Background

According to an assessment conducted by Education Quality Assurance Department (EQAD) Department of the MOEYS in December 2015, Cambodian children are struggling to write and dictate their native language, Khmer. 50% of Cambodian children demonstrate an inability to write sentences. The same report also states that students specifically in third grade have a limited vocabulary, and their dictation scores on average score a dismal 41% correct. Moreover, with further assessment, EQAD indicates that teachers at schools have limited resources to increase students' vocabulary proficiency. The insufficiency of resources and absence of language exercises at schools has hurt any possible resolution to a country-wide literacy problem.

Children's literacy was the focus area among the participants of the 5th InSTEDD iCamp about "ICT for Education." After a brainstorm by the 14 participants, one of the   standout ideas at the camp was to "encourage young people to learn Khmer language using technology". After additional consideration, this idea had the highest

chance of feasibility and was later dispatched to the incubation stage, after considering its path from prototype to solution. The resulting five-month incubation period brought together the iLab SEA team and the Educational Technology Coordinator of the KAPE, funded by SPIDER. KAPE is a well-established local NGO which works primarily in the formal educational sector of Cambodia's education system. The agency started in 1999 and has grown into the largest local NGO in the education sector with 14 educational projects. (Website:www.kapekh.org) In 2014, KAPE introduced technology into their programs for students, to help support in-classroom lessons using a modern method.

Khmer Writing app or 'SorSei Khmer app' was developed in the InSTEDD 's incubation program, supported by SPIDER. It is a mobile application for Android OS. It combines written comprehension with visual and audio cues, allowing students in grade 1 to grade 3 to improve their Khmer Writing vocabulary.

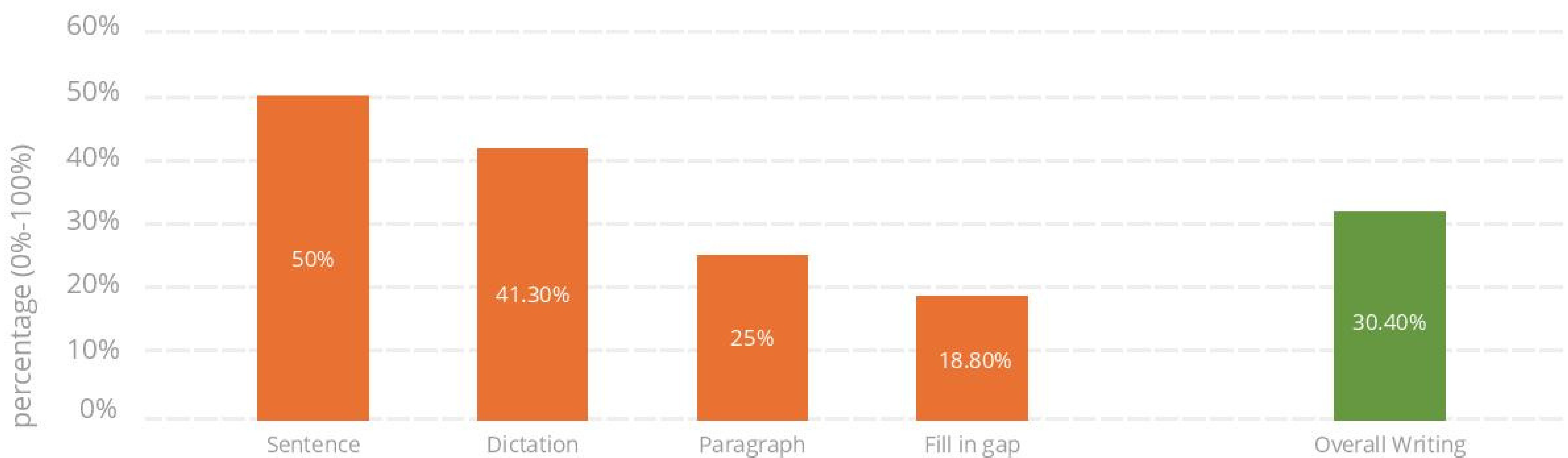1. Results of Grade Three Student Achievement from the National Assessment in 2015 (May, 2016)
2. Cambodia Early Reading and Writing :
http://unesdoc.unesco.org/images/0023/002339/233989E.pdf

3. Policy for curriculum by MOEYS 2005-2009
4. The Asia Foundation 2016. Mobile phones and internet use in Cambodia 2016, retrieved from http://www.open.org.kh/research/phones_2016.pdf
5. Education Reform in Cambodia: Progress and Challenges in Basic Education

Program Design and Implementation

Figure 1.0. Summary of G3 2015 Khmer Writing Sub-Content Area ■ Student Achievement

Figure 1.0. Summary of G3 2015 Khmer Writing Sub-Content Area

In 2015 study by the Ministry of Education, Youth and Sport reports that children in Grade 3 continue to struggle with writing proficiency in their native language.

The results in Figure 1.0 illustrates percentages of different areas in Khmer writing among students from grade 1 to grade 3. While only 50% of student could form a correct sentence, less than 19% could fill in the gap in a writing exercise. Only a quarter of total students could form a paragraph and more than 58% failed in dictation. Overall in average barely 30.40% of the total students could answer correctly a complete writing exercise.

The Khmer Writing app adopts integrated approaches of using visual, auditory and kinaesthetic learning styles in its content. The app is not limited to only follow state textbooks but also teaches students how to structure words and paragraphs with standardized and correct pronunciation. It will be used as a tool to bridge the gap between classroom learning and practical learning. The desirable result is that students between grade 1 and 3 will improved their literacy using this technological aid.

To ensure the usability of the app, the team conducted its validation phase at Veal Vong Primary School, Kampong Cham province. The main purpose of testing the app is to observe, experience and validate the app using real students. The result from the validation was largely positive. Students were excited and enjoyed interacting with this new platform. The team addressed one critique that some students had trouble reading written instructions in the app, which resulted in simplifying lesson introductions, and making them more interactive to begin with. Audio, as well as a variety of visual elements were also added to the beginnings of lessons, to keep the students properly engaged.

Technology Details:

Lessons in the app were created by including material from related textbooks. Materials like videos, pictures, and written pieces were uploaded to the cloud which are then converted into an APK file that is then downloaded. A student can create his/her own personalized account. The app provides the option to select a course level between grade 1 and grade 3. Each grade has a many lessons: Grade 1 has 105 lessons, while 2nd grade has 81 lessons, and 3rd grade has 64 lessons. Most of the lessons cover the fundamentals of Khmer typography, the Khmer alphabet and building khmer vocabulary.

Partnership

Khmer Writing app would not be possible without the work of InSTEDD iLab SEA and KAPE under exclusive support from SPIDER. The Swedish Program for ICT in Developing Regions (SPIDER) is an NGO based in Stockholm University. SPIDER supports to projects, research and capacity building in developing regions. Its mission is to decrease the global differences using ICT in order to achieve the Sustainable Development Goals (SDGs). SPIDER, A donor of InSTEDD SEA iLab, financially supports the existence of iCamp at InSTEDD iLab Southeast Asia as well as the entire process of incubation and implementation. InSTEDD iLab SEA provides free technical support starting from gathering information to building the app and implementing it, while KAPE, who has been working closely with the InSTEDD team in the development of the Khmer Writing App, fully dedicates itself to the material collection for building effective content, and the outreach of the app.

SPIDER

Khmer Writing App is still in the early phases of piloting. We envision that in time, the app will roll out country-wide.

Today, 37 of KAPE's Target Schools are using the app. The app could be used in potentially thousands of primary schools that have the ability to use the application on mobile tablets. Parents can install the Khmer Writing App on their tablet or phone at the school, without an internet connection. The app is also available on Google Play Store for free download.

The Challenge

Cambodia is a developing country. Most of the public schools, both urban and rural, do not have enough study material for students. According to the research Education Reform in Cambodia, Progress and Challenges in Basic Education, mention that the lack of teaching materials in all schools limits the quality of education. In some school, three to five students often share one copy of the textbook. Our goal of applying technology to support teachers and help students improve their writing skill is currently still limited.

Our partner, KAPE, is only able to apply the app at their target areas, in schools at Kampong Cham, Prey Veng, Svay Reang, Tbong Khmum, Kampong Chhnang, and Pursat Province. The majority of the rest of the thousands of public schools do not have tablets for their students to learn.

A technical challenge faced by the team is the inadequacy of smartphones and the low accessibility to internet, creating an obstacle for the team to introduce this app, especially when the targeted users of this app is kids from grade 1 to grade 3 in the rural area of Cambodia. In a recent report by the Asia foundation (4), it states that by 2016, 48% of the whole population of Cambodia will own at least a smartphone. And among that percentage, five out of every six access the Internet using their phones, which means 40% of the whole population of Cambodia uses smart phone with access to Internet. We would wish that this number would be higher. However, after one month following the launch of the app, we have 638 downloads, and we continue to grow this number.

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Student learn writing khmer via Sorse Khmer App

The Solution

Besides introducing students to the app at a school library, the team also introduced the app to parents in their target areas--Svay Reang, Prey Veng, Pursat, Kampong Chhnang, Kampong Cham, and Tbong Khmum province. Although there are a limited amount of tablets available at the schools, the team assists the school with proper organization and scheduling, so that any student can experience this new method of learning.

A general awareness campaign has also been done via the social channels of KAPE and InSTEDD iLab Southeast Asia.

Results

The khmer writing app has been installed in 37 schools on a total of 820 tablets in six provinces--Svay Rieng, Prey Veng, Pursat, Kampong Cham, Kampong Chhnang and Tbong Khmum Provinces. An additional 638 writing app downloads in between August 2017 to January 2018 from the Google Play Store.

The project is open for funding to expand its coverage. We wish for the app to be available on the Apple iOS App Store and wish to see the app accessible to all primary schools in Cambodia.

Next Steps

We are looking for a donor to support in producing an iOS version to respond to the requests from parents so that parents can install the app on their iPhones and iPads. We also wish continually upgrade and add to the lessons.

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Khmer Writing Mobile Application

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