Case Study:
Simbi Learn Cloud

This case study is part of a series that showcases successful usage of open-source software with a development objective in Uganda and around the world. It was prepared by the Response Innovation Lab in partnership with URIDU, as a part of the Open Source for Equality initiative (OSEQ) in Uganda.

What is Simbi Learn Cloud?

Simbi Learn Cloud is a digital library developed by Simbi Foundation that curates high-quality, educational resources for students to access offline.

Research carried out by Simbi Foundation found that students' access to education in remote areas is limited by multiple factors: no access to power or water, a lack of textbooks, materials and technology in the classroom, lack of connectivity in schools, teachers that lack instructional materials, and long distances to walk to school, among other factors. Simbi Learn Cloud brings thousands of books and educational materials to students and teachers in remote communities with limited or no internet access.

Simbi Foundation is a research-driven non-governmental organization (NGO) founded in 2015 by Aaron Freidland and Ran Sommer following a research trip to Uganda. Its mission is to improve access to education in remote, refugee and underserved communities.
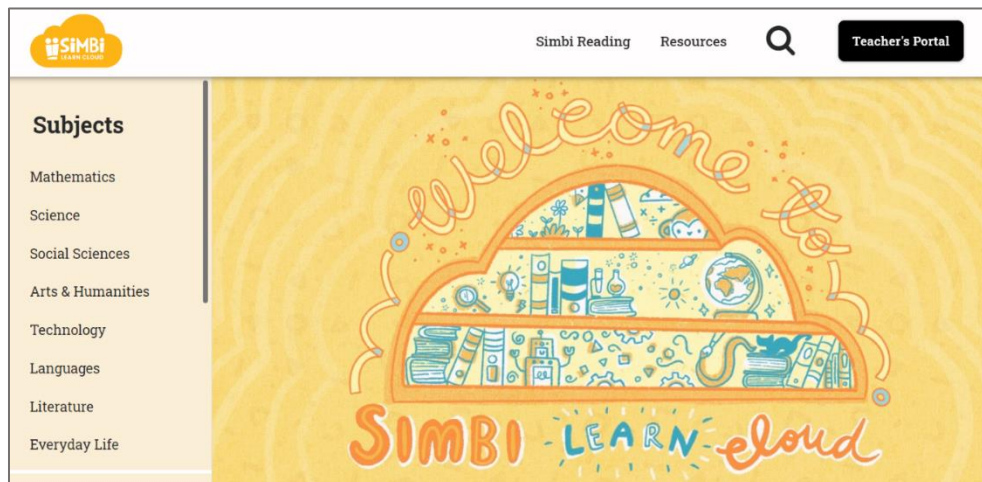
How does it work?

Simbi Learn Cloud is a platform that has a user-friendly interface to browse and search for resources from the digital library. It has curated and compiled a variety of Open Educational Resources from sources like Khan Academy, African Storybooks, GCF Learnfree, Wikipedia, and Infonet – Biovision. The **open content** is free to copy or modify without needing to ask for permission from the creator because it has a **Creative Commons** license. There are resources in a variety of subjects, like mathematics, sciences, languages, and history, and in various formats, including textbooks, storybooks, videos, and an interactive map.

Simbi Learn cloud has two portals:

1. **Main portal**: All users can access the resources in this portal. The resources are categorized so that users can search by subject area, by the source, or by using the search bar.
2. **Teacher's portal**: Teachers can sign into a separate portal to prepare lessons, use the content with students, or upload and save lessons to use in the classroom.

Creative Commons license allows the creator to retain copyright while granting the public permission to copy and distribute the work as long as attribution is given to the creator. There are six types of CC licenses that further define the commercial use, licensing, and ability to adapt the work.

To function in the school, Simbi Learn Cloud requires a mini-PC and a WiFi router. The content is loaded onto the mini-PC and is connected to a local WiFi router. This is connected to a long-range WiFi router, allowing anyone within a 2.7km radius of the router to access the resources from the mini-PC. It can function on any device with WiFi functionality and a browser, such as tablets and phones.

How was it developed?

As a research-based organization, Simbi Foundation has a Think Tank where researchers engage and work through elements of Simbi Foundation's EduTech and Infrastructure projects in the field. One Think Tank team formed was devoted to UI/UX (user interface and user experience) to find a way to bring digital resources to remote and refugee communities with little to no access to power.

The initial solution made use of the existing open-source software called RACHEL (Remote Area Community Hotspot for Education and Learning). This platform collects and curates Open Educational Resources that are freely available online from various sources. The resources were compiled onto a 64GB SD card and used with a portable plug-and-play webserver and hotspot

called Raspberry Pi to make content available over a local offline wireless connection (referred to as RACHEL-Pi). While it served to deliver open content to the communities, it had limitations in terms of the hardware it required, the low processing power, limited capacity for resources, and a user interface that was not friendly for those with limited digital skills.

Inspired by RACHEL, Simbi Foundation sought to develop an improved platform that would overcome these limitations. The UI/UX Think Tank members carried out surveys with teachers and students. They collected feedback on how the platform was being used and recommendations to make it more user-friendly. Based on their input, the team developed a new platform launched in 2018, Simbi Learn Cloud, which contains 250GB of resources that are housed on a local network on a mini-PC and accessed via WiFi.

Simbi Learn Cloud is designed to be as inclusive as possible, using fonts and colours, for example, that are accessible for students with possible undiagnosed learning disabilities. The interface was designed based on the feedback from teachers so that it is easily navigable based on their intuition. The content that is available on the cloud has been reviewed and vetted by the country's Ministry of Education to align with the national curriculum. The selection of content is designed to supplement the national curriculum and support the attainment of learning outcomes in the classroom.

In Uganda and India, Simbi Learn Cloud is generally used in combination with a "BrightBox," a repurposed shipping container converted into a classroom and microgrid with a solar system that powers the mini-PC, laptops, routers and other necessary technology to provide access to Simbi Learn Cloud. The BrightBox is set up on the grounds of a school campus so that classes can use the BrightBox and its equipment on a rotating basis. There is also the option of a "BrightBox Micro," a large briefcase containing 32 tablets, a mini-PC, WIFi router, headphones and charging hub. Teachers and students access Simbi Learn Cloud using the laptops or tablets provided included with a BrightBox or with personal devices.

Above: RACHEL-Pi with SD card

Above: A BrightBox Micro with a mini-PC on the left above the set of tablets.

Why use open content?

Simbi Learn Cloud provides access to existing quality educational resources. The main advantages and disadvantages of this approach are:

1. **Advantage**: The resources have already been curated and made available by reputable learning platforms. They have permission to be shared as long as there is attribution to

the original creator. It is easier to get Government approval because the materials have already been vetted by multiple institutions.

2. **Disadvantage**: When it comes to working with resources with a lot of code attached, it can be a slow process. If there is a bug or issue that is connected with the codes, such as in the categorization of resources, it takes time to locate and fix the problem.

What are the lessons learned?

Simbi Learn Cloud and other solutions by Simbi Foundation are developed through a collaboration with students and researchers from universities in Canada, USA, Uganda, and India. The lessons learned in the development of Simbi Learn Cloud are:

1. **The community survey was key to a successful design**: Getting feedback from the community about the use of the platform resulted in a design that the users were comfortable with and could easily navigate.

2. **Basic training for teachers was essential**: Many teachers had not used computers or tablets previously. Teachers were provided with basic training on how to use the equipment as well as how to navigate the platform and portal.

3. **The use of researchers facilitated monitoring and evaluation**: The involvement of students and researchers from universities meant that all solutions were based on research, and that data was being collected and analysed to demonstrate results.

What are the results?

Simbi Learn Cloud offers not only access to resources, but it also contributes to digital literacy and an interest in learning. In Uganda, 14 BrightBoxes have been installed and more than 40,000 students are accessing content. The researchers from Simbi Foundation's Think Tank carried out randomized control trials to assess the results of their initiatives. The data showed an increase in various metrics, including enrollment, academic performance, attendance, motivation to read, and word count per minute. For students and teachers that had not seen a computer before, they have been exposed to a new world.

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