

Remote education severely hindered the communication between teachers and students, as well as among classmates and colleagues. In fact, this was the second most common challenge faced by students as nearly half of them reported insufficient communication with both their teachers and classmates (Figure 13). A substantial share of teachers (39%) only communicated with students and their families once a month or less while schools remained closed and only 24% of them managed to communicate on a daily basis. On the one hand, limited communication constrained the ability of teachers to teach content as per the official academic curriculum. On the other hand, it also hindered the ICT/technical guidance and support that teachers could provide to students.

Only a quarter of students indicated that their school and teachers provided them with a choice of ICT tools and digital material to use during distance learning. Nearly

half of students had to find digital alternatives themselves to keep learning while schools remained closed. The result was an increased burden on students and their families. The latter became, overnight, the primary support for students, especially for young students who require continued supervision. Unfortunately, families and caretakers were not prepared to fully take over the role due to time constraints and the generally inadequate technical skills of parents (which were rated as insufficient by half of teacher respondents).

Limited communication also led to increased difficulties for teachers in assessing students' performance, to control cheating and plan lessons. It was also challenging to engage students with special needs given that the material and tools did not allow for different needs and adapt to specific circumstances. The resulting sudden changes induced by the closure of schools, combined with widespread uncertainties and the efforts required to adapt to the changing situation, markedly increased the levels of stress and anxiety experienced by students and teachers.

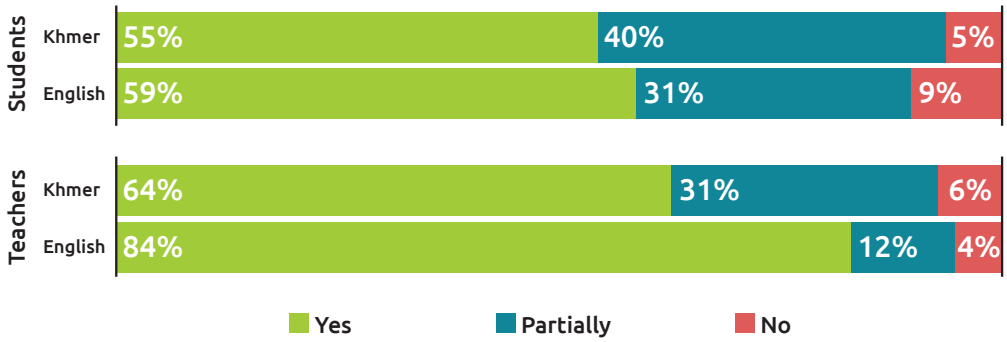
Those students that were severely affected by these challenges were left with few alternatives to prevent a total halt in their education. Some schools did offer students the possibility to pick up printed material from the academic centers while schools remained closed. However, this option was only provided to less than half of student respondents.

Language barriers

Respondents using Khmer as their primary language to study and teach experienced more difficulties during the distance learning period. Almost one third of students and teachers faced language barriers when using ICT tools and digital resources during remote education (Figure 16). As mentioned in section 2, Khmer was the primary medium of instruction for the great majority of survey respondents. Overall, 80% primarily used Khmer while the remaining one fifth used English.

The share of respondents who reported that they were able to continue education in their primary language of instruction tended to be larger among English users. Among those using Khmer, 55% of students and 59% of teachers were able to continue education in that language. As for those primarily using English, the figures rise to 64% of students and 84% of teachers. Using ICT tools and navigating the internet require users to have a minimum knowledge of English. The main issue is the limited amount of digital academic material, digital platforms and applications in Khmer.

Figure 16. Did ICT tools/platforms enable you to continue education in your primary medium of instruction?



Nevertheless, in recent years, the Ministry of Education, Youth and Sports (MoEYS) has remained highly committed to improving the availability of online educational material. The Open Educational Resources (OER) provides learning and teaching material to support the activity of students and teachers in the digital age. It has become the flagship platform for educational resources produced in Cambodia, which are available in both Khmer and English. These OER resources were generally well-valued by teacher respondents; 55% found them highly useful for distance teaching, while 26% somewhat useful and 9% not useful at all. Only 5% of teacher respondents had never used the MoEYS platform.

5.2 Attitudes and perspectives

Students

As previously discussed, ICT tools and digital platforms meant that many students could avoid a total halt in their education. The great majority of students (51%) agreed that such tools had enabled them to continue education (40% only partially agreed, 2% disagreed and 7% were not sure). The quality and effectiveness of the learning facilitated by ICT is another matter. Students' insights indicate that under better conditions, they would have been able to take greater advantage and better leverage the potential of digital resources.

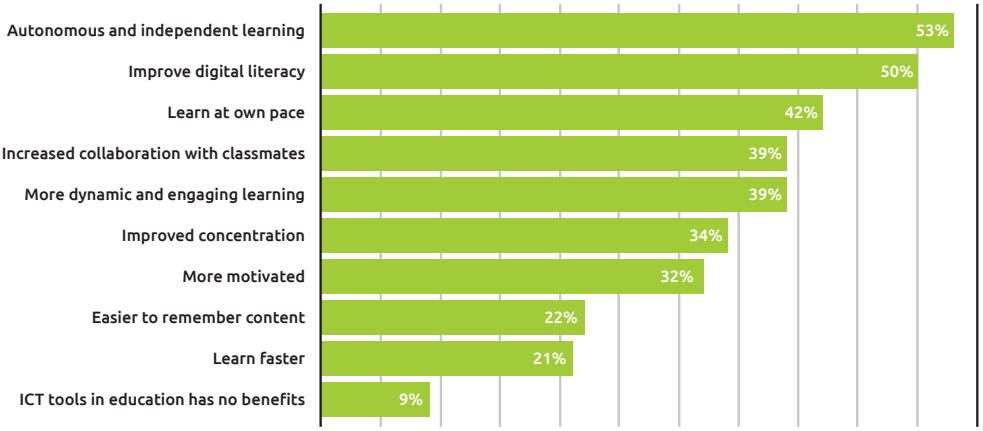
Firstly, distance learning would have been more effective if students had better digital skills. Only 23% of students believed that their technical skills were adequate to incorporate ICT tools into their learning activity. Secondly, students overwhelmingly agreed that their learning performance would have been better if they had used more ICT resources (20% totally agree, 60% partially agree, 7% disagree and 13% not sure). Thirdly, the limited communication between students and teachers hindered the effectiveness of ICT for distance learning. Students considered that they would have benefited from receiving more support and guidance from their teachers. Only 29% of respondents believed that the support and guidance provided

by their teachers was adequate, while 51% reported it was partially adequate, 8% inadequate and 12% were not sure.

However, the integration of ICT tools in education did generate opportunities and benefits according to most students, except for 9% who did not perceive any benefits. The major advantage of a digitally empowered learning experience is that it provides an opportunity to be more autonomous and work independently, as reported by 53% of students. The presence of ICT entails new ways of learning that can contribute to tailor education to the interests and distinctive needs of different students. Indeed, 42% of respondents valued the possibility to learn at their own pace by adjusting their learning process.

A significant share of students (39%) considered that their learning became more dynamic and engaged compared to their traditional education and reported that the collaboration with their classmates had actually increased. This reflects that in many cases, ICT tools were successful at overcoming the lack of face-to-face interaction between students. In addition, around one third of students experienced higher concentration levels and felt more motivated. Importantly, half of students self-reported that their digital literacy and their capacity to use ICT had improved as a result of the distance learning period.

Figure 17. Benefits of using ICT in education according to students

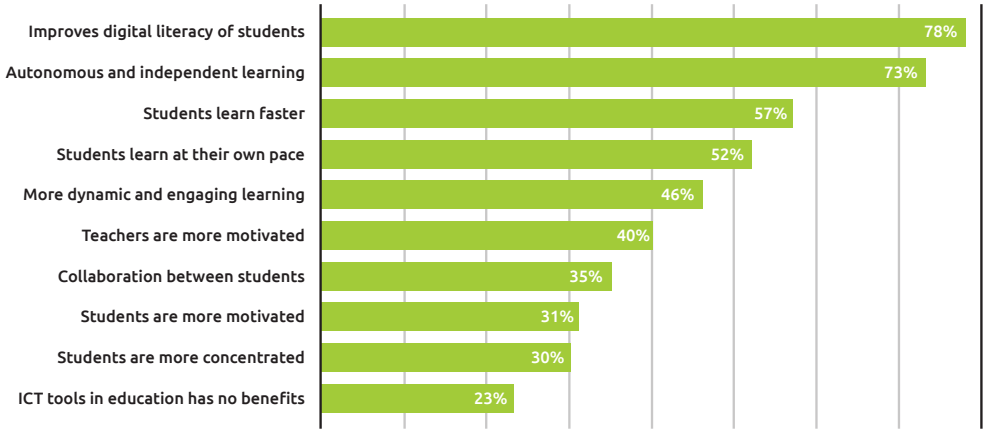


Note: The percentages correspond to the share of students who reported having experienced such benefits.

Teachers

Compared to students, a larger share of teachers believed that the use of ICT does not benefit education. However, those who do support the role of ICT reported higher satisfaction rates than students. According to teachers, the incorporation of digital tools generates important benefits for students, the most common one being an improvement in their digital literacy. Students can work more independently and manage their time according to their needs, which enhances their learning performance.

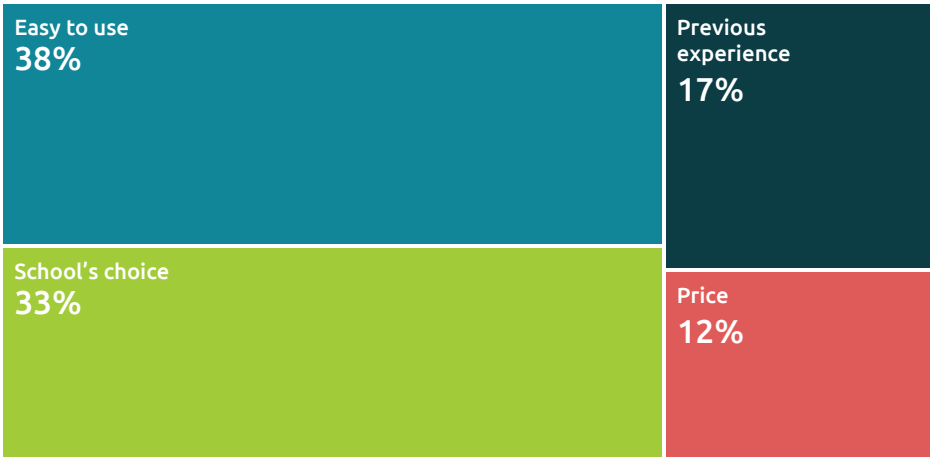
Figure 18. Benefits of using ICT in education according to teachers.



Note: The percentages correspond to the share of teachers who reported having experienced such benefits.

Normally, teachers should be responsible for adequately planning the lessons and guiding their students in the use of ICT resources. Therefore, it is important to understand on what basis ICT tools and resources are chosen. The survey indicates that one third of teachers do not usually choose the digital tools used in their regular teaching activity as it is considered to be the school's decision. Teachers who do make the selection themselves show a higher preference for tools that are user-friendly and intuitive, followed by familiarity and affordability.

Figure 19. Teachers' selection criteria for ICT tools.

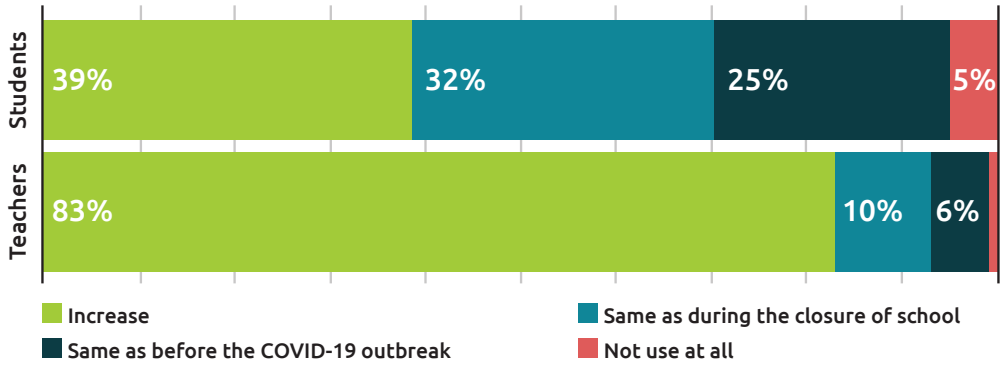


6. THE FUTURE OF ICT IN EDUCATION

As societies become more reliant on the internet and the role of digital solutions expands, the potential implications for the education sector are a matter for debate. While the development of digital education and the integration of ICT varies significantly between countries, COVID-19 has forced millions of students across the world and across different demographics to adapt to distance learning, where possible. This last part of the report examines the perspectives of Cambodian students and teachers with regard to the future role of ICT in their education.

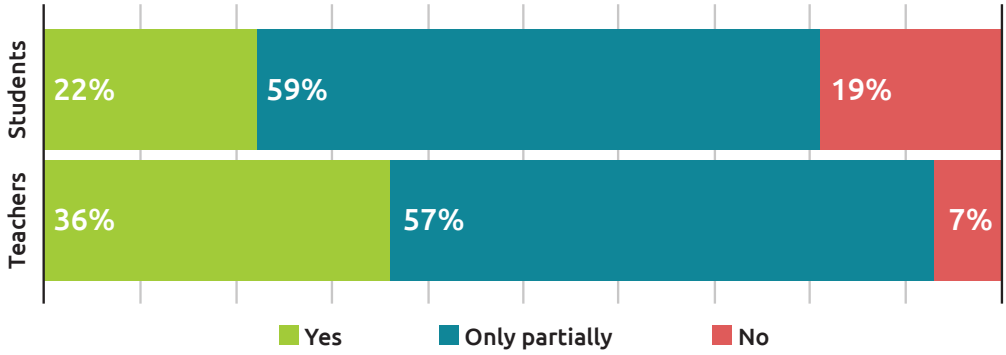
Figure 20 indicates how students and teachers view the ideal role of ICT and digital resources in their regular educational activity. Overall, there is consensus that, once normal educational activity is restored, the presence of ICT should be higher than compared to the pre-pandemic scenario. The majority of respondents would favor an increase of the current level of ICT use – especially teachers (83%) compared to students (39%). Some respondents would like to maintain the level of ICT employed during the closure of schools, namely 32% of students and 10% of teachers. The share of respondents that does not support any changes and prefers to maintain the level of ICT use as before the closure of schools accounts for 25% of students and 6% of teachers.

Figure 20. Respondents' preferences regarding the ideal role of ICT and digital resources in the regular educational activity.



The survey reflects broad agreement on the importance of ICT and a strong interest in integrating more digital tools and resources in the education sector. Going one step further, respondents were asked about the possibility of ICT eventually replacing the traditional classroom setup. As shown in Figure 21, over half of respondents believe that distance learning could only partially replace traditional education (59% of students and 57% of teachers). Students seem to be slightly more hesitant, with 22% of them believing that traditional education could be completely replaced, compared to the 36% of teachers. From this standpoint, education could potentially become a hybrid between conventional education activity and distance learning.

Figure 21. Can distant learning replace the traditional classroom setup?



7. PRIORITIES AND RECOMMENDATION TO ENHANCE THE INTEGRATION OF ICT

The growing role of ICT tools and digital resources in education is set to transform many aspects of the learning and teaching experience. If integrated effectively, such tools have the potential to improve the efficiency of education and enrich the experience of students and teachers alike. ICT tools can make education more dynamic, engaging and collaborative. This section delves into some timely priorities for the sector to enhance digital education.

Identify the limitations faced by students and teachers and integrate their needs in a responsive digital education environment.

Clearly, technology and internet-based resources can considerably enhance the teaching and learning experience in a number of ways. Nevertheless, preexisting inequalities between students tend to reinforce the differences in their ability to capitalize on education in a digital environment. The digital divide is a primary driver of inequality. The expansion of internet and mobile phone use in Cambodia has been considerable in recent years; with 8.86 million users, internet penetration stands at 53%, a 14% increase compared to 2021.[1] However, a wide digital divide prevails and disconnected households cluster in rural and poor areas, not completely captured by this survey as its scope is limited to two the capital city and one province and mostly urban respondents.

The findings presented in section 5 highlight the inadequacy of the equipment – with 71% of students using a smartphone during distance learning – as well as the high frequency of electricity and internet cuts. The learning experience during the closure of schools was slightly easier among those with a stable internet connection at home, who reported higher increases in ICT use compared to those facing connectivity issues.

Persistent socioeconomic inequalities are an important consideration in determining access to equipment and the capacity of families to support the education of their children. In order to mitigate the underlying disparities in skills, access to equipment and internet, and family support, all schools should be equipped with adequate digital equipment to improve the currently poor digital educational infrastructure. This would ensure that all students, including those with more limited resources at home, are able to learn and become competent in the use of ICT and online resources. With fast-growing digitalization and global interconnectivity, unequal access to ICT and online resources further perpetuates socio-economic inequalities, not only during the period of distance learning but also in traditional education. Coupled with this, the vulnerability of students with special needs and disabilities significantly increases if their specific needs are not effectively addressed by the choice of ICT tools and digital resources.

1. Simon Kemp, 2021. DIGITAL 2021: CAMBODIA. [online] Available at: <https://datareportal.com/reports/digital-2021-cambodia> [Accessed 1 May 2021].

Improve digital skills to leverage the potential of ICT

Despite the fast growth of internet penetration and the use of smartphones and social media – particularly among the younger generations in urban environments – digital literacy in Cambodia remains limited. This is confirmed by the survey results presented in this report. Over three quarters of students reported that their skills were not sufficient to adequately incorporate ICT tools during the distance learning period.

The great majority of teachers are willing to improve their digital skills, however. There is a clear need for further training to build the capacity of the whole education sector. In this survey, 55% of students and 89% of teachers believed that having received more technical training would have improved their use of ICT and enabled them to make the most of it. The majority of students would like to receive better guidance from teachers while the latter, in turn, demand more support and training from the schools. It is relevant to note that this survey did not test the digital skills of participants, and hence the findings are based on the respondents' perceptions and self-reported levels of literacy.

Students and teachers need to be equipped with the technical training that gives them the knowledge and capacity to integrate new tools into their regular activities. It is also important that basic skills are provided to students from early grades of education, with a focus on manipulating devices (computer, smartphone, tablet), managing documents and files (create, save, share), processing information and content display (Word, Spreadsheets, PowerPoint), creating presentations and communicating via the internet (online messaging, e-mail, videoconferencing).

In addition to the technical aspects, training must encompass privacy and security considerations. The internet and digital-enabled education have exposed users to unprecedented security and privacy threats. Unfortunately, there is a widespread lack of awareness about the risks posed by the increased digital presence. It is crucial to train students and teachers on security measures to be safe when working online and navigating the internet.

Figure 22. Convenient training topics for students and teachers.

Training Topics	Teachers	Students
Video recording	🔴	🟡
Online searching and retrieving information	🔴	🔴
Information processing and content display	🔴	🔴
Social networks	⚫	🟡
File sharing and collaboration	🔴	🔴
Video conferencing	🔴	🔴
Online messaging	🟡	🔴
Online privacy and security	⚫	⚫
Class management platforms	⚫	-
Tools to assess students performance	🟡	-

Note: The color icons reflect respondents' views on the neediness for these trainings (red=high; yellow=medium; grey=low).

Integrate tools and platforms that are more responsive to the needs and capacities of the education sector.

There is no one-size-fits-all approach when selecting the most suitable technological and digital educational resources. Instead, the adequacy of each tool or solution depends on the circumstances (time and place), the resources available and the digital literacy levels, needs and preferences of users. In any case, and regardless of the tools employed, teachers have a fundamental role in guiding students and are responsible for fostering creativity, critical thinking and encouraging discussions.

Compared to the ICT and digital tools used in the traditional classroom, the tools used for distance education need to ensure student-to-teacher interaction as well as collaboration between classmates. It is important to incorporate the social component that education has for students, especially among the younger ones whose personalities and social skills are still being developed.

The lack of face-to-face interaction hinders the capacity of teachers to monitor and assess the performance of students. A variety of platforms and tools can improve the ability of teachers to evaluate the competencies of students from a distance and create and grade online exams. Teachers can even supervise tests remotely to prevent cheating practices. Such tools can improve the evaluation processes in a way that is not too time-consuming and allows teachers to focus on their teaching activity per se. Another major challenge faced during distance learning was the lack of a stable internet connection. In these cases, teachers and schools must strive to equip students with offline resources that can be used when not connected to the

internet. In terms of the availability of educational material, there is a need for more digital academic content in the Khmer language. Despite the substantial expansion of the Open Educational Resources (OER) available on the MoEYS' website, students would benefit from further and more diversified web-based and audiovisual educational resources in their language.

The following table provides a list of open source and free software, tools and platforms classified by their main purpose. Digital classrooms will grow in importance as the role of ICT in education expands. Enabled by intuitive software, digital classrooms centralize information and features for team collaboration, assessment and evaluation, communication and content sharing. In addition, such platforms seek to create communities by offering teachers a wide range of possibilities to engage students, personalize learning and communicate with parents. A free version is available for all listed tools although certain functionalities and upgrades might come at a cost.

Figure 23. Open Source and free software and platforms for education.

Digital Classrooms	Retrieve and Share Material	Communication
Class Management and Planning	**Knowledge Sharing Platforms**	**Video-conferencing**
Veyon Edmodo Eliademy TeacherEase Insight LanSchool Lite NetSupport School ClassPager	YouTube Spotify Vimeo TED-Ed (YouTube channel is free) Ministry of Education, Youth and Sports (MoEYS)	Zoom Skype Google-Hangouts Jitsi Meet
Students' Engagement and Collaboration	**File and Content Sharing**	**Instant Messaging**
Kahoot AnswerGarden ConceptBoard Crowdsignal Edmodo Edulastic Kaizena Micropoll Naiku	Google Docs Google Drive Slack Dropbox WeTransfer	Whatsapp Facebook-Messenger Telegram WeChat Line Viber
	Social Media Networks	
	Twitter Facebook LinkedIn	

8. CONCLUSION

At the time educational institutions closed on 16 March 2020, the Cambodian education sector was not prepared to handle the sudden challenges that emerged or to embrace remote education. The response of the MoEYS and development partners, along with the efforts of students, teachers and families, partially mitigated the halt in education for some. Nevertheless, the experiences of the 295 students and 141 teachers captured in this report show that, despite the substantial expansion of ICT tools and digital solutions, both students and teachers faced increased difficulties in continuing to study and learn.

Students' internet connectivity, previous familiarity with ICT, digital skills and age were determinant factors in the accommodation of remote education. However, the vast majority of respondents experienced a number of challenges, both intrinsic to their education activity as well as derived from external factors. Even though the wide use of tools during this period sought to overcome the lack of interaction and the inability of teachers to run face-to-face lessons, the communication between students and teachers, as well as among classmates, significantly deteriorated.

The education sector is not exempt from the growing reliance on technology and the digitization of societies across the world. The future of education will inevitably build on digital and online solutions. Survey participants reported a strong keenness to integrate more ICT tools in their activity. If adequately rolled out and supported, an ICT-enabled digital education can enhance the flexibility and dynamism of the sector, promote creative learning and help adjust teaching methodologies to the different needs of students for a more personalized experience.

The integration of new solutions must be gradual and realistic, with properly defined objectives in the short, medium and long terms. In the first place, the education sector must be equipped with the resources, tools and skills to adjust to digital learning and teaching activities. Ensuring adequate equipment and internet connectivity is essential. Digitally literate teachers are essential in adapting teaching methodologies as well as guiding and supporting students. Teachers will certainly remain fundamental figures in motivating and engaging students, and fostering their critical thinking and creativity in digital education environments.

The closure of educational institutions during the COVID-19 pandemic yielded a real-life experiment that can be extremely helpful in assessing the state of education and can inform a future road map. The path towards a more digital education must be responsive and inclusive to ensure that no one is left behind and that all students, regardless of their special needs and social and economic status, can benefit. In time we will more clearly see the ways and the extent to which the closure of schools impacted the education sector in Cambodia. In the upcoming years, the role of

ICT in the digitization process of education will necessitate profound debates and strengthened cross-sectorial collaborations between policymakers, educators, tech experts and development partners.

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