

Cboard Timor Leste pilot 2023

What is Cboard?

Cboard is an open source Augmentative and Alternative Communication (AAC) application created to support children and adults with speech and language impairments (see Image 1 below). The application works in over 44 languages and is free-of-charge in all countries in the global south, while charging a small subscription fee for full access in for users located in the United States, Canada, Australia, and certain countries in Europe.

Cboard works on modern web browsers, can be accessed on multiple devices (tablets, computers and smartphones), and can be used offline on these devices and by downloading boards and printing them. The application can be fully customized to the user's needs, editing pictograms, adjusting voice settings, uploading images, recording personalized voices, changing the format of the tiles on the screen, and creating new folders, among many other features.

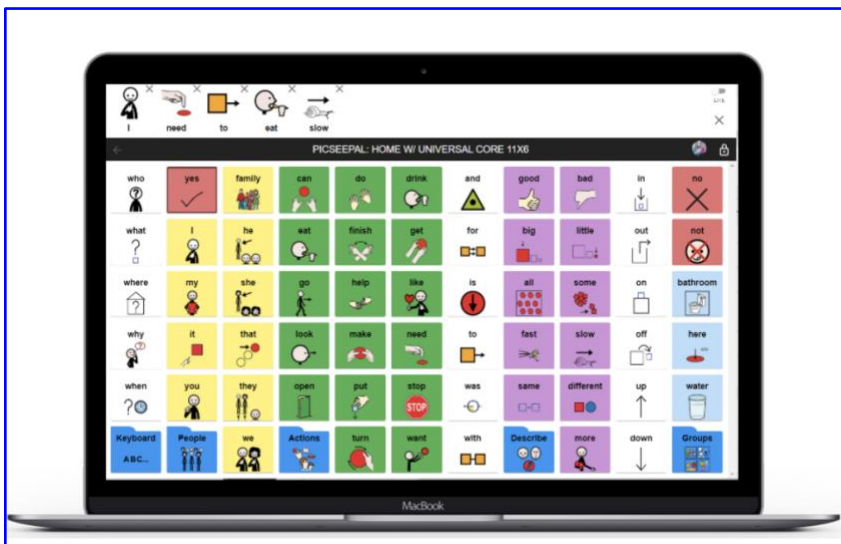


Image 1. Cboard board example

Cboard pilot in Timor Leste

Timor Leste was selected for the most recent Cboard pilot. Cboard has found the app to be most successful in regions with no AAC in the local language(s) and limited available assistive technology, which is the case in Timor Leste. Cboard was initially funded by the UNICEF Office of Innovation in 2017 and received the Microsoft AI for Accessibility grant in 2022. This pilot was conducted with the support from Microsoft and the UNICEF Education team in Timor Leste.

The pilot spanned across 4 months, from September through December 2023. In August, the Cboard team organized a workshop for the UNICEF team in Timor Leste to prepare the local team to teach school personnel how to use the app. The app, AAC guide, and activities manual were translated into the local language, Tetum, with support from local translators.

The impact of the pilot was assessed using the Psychosocial Impact of Assistive Devices Scale (PIADS) methodology. Participants were asked to complete the PIADS form twice—once in September prior to starting using Cboard, and again after 2-3 months of active engagement with

Cboard. A mid-pilot in person evaluation took place in October, involving in-person observations within the participating schools. The aim of this approach is to work towards a comprehensive understanding of the app's influence on the students' communication and psychosocial well-being.

Pilot participants and Cboard use observation

Three schools took part in the pilot, one in Dili and two in Baucau. For the pilot, the application was used on tablets and in printed boards using PicSeePal devices to house the printed material (see image 2 below for an example). PicSeePal donated 60 devices to supply the two schools in Baucau that had no available tablets and no internet connection.



Image 2: St. Mary's School, Baucau Timor Leste, October 2023

The pilot participants across all three schools had no access to AAC in the local language (Tetum) prior to Cboard, so the pilot allowed an introduction to additional tools for the teachers to incorporate into their work with the students beyond the duration of the pilot.

School 1: Alma Sisters

Alma Sisters is located in central Dili. ALMA is an acronym for Association of the Institute for Lay Missionaries, but the school is commonly known as ALMA Sisters.

During this visit, we observed a group class with 18 students. The students were between 5 and 10 years old. One teacher was teaching the class, leading students through different categories and folders on Cboard, having students repeat the words back and select them on the screen to have Cboard read them back as well. Other teachers assisted groups of students who were

sharing tablets and giving personalized assistance to students. The teachers clarified their classes were not usually held in the format observed, and students are usually placed in smaller groups with one teacher. We observed 3-4 classes together in one space.

All the tablets were logged on to the same account, which had not been personalized (the folders and pictograms had not been edited). The only thing on their account that had been personalized is the voice recording, which a member of the UNICEF team had re-recorded for them in Tetum because their students were having trouble understanding the voice options.



School 2: Katilosa

Katilosa (Klibur Alzeizadus Timor Loro Sa'e) translates to "Disabled Persons organization of East Timor." It is located in a rural area of Baucau and is an independent nongovernmental organization (NGO) that has received funding from the Marist Brothers Solidarity Group in Australia. However, it is not yet part of the Timorese school system and therefore does not receive funding, follow a specific curriculum or teaching form, or receive other local government support.

During this visit, we observed a group class with 15 students. The students were between 6 and 16 years old, all had disabilities, and most had speech impairments. The teacher led the class using Cboard boards that had been printed and placed in the PicSeePals by the UNICEF team, because the center does not have access to computers or printers. The teacher did conversation exercises with the class, asking the class to repeat after him “Bom dia, diak Ka Lae?” (Good morning, how are you?) and have the students answer “Diak” (Good). The teacher did this individually with each student, having them repeat after him, and using the pictograms on the board to show the symbol that corresponded to “Good morning”. The teacher then did similar exercises with different boards, such as boards displaying animals and food. It became clear when lunch time was approaching because the students turned to the food Cboard board. The teacher explained he usually approaches his classes this way, working with the group but then focusing on each individual student to work on pronunciation, and associating the word to the image.



The teacher explained that Cboard compliments teaching methods already used, making it easier to associate words to the pictograms (something he already did using images). He was happy with how PicSeePal and Cboard support his students but explained that he is unable to edit the boards because of lack of access to the internet, computers and printers. They have a space at the school with 7-10 computers, all of which have been broken for the past 5 years. They used to use them to teach students to type and other activities.

School 3: St. Mary's

At St. Mary's, we observed two different classrooms, one with 2 students and the other with 4. We observed the classes as they are always taught, in small groups.

The students in this school used printed Cboard boards in PicSeePal devices, but in one of the classrooms, the teacher used her personal cell phone to work with students on the app. The teacher had edited her account, re-recorded the audio to her own voice to make it easier for her students, and had added personalized images to the boards.



Measuring success - PIADS results

The aim of the Cboard app is to improve the lives of children with speech and language impairments by facilitating learning and communication. To measure the impact of this pilot, the PIADS (Psychosocial Impact of Assistive Devices) scale was used to measure progress in the categories of adaptability, competence and self-esteem. The initial results from the PIADS test suggest promising progress across the three observable domains, though further testing, training and observation would be beneficial to determine long term impact in all centers involved in this pilot.

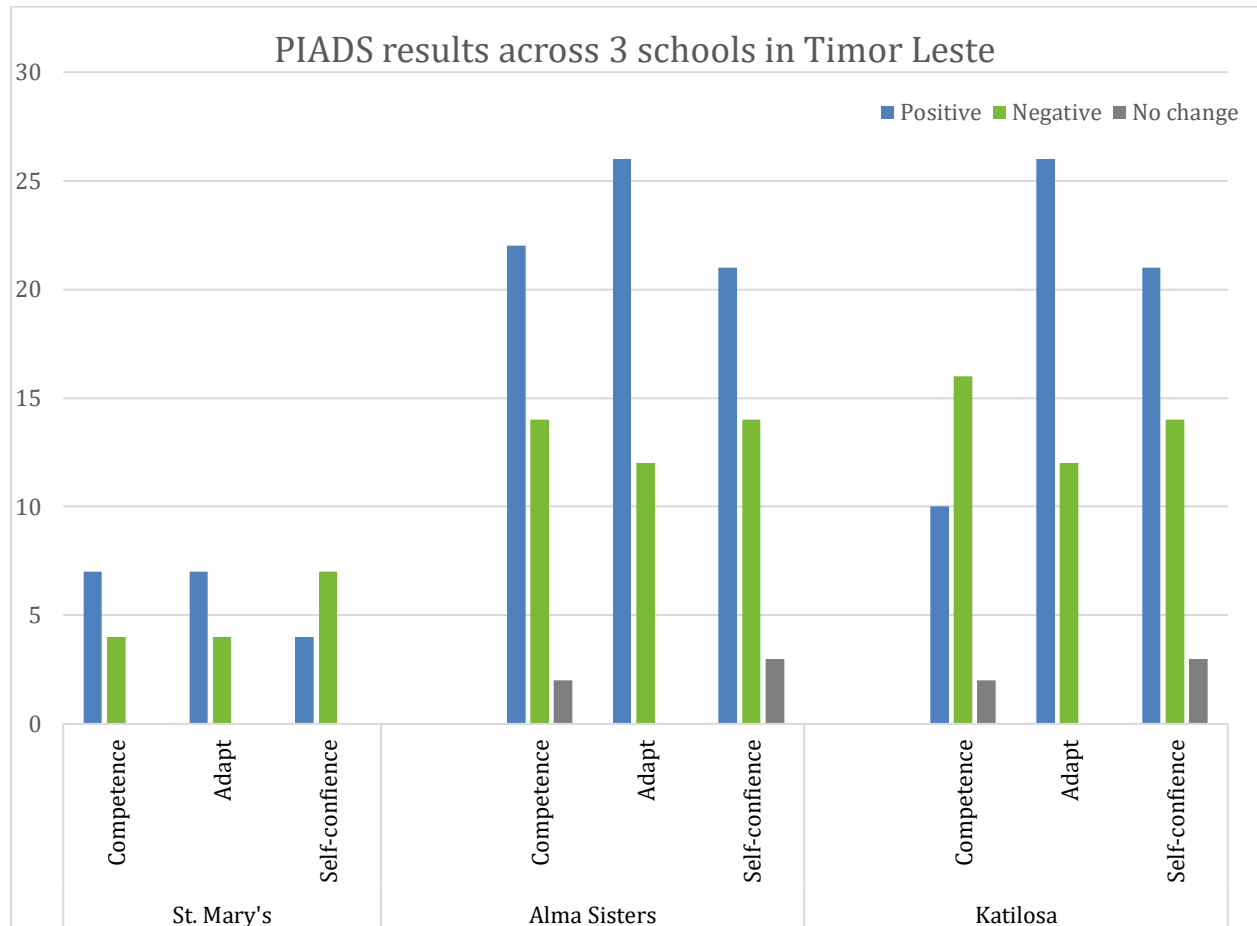
In total, 76 students completed the 1st and 2nd form. The PIADS scale allows for comparison between the overall scores in competence, adaptability and self-esteem in order to understand general progress, comparing between the results form 1 and 2. Participants input their opinion in the 3 categories based on their feelings regarding their use of Cboard within a range of 6 options, from “has diminished”, to “has not changed”, to “has increased”. Positive results are those that indicate improvements since the start of Cboard use, negative results indicate no improvement and decline in progress since the use of Cboard, and there is a third category for no change.

Results indicate that overall:

- More than half of the students progressed in the category of competence (39 out of 76)
- Nearly 60 percent of the students improved in adaptability (44 out of 76)

- Just under half of the students showed progress in the self-esteem category (35 out of 76)

As expected, there is some variability by schools. However, due to the small sample sizes, results are best considered across all schools participating in the pilot.



Alma Sisters

Competence: 22 positive, 14 negative, 2 no change
 Adaptability: 26 positive, 12 negative, 0 no change
 Self-confidence: 21 positive, 14 negative, 3 no change

Katilosa

Competence: 10 positive, 16 negative, 1 no change
 Adaptability: 11 positive, 15 negative, 1 no change
 Self-confidence: 10 positive, 15 negative, 2 no change

Saint Mary's

Competence: 7 positive, 4 negative, 0 no change

Adaptability: 7 positive, 4 negative, 0 no change

Self-confidence: 4 positive, 7 negative, 0 no change

Limitations

The pilot encountered two main limitations. The first was sample size , which was too small to produce results by school. This would have been useful as there were very clear disparities between the three centers visited. Both Alma Sisters and St. Mary's had more staff, infrastructure and support than Katilosa. The second was related to this disparity in resources, as many students could not test the app and, instead, used printed boards.

Pilot results analysis and conclusions

The pilot suggests that, on average, Cboard enhances adaptability, competence, and self-esteem of students with speech and other language impairments.

In addition, the pilot resulted in learning for the future testing and use of Cboard. It underscored the importance of:

- Providing teacher training. Training for teachers - teach them intended use for Cboard - how to edit the boards for the users, personalize to ensure best possible use of the tool. Provide training opportunities, and resources for teachers to learn about Augmentative and Alternative Communication (AAC), and how it can be applied in the classroom.
- Promoting data quality. Given connectivity issues at the schools, the forms were printed and completed by hand by the pilot participants, and the results were then added to the Google form by local UNICEF team members. This led to some minor errors, such as inconsistencies in birth dates for the same students from form 1 to 2, and name spelling inconsistencies. Though minor and fixable, these led to additional effort in data cleaning. In the future, it would be best to get the results directly from the participants to try to avoid this confusion.
- Enforcing teaching as usual. For future observation, it would be important to communicate that observation of classes is best when the class is conducted as usual, so not grouping multiple groups together but by having the Cboard and UNICEF team move through the classes and observe the way their classes are conducted on a regular basis.

Next Steps

To sustain use at pilot schools. The Cboard communicator is being used at the three centers with support from the teachers and UNICEF team. Both face to face and digital support from professionals (from the local UNICEF teams) is available. We have also used feedback from teachers and the schools to continue improving Cboard features to best suit the needs of each user.

To scale up use at other schools. Cboard and the UNICEF team in Timor Leste will remain in contact and discuss continued collaboration to expand the use of Cboard to more schools in Timor Leste.

To collect data to produce more robust evidence. Continued use at pilot schools will enable additional testing in the future for long-term follow up and measurement of results over time. In addition, the expansion to other schools may enable increasing the sample size for analyses of outcomes.

Conclusions

This pilot has demonstrated that, with the right tools and training, significant strides can be made in the lives of students with speech and language impairments. The progress observed in the realms of competence, adaptability, and self-esteem affirm Cboard's effectiveness in not only facilitating communication but improving overall quality of life.

The pilot has laid the foundation for a promising and more inclusive and supportive educational landscape in Timor Leste. The positive feedback and measurable improvements seen in the pilot participants underscore the potential for wider adoption and impact. We look forward to leveraging the insights and outcomes from this initiative expand access to assistive technology, ensuring that every voice can be heard, and every barrier to communication overcome.

Together, Cboard, Microsoft, UNICEF, and local partners are committed to fostering an environment where all students are equipped with the necessary tools to express themselves, engage with their communities, and reach their full potential.