# One Laptop per Child (OLPC) in Western Province, PNG

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| DWU | Divine Word University |
| ICT | Information and Communication Technology |
| OLPC | One Laptop per Child |
| PNG | Papua New Guinea |
| PNGSDP | PNG Sustainable Development Program |

## 1. General Information

The Catholic Education Agency in Kiunga, Western Province of PNG, together with other agencies, is delivering education services to remote communities. Within this documentation, the Agency presents its experience named "One Laptop per Child (OLPC)". The purpose of the practice is to improve skills of the future workforce in information technology, give students access to libraries on the computers, improve their learning and enable them to learn independently.



**Chart 1 Localization of the Experience**

## 2. Context of the Experience

OLPC itself goes back to two US non profit organisations OLPC-Association, and OLPC-Foundation (OLPC), which have the goal to create and promote affordable educational computers for the global South. They developed hardy, low-cost, and low-power-consumption computers and networks including solar power supply that could be used in remotest areas.

OLPC in PNG first started in East Sepik and Central provinces, initiatied by the National Department of Education (Department of Education) and in cooperation with the Divine Word University (DWU) and OLPC. In 2010, the local foundation PNG Sustainable Development Program (PNGSDP) stepped in with funding for 13 schools in Western Province (8) and the Highlands (5). This phase more or less finished with the evaluation in 2013. Since then some schools in Western Province carried on, being assisted by the Catholic Education Agency.

The country's population is largely rural (urbanisation of approximately 20%), with most people and schools not having access to electricity. OLPC is the only ICT-project which systematically addresses this hindrance.

Many communities are overwhelmed by technological progress, but at the same time are asking for this progress. The project communities in Western Province only came in touch with the Western world and other parts of PNG in the 1960s, and the current generation of teachers is the first literate generation.

OLPC mainly tries to address two challenges of the PNG educational sector:
- Computer literacy is generally low – this is an incentive and hindrance to projects like this at the same time. Many secondary schools do not include Information and Communication Technology ("ICT") into their teaching. Students entering universities often are not able to cope with the technology, just as young people entering work life.
- Classroom teaching often still follows a teacher-centred approach, leaving little room for students exploring knowledge for themselves, an issue OLPC tries to improve.

## 3. Main Characteristics of the Experience

Starting in 2010, there was a public debate in Western Province on the level of education in the province. Public business people and local leaders of Western Province were concerned about the education level and asked PNGSDP to bring in OLPC as a pilot project and the PNGSDP advisory committee decided to elaborate the project. The Catholic Education Secretary was furthermore involved in the advisory committee, and was later asked to select schools for the project. It became a focal point for the project, being involved in trainings, as well as repair and maintenance activities. PNGSDP as a donor organisation fundes the project, but but took up its organisation as well. Later on, awareness-raising was done by the Divine Word University on the use of ICT in primary schools. Straight after that the materials arrived. PNGSDP funded computers in 13 schools in Western Province and the Highlands. A PNGSDP IT specialist and consultant David Leeming (expatriate consultant based in Solomon Islands) set up the computers, and conducted trainings (for 2 days) for selected

teachers, one per selected school in Western Province. In other provinces, all teachers in every school were trained. The selected teachers in Western Province became the "OLPC champions" and were supposed to train other teachers in their schools. Out of these "OLPC champions" one was picked as a resource person/ coordinator to monitor the project (on a volunteer base) – he/ she did informal trainings, repairs, and received some additional email-support by David Leeming.

Computer skills are crucial for formal employment, but not even all high schools have computers for their students and until recently only a few teachers were accustomed to simple computer-activities. OLPC tries to meet these challenges by:
- training teachers, while some PNG teachers are specially trained to assist others, named *"OLPC champions".*
- giving laptops to pupuls grade 3-4, while the classes kept the computers also in higher grade.

The principles of OLPC are: right of child ownership, low age use, continuous digital saturation, connectivity, free and open source use for local growth and learning To meet the PNG context, a new principle was added: community participation. The principle of child-ownership developed ill-feelings by other classes, but was kept throughout. It contributed to computers getting lost.

## 4. Stakeholders and Partners – Roles and Responsibilities

The main beneficiaries of the experience are teachers and students in participating schools in relatively accessible areas (in Western Province those along the highway), in order to keep the project manageable. Parents as well as community members were benefitting too, for instance by improving their typing. Some other parents, that were already computer literate could support their children.

Moreover, the following parties/ institutions are mainly involved in the implementation of the practice:
- The Catholic Education Agency in Kiunga, which seeks to improve the level of education in Western Province.

- PNGSDP as donor and de facto project implementer. (PNGSDP is currently not able to play an active role in this project due to conflicts with the government. The "development" and compensation of the negative impacts resulting from the Ok Tedi Mine on Western Province, is the core purpose of PNGSDP.)
- David Leeming as consultant. He has been available for advice even outside of his paid contract, being personally interested in the project as well.
- Schools/ Communities owned by the respective community, seeking to improve the level of learning.

Concerning the roles of men and women, one out of 13 OLPC champions was female.

## 5. Resources

Moreover, the following resources are required in order to carry out the practice:
- Human resources: OLPC champions who receives special trainings (one per school); all teachers who receive training and make their own experiences; coordinator(s), trainer(s) and supporting IT staff, skilled in IT and able to train and motivate teachers.
- Financial resources: for computers/ equipment and administration (pilot phase: 1,47 Mio Kina /approximately 420,000 Euro to supply 13 schools with one or two classroom sets, expert-consultants and the local management of the project). The cost of one computer is less than 200 EUR
- Knowledge: IT skills and experience on how to improve student's learning by using ICT

## 6. Impact of the Experience

There has been an increase of basic computing skills of students/ children, allowing them to overcome their fear in order to approach the new technology. Some parents stated that they are now "more open to learn by themselves without teachers' guidance".

OLPC promotes a "learning by exploring" approach to teaching, giving the teachers a guide's or facilitator's role towards a child-centred and away from teacher centred approach.

## 7. Lessons Learned and Recommendations

Lots of key messages and lessons learned could be derived by the experience, as can be seen below:

The "Jiwaka-Experience": Train all teachers at the same time; Train the teachers at the school level; Let the teachers select a champion for their group after the training; The champion then receives further training in a central location.

Teachers and ground staff felt overwhelmed by the speed of new developments. Future project staff/ consultants have to take care not to introduce too many new features or new developments in a short time in order to make sure that local staff is not lost "on the way".

The concept of child-ownership of the computers conflicts with a perception of community-/ family ownership.

Students are enthusiastic and explore when given the opportunity to use the XOs (OLPC-computers) – likewise absenteeism is reduced.

Teachers lack experience and therefore need guidance, e.g. a lesson plan that guides their use of the XOs throughout the year.

There are alternative approaches to the shortcut of "one laptop per child":

- Starting one stage earlier: One laptop per head teacher or teacher to give them a chance to familiarise themselves with the technology. This is also supported by the experience of HORIZONT3000 in Bougainville: after Project Sankamap and the Catholic Education Agency started computer trainings, the numbers of teachers purchasing private or school computers rapidly increased, starting from practically zero.
- "Open learning centres": centres equipped with computers, to keep the computers under control but at the same time give students access to the opportunity.

## 8. Challenges

Some challenges were encountered when applying the practice:

- Computer literacy: few teachers have prior exposure to computers.
- Integrating the tool OLPC into the teaching and learning plans/ programmes/ classroom routine: XOs were rarely used in a structured way, despite indications of a high interest by students.
- Guidance for teachers: teachers need a guide and the authority of the National Department of Education. The ICT policy was not accepted/ known at provincial and district level, hindering standard officers/ inspectors to cope with it appropriately.
- Resistance by teachers: "teachers prefer not to promote self-discovery or self-learning in which students have an opportunity to explore the XO and it's capabilities on their own" (quote taken from the evaluation).
- Ownership: "Who owns the computers?" The question was not clear for the beneficiaries being involved. Additionally some negative social impacts emerged, such as cross-fighting/jealousy between those that have and those that have not access to OLPC-computers.

Other challenges are related to the implementation, not to the OLPC-program itself:

- Very often, there were no technical people in the school to install and keep the system going.
- Many teachers did not receive any training, or not enough.
- The distributed OLPC computers got lost or damaged over time (between 25% and 75%) due to unsuitable storage or stock management.
- Limited inclusion of provincial officers into the program
- Limited finance support by public donors and by the schools themselves. Schools had to allocate budget to OLPC program, forcing them to prioritise their activities.

So far, these challenges were addressed by the decision of some schools to not allow students to take the XOs home in order to prevent the computers getting lost or damaged, although this is against the original policy of OLPC and a modification of the original idea. Concerning maintenance and technical problems, one

person in Western Province was trained equipped with budget to do the maintenance. In order to cope with the low computer, OLPC "champions" should support other schools, which seems to work better if all teachers have received initial training (see the "Jiwaka experience"). OLPC Champions are selected and provide operating support.

Still, there is a national policy missing, as there are various isolated ICT projects in schools, but not clear overall policy. Low ICT literacy of teachers as well as a lack of financial support is also still a problem.

## 9. Sustainability

Some elements should be in place, for the practice to be institutionally, socially, economically and environmentally sustainable:
- A clearly communicated policy on project and computer ownership.
- Large scale qualification of teachers to increase computer literacy (this might need support of government authorities, who have to provide teachers for training).

- A local, on-the-ground support team for the training of teachers and the maintenance of computers.
- Clear and reliable funding.

## 10. Experience Sharing/ Up-scaling

The following conditions need to be guaranteed in order to replicate the experience:
- Institutionally, a local support team as well as an education agency or another institution, feeling responsible for the practice, is needed.
- Economically, sufficient funding for a longer period of time is required to achieve the desired level of market infiltration.
- Socially, ownership and support by parents as well as the community are essential, while prior ICT exposure of parents seems to foster the acceptance of the project.

Described experience could be of interest for government and church education agencies, and NGOs working in the field.

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