Mobile Learning Lab
Frequently Asked Questions (FAQ)

NOVEMBER 2018

60 million girls **Foundation**

Table of Contents

Introduction

The Mobile Learning Lab Showcase, that took place in Montreal on May 14, 2018, was an exciting meeting for different players in the field of education and technology for use in developing countries.

We have received feedback from the participants as to how they are incorporating the MLL in their projects.

During the Showcase, we held workshops so that participants could discuss – in small groups – various opportunities to incorporate the MLL in their projects and to identify the necessary resources, support and training to make it possible.

Based on a synthesis of the input gained during the workshops, we have organized the information in a frequently asked questions (FAQ) format, along with answers to enable education practitioners and project managers to set up their own MLL. The FAQs are presented by topic. We have also provided links to our partners who can provide you with additional support.

Security

> 1. *Will our devices get lost or stolen?*
>
> For ***60 million girls***' MLL program set-up with our partner in rural Sierra Leone, 150 tablets (7-inch size) were purchased and distributed in 5 different communities. After one year of the MLL program, all tablets were accounted for. (See community engagement in item 2.)

> 2. *How do we ensure proper security?*
>
> - Storage: Store the tablets and RACHELs in a suitcase specifically designed for this purpose. When not in use, keep the MLL in a secure place such as a lock box in a community centre.
>
> - Coordinator: Assign a coordinator to charge, distribute and take back the tablets and RACHELs after each training session.
>
> - Community engagement: Undertake extensive community engagement work at the outset of the program to ensure buy-in to the MLL concept and understanding of its educational value for their children.

Equipment/Technical Support

> 3. *What equipment do we need to set up a mobile learning lab?*
>
> - RACHEL server for access to digital content
> - Solar charging system if electrical power connection is not available
> - Devices to connect to RACHEL (laptops, desktops, tablets or smartphones)
> - Mobile phone for coordinators to troubleshoot if problems arise
> - See below for a list of items and cost breakdown

> 4. *What is a RACHEL? How reliable is it?*
>
> - RACHEL is a portable plug-and-play server, which stores educational websites and makes that content available over a local offline wireless connection.
> - ***60 million girls*** has been using RACHEL units for over three years without any problems.
> - Go to the World Possible website for complete information on content, purchase and support: www.worldpossible.org

> 5. *How many RACHEL units do we need?*

> - Approximately 30 devices can connect to a RACHEL and users can still view content well. If all users are streaming videos, the streaming speed decreases.
> - The number of RACHELs and devices will ultimately depend on group size. In Sierra Leone, we had a group size of 30 students with one coordinator, using one RACHEL and 30 tablets.

6. *How can we get support when using the RACHEL?*
- World Possible has country chapters that can support you, depending on your location: https://worldpossible.org/chapters/ - You can visit the World Possible community board to reach out to other users with questions about content or using the RACHEL: http://community.rachelfriends.org/ - There is also a 30-minute video on the World Possible website that explains in detail how to use the RACHEL and its many features. It can be accessed from the World Possible website along with resources for using the RACHEL: https://worldpossible.org/rachel/
7. *What type of data can we get regarding the content accessed by learners on the RACHEL?* - The RACHEL comes with an Apache log.

8. *What is a solar charging system? How reliable is it?*
 	
- The BBOXX systems consist of solar panels, placed on a sunny rooftop. A charging system, including a battery that is used to store the electricity, is generated by the solar panels. The tablets and the RACHEL are then connected to the charging system using a set of USB ports that can charge up to 9 devices at a time.
- We estimate that the batteries will need to be replaced every two years (approx. US $50 per battery, not including shipping).
- The solar panels should last 10+ years.
- It takes about 1 hour to install the BBOXX system (http://www.bboxx.co.uk). You can choose any solar charging system that you have or prefer.
- When the BBOXX batteries are completely drained, it takes up to 5 hours to fully charge again during the dry season. During the rainy season, charging time depends on the number of hours of direct sunlight.
- Charging the tablets:
   o When the tablets are completely drained, they can take up to 3 hours to fully recharge when connected to the BBOXX.
   o The BBOXX batteries can charge 27 tablets at a time.
   o Any tablet added in the front USB slot will turn off within 30 seconds.
   o The BBOXX batteries will drain completely after 6 hours of charging devices.
   o 54 tablets that are completely drained can be recharged in one day.
 	
- When you disconnect the BBOXX from the solar panel for a week, it will completely drain/discharge, even without connecting any device.

9. *How many solar charging systems do we need?* - See the power requirements comparison for a notebook and a tablet in the Kolibri document titled, *Learning Equality Hardware Guide*, October 2017: https://drive.google.com/file/d/0B9ZzDms8cSNgVWRKdUlPc2lkTkk/view

10. What is the best type of user device to deploy in the field? What maintenance is required?

- Based on our experience:
  - A high-quality tablet is best to ensure durability. A tablet is more robust (less fragile) than a computer and less expensive.
  - The tablets screens (7-inch) are large enough for the students to use. We feel it is the optimal size for viewing vs the power it consumes.
  - Having a scratch resistant protective coating on the tablet screens is very helpful.
  - Tablets can be wiped down with a cloth if there are too many fingerprints.
  - Note: It is helpful to show learners how to close pages. If too many are open at the same time, the tablet operation will slow down and the tablet can get hot.
  - It is best to disable unused apps to keep tablets at optimal performance.
- See the comparative analysis between a notebook and a tablet in the Kolibri document titled, *Learning Equality Hardware Guide*, October 2017: https://drive.google.com/file/d/0B9ZzDms8cSNgVWRKdUlPc2lkTkk/view
- See examples of the devices being used around the world at the Learning Equality blog: https://blog.learningequality.org/2018-khgp-announcement-b2ce5fd90736

11. How do the coordinators in the field get support?

- A technical support person needs to be identified.
- Coordinators are each given a smartphone to be able to reach the technical support person if they have questions and to share progress on the MLL sessions. This can be done via text messaging.
- If there is Internet connectivity, the coordinator can use the RACHEL community forum.

12. How will the heat and humidity affect the devices?

- The RACHEL is built for extreme climates.
- ***60 million girls*** used the MLL in Sierra Leone, where there is high heat and humidity, without any issues.
- The MLL has also been used in Tanzania, the DRC, Guatemala and Nicaragua without issues related to the heat or humidity.

Cost Breakdown

13. How much does it cost to purchase and set up the hardware?			
Costs Scenario Based on Our Activities in Sierra Leone CAD (2018)			
Items	**# Required**	**Cost/item**	**Total**
RACHEL server - for access to digital content	1	$650	$650
Solar charging system - if electrical power connection not available	3	$285	$855
Devices to connect to RACHEL - tablets in our case	30	$110	$3,300
Headphones - for students to listen without disturbing others	30	$12	$360
Shipping for devices (Sierra Leone)			$1,500
Total cost for all materials ($CDN)			**$6,665**

Costs*: Repairs, Maintenance & Security	Annual
Allocation for replacement of batteries (every 2 years) and 2 tablets per year	$275
Coordinator 10 hours/week, 40 weeks	$600
Security guard	$300
Total annual operating costs	**$1,175**
*Note: These costs may vary from one project to another. This is an example of the costs for our Sierra Leone MLL project.	

Self-Directed Learning

14. What is self-directed learning?

- It is an instructional strategy where individuals take ownership of their learning and take the initiative and the responsibility for what occurs.
- Individuals select, manage, and assess their own **learning** activities, which can be pursued at any time, in any place, through any means, at any age. (Source: https://www.selfdirectedlearning.com/)
- Applied within the context of the MLL, students are encouraged to explore and learn in line with their areas of interest.
- This learning will have an impact not only on their cognitive skills but also on non-cognitive skills: intrinsic motivation, self-confidence, level of aspiration.

15. *What is the best learning environment for students in a self-directed setting?*

The ideal learning conditions when using the MLL:
- Child-friendly atmosphere where students are free to use the tablets as they want
- Encouragement and an environment open to peer learning/sharing
- Headphones provided so students can listen to videos thus lessening ambient noise

16. *Can we ensure that students don't waste their time when they are on the device?*

- The RACHEL contains only educational content.
- Whether students are using the academic content or simply testing out the camera or video options on a tablet or other software they might find on a laptop or smartphone, they are developing new skills and learning to use tools that are new to them.
- Based on the evaluation project conducted in Sierra Leone, our experience indicates that taking pictures or creating videos is interesting to the students during the initial sessions. Thereafter, students focused on the educational content.
- This approach puts learning in the hands of the children, as they know best what it is most helpful to them.
- See the education initiatives undertaken by Sugata Mitra: http://school-in-the-cloud.dev.indigo.ws/about/

17. *What role can the Mobile Learning Lab play in children's education?*

- The MLL is meant to enhance classroom learning by letting children choose the topics/apps/activities they feel would be most interesting to them.
- This opportunity for self-directed learning reinforces the point that learning can be fun and specific to a child's needs.
- This is especially crucial in areas where there are few teachers, where teachers are poorly trained, where textbooks and school teaching aids are scarce, and where corporal punishment is used for discipline in the classroom.
- Additionally, beyond the vast amount of quality content the children have access to, they learn how to use digital technology and become familiar with computer programs that can be helpful to them.

- They can have access to content that can be helpful to them but about which they are too shy to ask. Custom content can be added on subjects such as menstruation hygiene, health issues, gender-based violence and human rights.
- Access to the MLL can increase non-cognitive skills, social skills and peer learning.
- Since the children have access to content in many formats (video, games, interactive, text), students can find which model suits their learning capabilities best. This may be particularly helpful to students with learning disabilities.

Educational Content

18. What is the content currently on the RACHEL?

The RACHEL comes pre-loaded with room for up to 1 TB of curated content, which is used around the world for children's education purposes. Click here to see the complete list of open educational resources on the RACHEL: https://worldpossible.org/oer2go

19. *What are some examples of content on the RACHEL?*

- KA Lite (the offline version of Khan Academy): available in 10 languages
- Fantastic Phonics: English literacy software including games
- Feed the Monster: English literacy app available in over 50 languages
- Kolibri: curated and openly licensed educational content library
- MIT Scratch: coding
- Sample national level tests: allow primary and secondary students to practise for national exams (in certain countries including Sierra Leone and Tanzania)
- World Maps: provide access to interactive and current information in a clear, fun and engaging way
- Wikipedia Academic: allows students to search for information on any given topic
- Literacy software programs: enable children to decode through phonetics
- E-books: provide access to literature; available in several languages and from different countries
- Hesperian Health Guides: health guides for trained and untrained people to care for themselves and others
- TED Talks
- Much more

20. What is the quality of the content? Will my organization be able to control the content our target audience can access on the RACHEL?

- Like any library, the main objective is a variety of quality content.
- At any time, the content on the RACHEL can be modified depending on the needs of the community.
- Content can be hidden or deleted.

- New content can be added.
- Much like a library, you are in control of what content the children can access.
- Children have the ability to learn topics in various ways: video, text, games, interactive. These many models of learning enable children to learn in ways that best suit them (UDL).

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21. *How can my organization use the content on the RACHEL if it is not aligned to ministry curriculum for a given country?*

- While programs like KA Lite math and science are not necessarily curated in the same order as students are taught in different countries, all the content they need to learn is available and well identified.
- Students can work at their own pace on those areas where they are having the most trouble.
- Kolibri Studio makes it possible to collaborate online to align open educational resources to local curricular standards, exporting the results to offline distributable channels: https://learningequality.org/kolibri/
- Additionally, final exams from countries like Sierra Leone and Tanzania, along with the curriculum lists for primary and secondary school, are available on the RACHEL.
- Students can consult that information and structure their learning accordingly.
- The main advantage of self-directed learning is to enable students to customize learning to what they need rather than present content in a standard way for all students. Self-directed learning increases a student's intrinsic motivation and self-confidence in a way that many classroom settings cannot. It is meant as a complementary way to help children increase their learning outcomes.

Buy-in

22. *Which stakeholders need to be involved for a successful implementation?*

Communicating with and informing stakeholders will ensure support and smooth operation and eventual ownership of the program. Here is a sample of the stakeholders who were involved in the process in Sierra Leone:

- Local authorities, school principal, village leaders: to provide the infrastructure, security, access to the potential participants.
- Parents: to allow and encourage children to participate after school, despite other obligations at home.
- Teachers: to ensure they do not see the MLL as a threat to their roles in the classroom.
- Local partners (companies, NGOs) with the required expertise to implement and support the MLL. This helps to ensure that partners with technical knowledge and resources can assist in supporting the MLL.

Demonstrating Impact

23. How effective is the MLL regarding learning and intrinsic motivation vs a traditional classroom?

- The MLL was used as an after-school program in Sierra Leone to supplement school programs, not to replace them. Our aim was to encourage self-discovery and exploration by students.
- Our data showed tremendous interest and enthusiasm, and regular attendance at the MLLs indicated strong intrinsic motivation, as well as increased self-confidence through peer learning and the customized approach of self-directed learning.
- Our data showed a significant increase in both literacy and math scores.
- The results of the MLL demonstrate that digital learning, in a self-directed environment, can be an effective tool to support traditional classroom education – or can be used where traditional classrooms do not exist – as well as increasing non-cognitive skills in students that can lead to a deeper impact on learning outcomes in the medium and long term.

Sustainability

24. Once a project is implemented and we leave the community, how do we ensure long-term sustainability?

- To ensure a smooth transition and ongoing use of the MLL, it is essential to identify a champion of the project (e.g. Mothers' Clubs, community members).
- Establish a partnership with a technical institute (e.g. YALA in Nepal), organization or NGO to provide technical support to the project, as well as continued access to problem-solving forums like that offered by World Possible.
- Identify possible sources of revenue to cover the yearly operational costs of the MLL, as well as the salary of an MLL coordinator.