Case Study: **Ustad Mobile**

What is Ustad Mobile?

Ustad Mobile is an inclusive open-source digital learning platform. It enables education providers to deliver quality education to learners offline and online using their own devices.

Ustad Mobile is a social enterprise registered in the United Arab Emirates (UAE). It was co-founded in 2014 by Mike Dawson and Varuna Singh with the mission of making education technology accessible to everyone, everywhere.

Technology has the potential to increase access to education. However, a lack of connectivity, limited financial resources, and the high cost of smart devices are barriers for many disadvantaged, remote or displaced groups. Ustad Mobile aims to reduce inequalities by providing a platform that can be accessed by all educators and learners, including those with limited internet and device access, and/or disabilities.

How does it work?

Ustad Mobile is a customizable platform that allows educators to easily add, remove, and edit educational content and track student progress. It is the engine that delivers content to learners. It is optimized to work offline, so that teachers can use the app, add content and share between phones without requiring internet. It works on a range of devices, including older phones and smart feature phones to allow students to use their own devices and minimize costs.

1. **Classroom**: A teacher creates a classroom and invites students to register by sending a link or code.
2. **Sharing:** Teachers can download modules and content and send it offline to the devices of other teachers and students using a local WiFi connection directly between devices.
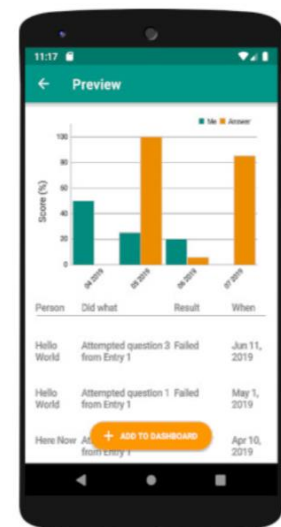
3. **Content**: The teacher uploads the content offline that they want students to review, including documents, video, and audio files.
4. **Classwork:** Teachers create assignments that can be submitted individually or as a group. Teachers can grade assignments themselves or enable peer grading.
5. **Reports:** The platform automatically records student attendance, avoiding manual data entry. Teachers can track the progress of each student and efficiently create analytical reports.

How was it developed?

Ustad Mobile is distinct because it **produces** its own open-source software, rather than using existing open-source software. The Ustad Mobile app is a unique open-source software, which can interface with other existing open-source libraries.

The most important feature is its ability to work offline using a multi-platform code base. With more than 16,000 lines of code, a system was developed to allow the app to run independently on all devices without relying on constant connectivity with a cloud server. There are matching databases on the app and the server, allowing the users to display, change, and save information offline. Once a user has logged in and synced for the first time, the app functions fully offline. The sync engine will work in the background until there is a connection and it will fetch the information required for the logged in user. The system has a scheme to distinguish the type of data each device has access to.

Copyleft software licence grants users the rights to use, modify and distribute the copyrighted program code, as long as the derivative work uses the same open-source licence to remain freely available.

The software is licensed under the **Affero General Public License (AGPL).** AGPL is a type of copyleft software license that ensures all changes to the source code stays available to the public and prevents others from repackaging and selling the open-source software. Thus, anyone who wants to make new versions of the software will have to share it openly.

The platform can be customized and is compatible with other open-source systems, such as Moodle, EPUB, PDF, and Experience API.

Why make it open source?

The decision to produce open-source software was both to achieve the goal of accessible education. The advantages identified are:

"If our wider mission is to make education more accessible, then it should be open for anyone who wants to modify or improve on it."
– Mike Dawson, Co-Founder

1. There is a wider field of potential clients because many only want open-source solutions.
2. For clients, there is no vendor lock-in whereby the consumer is dependent on the product and subject to unexpected increases in fees.
3. Integration and alignment with other open-source products is easier. Ustad Mobile can be integrated with other educational technology apps to have a single sign-on for users and to consolidate data in one place.
4. Collaboration with other open-source projects is easier. The app uses other open-source libraries and if a problem arises, the source code can be shared with each other to easily identify and resolve the issue.
5. It allows the Ustad Mobile to offer low-cost, affordable options clients, while still generating revenue, creating sustainable solution in lower-income countries.

Ustad Mobile is a social enterprise with a business model that is based on both grants and the revenue generated from services offered. While Ustad Mobile offers a free option for public courses, there is also an option for private courses at a marginal cost for each student ($0.05/user/month). For this fee, the Ustad team takes on the responsibility for security, maintaining the servers, backing up data, and restoring it if something happens. Additional services offered are the development of a branded app or providing on-premise support for a higher fee ($350/month).

One drawback to the open-source model is that it can limit funding opportunities. Private investors may see the lack of ownership over intellectual property as a risk and opt not to invest.

> **"Big organizations want to pay someone who will be responsible when something goes down...If they have the option to work with the creators at a reasonable price, they will take it. "**
>
> – Mike Dawson

What lessons were learned?

Ustad Mobile has been growing since its start-up phase in 2014 and shared four lessons from this process.

1. **Producing open-source software takes time:** It will take time to create the product and grow the user base. Successful products with millions of users are generally 10 or more years old.
2. **Avoid "forking" open-source products:** A fork is created when a separate but related open-source solution is created for a client that is not compatible with the original. If a client wants a new feature, find a solution that would satisfy multiple users and build onto the original platform.
3. **Promote open-source products:** Open-source has many advantages to potential clients, but there needs to be some preferential treatment for it to survive. Donors could include it as a requirement in procurement processes.

4. **Have a free low-barrier way for users to test the software**: Currently, potential users must request Beta access to try the Ustad Mobile app. A trial option is being developed to set up a classroom for a limited number of users to gain interest from potential clients.

How is Ustad Mobile contributing to inclusion?

The development of the Ustad Mobile app was around the philosophy of accessible, inclusive education technology. Several features were incorporated to overcome several barriers to access:

1. **Low income**: The app is small (9mb) so that it doesn't take up much space and can be used on older, lower-tech phones.
2. **Access to internet**: The app is designed so that it can be used, and content can be shared, offline.
3. **Visual impairment**: The app has built-in support for "Talk Back", a standard screen reader, and all the images have alternative text that it will read aloud. The colours are accessible to those who are colour blind.
4. **Hearing impairment**: The videos include subtitles.
5. **Motor impairments**: The buttons are larger to make it easier for people with a motor impairment to use.
6. **Language**: The user interface language can be easily changed/added. A translator can log-in and translate all the fields so that the buttons and headings are in the local language.
7. **Gender**: The only required field to sign up is *Gender* to enable reporting with gender-disaggregated data. The ability to use it on a simple device without internet also aim to improve accessibility for women.

Soft skills in Afghanistan

The University of Afghanistan used the Ustad Mobile app to create a course on soft skills that would be offered as optional but allow the students to be eligible for internships. Female students, however, had less flexibility to stay longer for optional courses and generally had limited access to devices and internet.

The 9-module course was developed and made available in three languages (Dari, Pashto, English). The marginal cost per student made it affordable for the university. The ability to use their own devices on their own time offline resulted in a high enrollment of women.

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