

GiaKonda Solar Schools

Monitoring, Evaluation and Review 2019

Purpose

The aim of the activity was to gain information on the impact of our project. We focused on 14 schools in Siavonga District which have received solar panels as well as RACHEL learning resources on a Raspberry Pi. These schools have 4750 pupils (2456 boys and 2284 girls)

Project Overview

The monitoring and evaluation activities took place in Siavonga District and considered:

- Usefulness and accessibility of RACHEL
- Benefits (if any) of RACHEL
- Usefulness, accessibility and use of other tools provided
- Benefits (if any) of other tools provided
- Maintenance and upkeep of equipment or tools provided
- Impact of training delivered and identification of any additional training needs
- Advantages, disadvantages and weaknesses of the tools in place
- Use of the resources and tools beyond teachers (if any)

This was achieved through:

- Questionnaires with teachers
- Focus group sessions with teachers
- Interviews with School management and IT staff
- Interviews with village leaders
- Audit of equipment and its maintenance

Through this process, we:

- Identified barriers to full use of tools and resources
- Investigated any unintended consequences of GiaKonda activities
- Identified further needs
- Gave technical support and facilitated brainstorming conversations to identify possible solutions to any challenges arising and avenues of finding external support
- Liaised with District Education Board Secretary on how we can support the government goals for education. (She accompanied us to two of the schools).

Main Findings

This trip has brought home to us the extent to which the solar project has been amended and improved over the past four years from a very basic example of solar power to something offering far more potential.

During the audit of hardware we were pleased to discover most of the equipment has been well looked after with only a few shortcomings.

Recipient schools reported that they are now able to address the ICT element of the Zambian Curriculum. Furthermore, the African Story Books on the learning resource are of great help in the Zambian Government's "Read Aloud" Project which promotes daily reading of stories. On this visit we also added stories in the local languages, (ChiTonga, ChiNyanja and GiBembe), which are used as the teaching medium for younger children.

Having lighting provides security from theft. Solar power means the wider community can charge mobile phones and use the school in the evenings for a range of purposes from literacy classes to watching football on television. The school has become the focus of the community.

Many challenges still remain, particularly in the area of ICT training which has only recently been incorporated into the Teacher Training qualification. Focus groups discussed ways in which teachers could get together in zones to help ensure their colleagues had at least basic ICT skills. Those responsible for ICT have also set up a Digital Literacy Forum, monthly meetings in which they can share problems that arise and devise solutions. GiaKonda Solar Schools is there, via WhatsApp groups, offering remote support where possible and handling any of the more difficult issues.

Significant facts/data/figures

1 .Physical inspection of equipment

In order to quantify the effectiveness of the equipment in schools, marks were awarded for the state of the equipment and the extent it was being used by the school and community. The overall performance of a school with regard to our program intervention was calculated on the following basis:

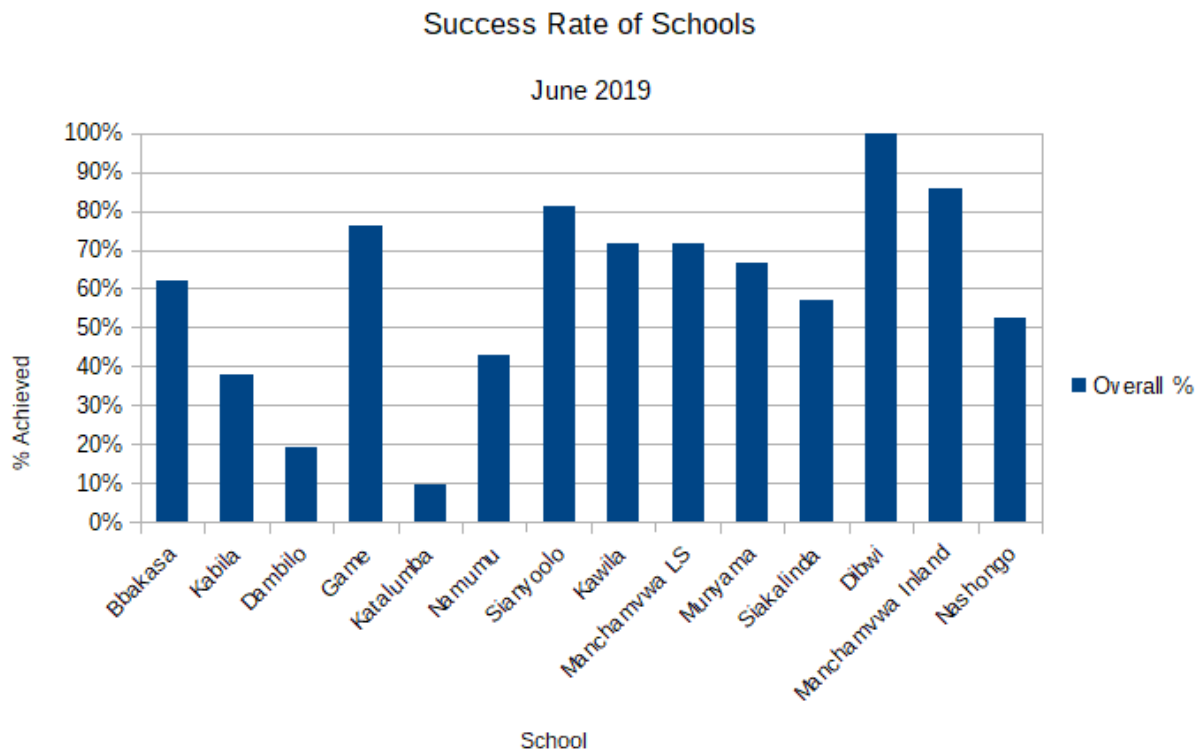
- Solar equipment including lighting,
Marks were awarded for the state of the equipment and the extent it was being used by the school and community.
- Computer equipment including the RACHEL resource and the use to which it was put both in the school and the wider community.
Marks were awarded for the state of the computers and evidence of use by staff, pupils and community.

The early schools were equipped with only enough power to power two Raspberry Pi computers with monitors. We have since increased their energy capacity but they are still below the level which we now consider minimal.

3 schools were judged to be outstanding: 5 were judged to be good: 4 schools were satisfactory: 2 were unsatisfactory

Dambilo School has a low score because of the change in personnel at the school which left them without the understanding to use the equipment effectively. Katalumba School has had all but the solar panels stolen.

The community use of the equipment was evident in the majority of schools. We felt this is of benefit when it comes to its security and helped established a degree of community cohesion.



2. Most significant change brought about by having solar power

Representatives of fourteen solar schools met as a focus group to assess the advantages that had occurred through the installation of solar power. Points made included:

- Being able to teach ICT because they now have the hardware to demonstrate what a computer is and the resources to show how effective it can be.
- Some colleagues more familiar with equipment have been able to cascade their expertise to other teachers.
- Lighting for security, after-school study, and writing of exam papers which often goes on late into the night
- Ability to charge mobile phones/ laptops to access the learning resources for lesson preparation
- Use of the school for adult literacy, numeracy, use of agricultural / health information
- Pupils from other local schools have been able to use the school resources for homework and research.
- One school reported some improved attendance of pupils because the projector made lessons more interesting

GiaKonda Solar Schools tried to identify the most significant of these impacts.

There was unanimous agreement amongst teachers that being able to teach the ICT component of Technological Studies was the most important benefit as previously this had been almost impossible to do.

The benefits of lighting came a very close second. Head Teachers were particularly pleased at the additional security it afforded the school.

3. Access to IT equipment and skills in its use

We asked 60 teachers about the frequency with which they used a computer in school and their level of skills in doing so.

40% of teachers used a computer daily and a further 35% used one at least once a week. 15% used computers in school at least once a month but 10% had never used one. Some of the latter were volunteer teachers. On the whole it looked like the school laptops were being shared rather than used only by a particular individual or individuals.

43% of the sample described themselves as beginners when it came to ICT skills.

70% felt able to access information on a computer from RACHEL or from the internet, and the same percentage felt they could handle basic word processing.

Only 46% teachers felt able to create and use simple spreadsheets.

We noted that 31% of the teachers responding had attended training courses with us and only teachers looking to specialize in IT had received any other IT training. Teachers from 2 schools mentioned that their colleagues had attended training with us and cascaded back to them. Head Teachers were generally not confident users of ICT.

We suggested to DEBS that schools work in their zone clusters to ensure that everyone has at least basic familiarity with using a PC or laptop. There is a wide disparity in skills at present.

4. Usefulness of learning modules

a) We asked about the frequency with which teachers accessed RACHEL and the modules they found most useful.

40% used RACHEL at least once a week.

One school had not used it for some time because its equipment had been stolen and another had a technical issue with the Raspberry Pi.

b) 47% of teachers had used the African Story Books, usually for the Zambian Government's Read Aloud Project. The next most popular unit was Wikipedia for Schools as this is a source of information on a wide range of topics.

c) We asked the reasons for using the RACHEL resources

36% Continuing Professional Development

48% lesson preparation

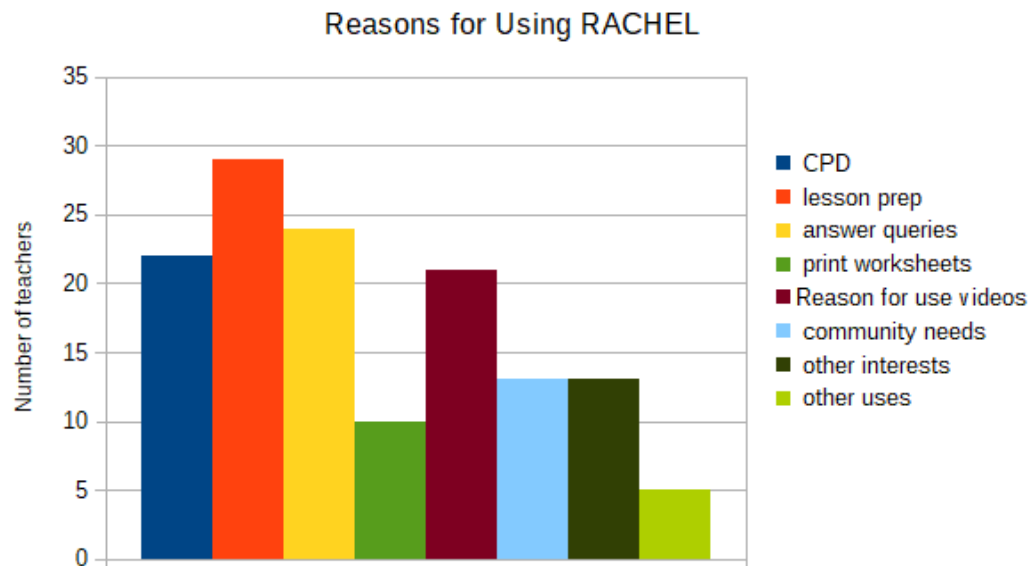
40% answering pupils' queries

16% to find worksheets

35% to show videos to pupils

21% for community needs

21% for own interests/hobbies



(At present only limited numbers of pupils are using the resources independently because of the schools having few laptops. We hope to address this by installing Raspberry Pi computers as a low power computer hub.)

What has GiaKonda learned?

This visit has strengthened GiaKonda's understanding of our impact, and improved the sustainability of our activities. The District Education Board Secretary has given her blessing to the Digital Literacy Forum and provided a location for it.

Through school visits, GiaKonda were able to

- Gain understanding of what Zambian stakeholders felt were the most significant impacts of the equipment installed and training delivered by us
- Identify and report on levels of use, maintenance and care of the equipment installed
- Accurately understand the levels of digital literacy within schools and what impact GiaKonda's work has had on skills
- Provide an opportunity to stakeholders to share challenges and be heard.

Through focus groups and questionnaires, 60 Teachers, 14 Head Teachers, 5 regional education officers and the District Commissioner had the opportunity to discuss educational issues with GiaKonda, share their experiences and support each other in troubleshooting the challenges they have faced. They have developed local links to support each other, should technical issues arise.

What changes will GiaKonda make in our next phase?

In future we will continue to evaluate new technologies as appropriate. This might include:

- Using the latest version of the Raspberry Pi to provide a small computer hub,
- the use of Kolibri as an additional learning platform (the advantage being that teachers can track individual pupil's progress)
- the use of LiFePO batteries (less possibility of issues arising from deep discharging)
- the possible provision of 19v televisions as an alternative to projectors

We will secure the batteries to avoid inappropriate movement / removal and require monthly feedback from each school on the condition of the equipment.

We are considering using 3 solar panels instead of 2 to help keep batteries fully topped up.

Undertaking this exercise has been of great help to us in looking critically at what we have achieved so far and formulating a plan for moving forward. It has reassured us that our approach is generally sound and made us aware of areas that can be improved.

Promotion and awareness building

GiaKonda Solar Schools shares its skills and knowledge regularly via web site, FaceBook page and Twitter. In Wales we support several other charities working in Africa, including Friends of Monze, Heshima, Linden Church Trust and Teacher Aid. We are keen to do this on a larger scale and are hoping to deliver a shared learning event hosted by Hub Cymru Africa.

We work alongside World Possible and Learning Equality to share our experiences and technical know-how on a worldwide basis.

We also attended Hub Cymru Africa's International Development Summit in May 2019. Here we met the Office of National Statistics (ONS) International Development Team based here in Wales. Through this connection, we have made further links with the Zambian Central Statistical Office who may be a source of useful education statistics as well as strengthening the involvement of Zambians in GiaKonda's work.

Future Plans

We hope to partner with the ONS data science apprentices on joint projects, using their expertise to monitor future work.

We intend to apply for more funding to complete solar installation in the remaining 12 schools in Siavonga District. Using what we've learned from carrying out this monitoring exercise, we will make a few changes. We will supply 3 solar panels as this will make it easier to keep the batteries well charged and physically secure the batteries to avoid them being moved from their proper position. We will supply televisions instead of projectors as these are more cost effective. They will be wall mounted in a protective cage. We will improve the solar set-ups in some of the schools (where we did earlier installations) to give them more power. We will continue to support teachers with training and learning materials, give remote support to the Digital Literacy Forum and be readily available via WhatsApp to answer questions.