Case study - Computer Aid’s Solar Learning Lab: Sustainable, scalable and adaptable to local needs

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Project / Programme	Solar Learning Lab
Region / Country	Ghana, Kenya, Morocco, Nigeria, Sierra Leone, South Africa, Togo, Zambia, Zimbabwe, Colombia and Mexico
Website	https://www.computeraid.org
Circularity	Access to technology; solar energy; reused shipping containers; training for marginalised communities

Overview

The Solar Learning Lab (SLL) is a standard shipping container converted into a classroom, with 11 user stations operating off of a thin-client network (which is a low-consumption network with a server). It is powered by a connected solar power system. With the addition of outside space and laptops, one lab can offer access to up to 20 people at a time using a wireless internet connection. It offers a stand-alone, mobile technology-enabled space to underserved communities around the world who would otherwise not have access to information and communications technologies (ICTs) due to prohibitive local infrastructure and the economic challenges they face. We design each lab depending on the needs of the local community and their context. Partnering with Dell Technologies, we plan to install a minimum of 10 Solar Learning Labs each year until 2030.

About the project

While technology has continued to advance year after year, much of the world population still does not have direct access to some of the most basic forms of technology. The International Telecommunication Union estimated that at the end of 2019, 53.6% of the world population was using the internet. This is just one indicator, but it suggests that almost half of the world

population is offline.

This is a concern, because a lack of digital access among certain parts of the population, particularly those in the developing world, is contributing to widening inequalities. Those without access do not have the opportunity to develop key skills which are required in the modern world. Therefore, digital access inequalities are preventing parts of populations (poor, remote, elderly, disabled and a range of others) from having the same opportunities.

Launch of the first solar lab

The first solar lab, or Zubabox as it was initially called, was established in the village of Matcha in Zambia in 2011. In 2014, we partner with Dell Technologies to replicate and scale this solution in Nigeria. Due to the success of the programme and the transformation witnessed in local communities, the programme received full sponsorship and support from Dell, and was expanded to Colombia and South Africa in 2015. Currently in South Africa we have 14 labs and in 2018 and 2019 we deployed labs in Kenya, Sierra Leone, Morocco and Mexico. Our goal is to reach 100 labs by 2030.

For our most recent SLL deployed in November 2020, we partnered with Zenzeleni Community Networks in the Eastern Cape in South Africa. One of the unique components of this deployment is that we aim to learn from the Zenzeleni experience in setting up and managing a community network. We aim to replicate their success in giving access to connectivity and communication tools to a rural community, thanks to small grant funding from APC. We will be able to carry out a documented learning process evaluating how the combination of a community network and a Solar Learning Lab can support each other to increase their positive impact and their sustainability.

This year we received a grant from Dell to deploy four more labs in 2021: one in Mexico, two in Egypt and one in Australia, the latter supporting Aboriginal communities living in remote locations.

Bringing together different partners

One of the most successful aspects of the SLL programme is the capability to attract and bring together different partners working to have a positive impact on a community through the introduction of technology and ICT training curriculums. We consider our model a successful example of a partnership between three key sectors: civil society, the private sector and the public sector. Besides Computer Aid being an international NGO, we always partner with local non-profits that own the lab and manage its day-to-day running. The participation of the private sector involves multiple corporate donors, with Dell being the main one. We have also received donations of software from Microsoft and connectivity support from telecom companies. The SLL has engaged volunteers from Dell that support the communities and have even made donations to local charities.

There are many examples where the public sector has also engaged with, supported and helped fund the programme. For example, the local government in Xalapa in Mexico funded all the infrastructure, and identified and prepared the site at a public school to run the programme. The government of the state of Mexico also supported the programme with spaces and site

improvement at local schools for the deployment of the labs.

A tailored solution

In total we have delivered 32 solar labs since 2011. Some of those are double solar labs. These use two shipping containers facing each other, creating a centre deck area with additional computer capacity and increasing the seating area and number of computers. This allows us to use the second container for specialised training, such as in robotics in Mexico with our local partner Fundación Robotix.

The SLL programme establishes a unique space to enrich learning resources, build local institutional capacity, and provide access to 21st century skills for the local population.

Thanks to our partnership with local organisations, our intervention delivers solutions tailored to local needs and context. In our programme, technology is a tool for transformation and participation. This is not only because ICT skills are essential to succeeding in the modern world, but also because establishing a Solar Learning Lab is a force of transformation and inclusion in traditionally marginalised communities.

We have been closely monitoring the impact of our SLLs. Since 2014 to date, we have delivered 10,000 hours of digital access, per lab, per year, and reached over 17,000 disadvantaged students around the world.

Sustainability and scalability

Since the inception of the programme, we have expanded to more than 11 countries, proving the replicability of the programme. Reusing containers is also sustainable way of building and providing a secure space to store technology, as is the use of solar power. We have seen many other organisations setting up similar labs in contexts where there are high levels of crime and the equipment is at risk, or where there is no electrical power infrastructure.

One example of a successful sustainability strategy is the lab in Pujehun, Sierra Leone, which partnered with MOPO (MobilePower) and offered power banks to the community on a lending system. The need for power created a huge demand and the hub is now generating a steady income to keep operating with no extra investment.

In Cazucá, Colombia, the Tiempo de Juego foundation, a local NGO supporting children and young people living in marginalised areas through sports and educational after-school programmes, has successfully transformed the SLL into a training and production studio. It offers training in computer skills, video and photo editing, audio-visual creation and journalism, and – with additional specialised technology donated like 3D video cameras, Dell digital canvas and video editing PC and software – it has become a production studio running as a social enterprise that funds all the lab’s ongoing costs, including those of other programmes.

After the first year of each deployment we work alongside our local partners on a sustainability strategy. The SLL infrastructure and private sector support allow our local partners to benefit from the synergies and opportunities created by the programme beyond a traditional computer

donation programme. Additionally, our marketing and media campaign in each country focuses on inviting more partners to fund similar programmes in other locations. This means the replicability of our programme depends on attracting new partners and additional funding.

Challenges

Depending on the location and context, the SLL can face high logistics and transport costs and might seem like an imposition to a local community compared to a locally built bricks and mortar structure. This is not a “fits all” solution and it has to adapt to the local context and the needs of the local population. We have learned that one of the best ways to achieve local ownership is by adapting design features to each specific community. With support from Squire and Partners, an architect studio in London, we design each lab considering its context and invite local artists to make each lab unique to their location. We have seen that the addition of art has made the space not only a computer room but a local hub resulting in many positive externalities that support the transformation of the community.

Limited space can be one of the challenges. However, the project is adaptable to local needs. For example, in Mexico we launched the new double design to offer a dedicated space for learning robotics in addition to the computer lab.

Conclusion

The SLL is an example of a programme that engages key stakeholders to bring technology and education to marginalised communities around the world, reducing digital access inequalities and promoting sustainable practices and use of renewable energy.

Our model strongly relies on donors and support from companies to be able to deliver the SLL infrastructure and the training programme. Reusing shipping containers and adding renewable energy are key parts of what makes our programme unique. We are able to deliver a secure and innovative space for learning in remote locations that can also be relocated if needed, something that cannot happen with bricks and mortar infrastructure. Another advantage is that the regulatory process is usually lengthier and more bureaucratic for building infrastructure like schools or classrooms than for deploying a container lab.

One of the key lessons learned from our programme, which can be useful for other organisations, is that providing an innovative all-in-one solution, rather than donating technology to already established institutions, not only attracts more partners and funders but also motivates the local community to participate more than traditional spaces like schools or community centres.

We acknowledge that this is not a solution for all locations and organisations working to bridge the digital divide. In some cases, traditional intervention methodologies like donating computers to schools can be more cost effective or can impact more beneficiaries due to the space limitations of the SLL. However, we strongly recommend creating innovative programmes that improve the impact beyond quantitative outcomes such as counting the number of computers installed or students impacted.

References

International Telecommunication Union statistics:

https://itu.foleon.com/itu/measuring-digital-development/internet-use

Solar Learning Labs: https://solarlearninglabs.org

Computer Aid: https://www.computeraid.org

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