

Evaluation of OLPC programs globally: a literature review

Version 4
August 2010

Dita Nugroho and Michele Lonsdale

Australian Council *for* Educational Research



Acronyms and Abbreviations

ACER	Australian Council for Educational Research
G1G1	Give one, get one program
IADB	Inter-American Development Bank
M&E	Monitoring and Evaluation
MOE	Ministry of Education
OECD	Organisation for Economic Co-operation and Development
OLPC	One Laptop Per Child
PISA	Programme for International Student Assessment
UCA	<i>Un Computador por Alun</i> (Portuguese: One computer per student)
XO	Low cost laptop designed by OLPC project

Notes

In February 2009, a draft version of this document was completed with limited circulation. This is now called Version 1. In March, Version 2 was completed with the intention of making this review available more widely among OLPC school communities. This version was uploaded on the OLPC wiki site and was cited in a number of other reviews about the OLPC program.

An update called Version 3 was completed in August 2009, with the intention of providing a background to the development of an evaluation framework for OLPC deployment in Solomon Islands.

This further update (Version 4) was completed in August 2010, to inform a wider review of OLPC deployment achievements and possibilities in the Pacific.

Contact

For comments, contributions and queries, please email Dita Nugroho at nugroho@acer.edu.au

Executive Summary

This literature review was undertaken by the Australian Council for Educational Research (ACER) with the intention of identifying existing approaches to the evaluation of the OLPC programs globally. It was expected that there would be few examples, partly because the OLPC program is a relatively recent initiative, and this has proved to be the case. The knowledge base is expanding, however, with more evaluations of OLPC deployments and one-on-one computing in general being conducted.

The review indicates that because most of the deployment projects have only started recently, there has been little time to conduct any longitudinal assessments of its impact; the methodology, timing and conduct of the evaluations have been affected by the variations in project implementation models; the findings from existing evaluations are largely anecdotal and positive in nature; and recommendations arising from the evaluations generally relate to training needs and technical matters.

A key issue that have been highlighted in existing evaluations is the need to take into account the cultural and regional setting of the deployment project. Timing constraints and regional locations can also affect the ability of teachers and parents to participate in evaluation activities.

On the basis of the review it is suggested that future OLPC deployment projects embed an evaluation framework at the very beginning of a deployment, preferably at the project design and planning stage. Having an evaluation plan in mind at this stage helps clarify the aims of the evaluation, which as this review found can vary even among stakeholders in the same project, and enables baseline data to be collected so that change and impact can be measured.

Purpose and Scope of Review

The purpose of the literature review was to identify existing approaches to evaluating the impact of OLPC programs around the world. The review was intended to identify what evaluations have been done, what methodologies were employed, who has conducted them, and what the findings have been.

It was hoped the review would identify how 'evaluation' is understood in different jurisdictions, the nature of the evidence used to measure impact, and what constitutes 'success'.

The review focuses on countries/jurisdictions that have undertaken deployments of XO computers, and conducted some kind of evaluation of the OLPC program. The focus is more on the approaches and issues surrounding evaluation of the projects than on the wider processes associated with deployment.

Methodology

Information for the review was gathered from three main sources:

- A Factiva news search
- A search of the OLPC wiki site (http://wiki.laptop.org/go/The_OLPC_Wiki)
- Email correspondence with relevant personnel in countries where the OLPC program has been implemented.

The online search of news articles and the OLPC country-specific wiki information yielded a small number of publicly available reports relating to OLPC program monitoring and evaluation. Links to websites and publically available reports are provided in the attached Table.

The online searches provided contact information for relevant experts and government officials who were likely to be knowledgeable about any evaluations that might have been undertaken.

ACER established email contact with these experts and officials and sought information relating to the following questions:

1. Have you done any evaluation yet of the impact of the OLPC program?
2. If you have, what evidence have you gathered and what does it show? Is it possible to obtain a copy of any reports that may have been released?
3. Who conducted the evaluation and when?
4. If you have not done an evaluation yet, do you know when one will most likely be done? What kind of evidence are you hoping to collect to show the impact?
5. From your observations (or those of others in your department) what do you see as the main benefits of having the OLPC program in your schools?
6. What have been the main difficulties in introducing the OLPC program in your schools?
7. Are there any other comments you would like to make about evaluating the OLPC program in your schools?

Information from the preliminary literature, email responses and evaluation reports was collected and analysed for this report.

The list of countries in the attached Table has been shortened to include only those with either publicly available material on evaluations and/or those who responded to our emailed queries.

Updates to the review were undertaken by:

- Collecting information from the OLPC wiki site on new deployments
- Sending the above questions to any new contacts
- Inviting contributors to past version to submit any updates on their programs.

Methodological Issues

A review of the literature highlights a number of issues associated with evaluating the OLPC program.

1. There has been little opportunity to conduct any longitudinal assessments of impact because XO deployments are a relatively recent phenomenon. It is difficult to formally measure impact over several months. One of the aims of the OLPC program is to create a learning experience that is ongoing rather than a short-lived engagement with the XO technology. It is difficult to know to what extent any changes in the first few months are sustainable or the product of a 'novelty' effect.
2. Of those evaluations that have been conducted, little formal documentation currently exists. Most feedback from the OLPC programs has been anecdotal in nature. In some cases the cultural context can mean that interviewees who might be anxious to please an evaluator provide information in its best light. An implementation study on the Ethiopian deployment, for example, found this to be a persistent factor that resulted in difficulties obtaining honest and accurate feedback.¹
3. Where formal evaluations have been conducted, the findings are not necessarily generalisable owing to the particular circumstances (including the purpose, timing and quality) of the evaluation itself. There is a large variation across OLPC programs in terms of who initiates the evaluation, for what purpose and for what audience. For example, a ministry of education might want to know if the introduction of XO computers in a classroom has led to greater student engagement or performance. A different stakeholder group might want to know more about the issues affecting deployment or infrastructure. It is difficult to build up a global picture of impact across such different agendas and circumstances. Different stakeholder groups hold different expectations of the program and not all evaluations are necessarily focused on measuring educational outcomes.
4. There are difficulties associated with identifying, locating, gaining access to, and communicating electronically with officials in countries where the XOs have been deployed. It is not always clear who is responsible for the evaluation and even where this is apparent, it is not always possible to establish contact.
5. In identifying what works, it is not always clear what criteria are being used to measure success and how conceptions of success differ across jurisdictions. For example, should the OLPC program be evaluated only, or primarily, in terms of its educational benefits (and if so what would be reasonable evidence) or in terms of its broader economic (or other) impact?
6. Little baseline data has been collected which makes it difficult to track change. Additionally, the nature of the relationship between use of the laptops and improved educational outcomes is complex and not necessarily directly causal. Limited resources and/or logistical issues often restrict program implementers from employing rigorous evaluation methods.

Background

OLPC is a relatively new project. Nicolas Negroponte first announced his idea of a low-cost laptop to be used by children at the World Economic Forum in Davos in 2005. Although this was the culmination of decades' worth of work from Negroponte, as far back as distributing microcomputers to school children in Dakar in 1982, the first XO deployment only took place in February 2007, with mass production beginning in November of that year.

The XO machines had gone through a number of iterations (a previous model, for example, featured a crank handle charger). In May 2008 Negroponte launched plans for the second version of the XOs, or XO-2, lighter and smaller, featuring two touch screens (one side to be used as keyboard) with a release date of early 2010. This did not eventuate, however. Instead, at the end of 2009, concept-designs for XO-3 were announced. Released images showed a

¹ Everts et.al. 2008. *Ethiopia Implementation Report, September – December 2007*, Eduvision

slim tablet to feature a touch-screen, a camera, induction charger, and a hole in the corner to function as a carry ring.² The release date was said to be 2012, with a price of “well below” US\$100. OLPC announced that it will achieve this low price by opening its designs to manufacturers, highlighting its non-profit status and focus its educational aims rather than manufacturing laptops.³ Negroponte further stressed this in an open letter to the Indian government, who had announced its plans to provide \$35 laptops to its students, inviting collaboration and sharing of technology to reach this aim.⁴

The XO software has also undergone a number of updates. The software versions used in the deployments mentioned here are not identified in this review. Some information on this is available on the OLPC wiki site listing deployment data.⁵ Based on the information from the site, different versions have been used in various deployment countries, sometimes even between the pilot, wider deployment and further upgrades in the same country. Therefore, it is important to note that comparisons between different OLPC deployments’ impacts and issues should be made with this in mind.

Currently over 1 million XOs have been deployed through OLPC projects in over 40 countries. Current XO deployment projects vary in almost every respect, including how they are set up, funded, managed, implemented, and supported. All projects involve a number of entities, ranging from international donor agencies, national ministries or local departments of education and ICT companies, to Non-Government Organisations or private non-profit foundations.

Current Stages of Deployment

In most of the countries reviewed, the OLPC projects are still in their early days. Many are at the end of their pilot project implementation phase and preparing for wider deployment, while some are still establishing pilot projects. There are exceptions, however. The Pacific Island country of Niue is aiming to be the first country in the world with full saturation of XOs in its schools. Within some countries the OLPC program received strong support from regional governments, with large-scale or full deployments in particular regions. Birmingham in the state of Alabama in the United States committed to deployment of XOs in all of its schools as early as 2007.

In 2006, the IADB signed a formal agreement with OLPC to “support the development and mainstreaming of 1 to 1 computing in Latin American and Caribbean schools”.⁶ The IADB has so far supported OLPC deployments in Haiti, Paraguay, Brazil and Uruguay. Latin American countries and Caribbean countries have therefore become the most enthusiastic adopters of the OLPC and other one-to-one computing projects, with several countries having already completed a full round of pilot projects and having starting to implement their country-wide large-scale one-to-one computing projects.

Brazil, the first country to receive XO laptops under the OLPC program, began trials for its *Um Computador por Alun* (One Computer Per Child) / UCA program in early 2007 with five schools. Two of the schools received XOs, two received Intel Classmate laptops and one school received Mobilis laptops. In January 2009, following a public bid the Brazilian government announced that it would be purchasing Mobilis laptops for a wider implementation of UCA involving 300 schools. After it was further found that the laptop did not meet the government’s minimum specifications, the government went with the second place bidder, which was a local assembler of Classmate laptops.

Conversely, Uruguay became the first country to make a government bulk order for XOs when it purchased 10,000 laptops in October 2007 under its *Plan Ceibal*. This followed a public bidding process that also involved Classmate PC. Uruguay is expected to put in another order

²This information comes from to the OLPC official website and the linked OLPC wiki, a collection of web pages that can be easily contributed to and modified by users.

³<http://news.bbc.co.uk/2/hi/technology/8428147.stm>

⁴<http://laptop.org/en/vision/essays/35-tablet.shtml>

⁵<http://wiki.laptop.org/go/Deployments>

⁶<http://www.iadb.org/news-releases/2006-11/english/idb-and-olpc-formalize-agreement-to-foster-applications-of-information-and-commu-3407.html>

of 200,000 laptops in 2009 in order to equip every primary school student in the country with an XO laptop.

More recently, in July 2010 Peru announced that it will also equip every primary school in the country the following year. This followed two rounds of piloting: a small trial at one primary school in June 2007 and deployment of 40,000 XOs in January 2008.

International Conference

To illustrate the growing interest in one to one computing approaches, in February 2010, an international conference on the topic was held in Vienna, supported by the Austrian Ministry of Education, the World Bank, IADB and OECD⁷. The conference, believed to be the first of its kind, brought together speakers from funding and implementing agencies, governments and private foundations that have been involved in one to one computing initiatives to share their experience and network with one another. Various OLPC foundations and others who have been involved in OLPC funding and deployments took part in the conference.

Of the seven panel sessions, three were dedicated to monitoring and evaluation issues: one discussed how to monitor the use and results of one to one initiatives, one discussed their impact on students' outcomes and another discussed their impact on equity and bridging the digital divide.

Evaluations of Existing Projects

Approaches to evaluation, like the nature of the deployment projects themselves, vary greatly partly because of the workings of the entities involved in the initiation and implementation of the projects. In general, in cases where a multinational donor agency or the national ministry of education has been the major funder, countries are more likely to have a comprehensive formal evaluation plan. In other instances the evaluation tends to take a more informal approach, using case studies and stories published on the country community's wiki.

Evaluators and Timing of Evaluation

The choice of evaluator and timing of the study have implications for the methodology chosen and the nature of the responses during data collection. For example, participants might respond differently to an evaluation activity conducted early on in the program compared with one undertaken at a later date.

Evaluations of OLPC projects are often conducted by one or more of the implementing entities. When a donor agency or ministry of education is involved, for example, they usually undertake the formal evaluation. In some instances, external consultants – often from universities – are asked to undertake the evaluation. Informal reporting and evaluation also take place, published via online mediums such as the wiki, blogs or official websites, either complementary to or in place of a formal evaluation process.

At times, different evaluation activities are conducted and reports produced for different purposes and audiences. For example, the monitoring and evaluation of the Ethiopian pilot project is being conducted by the two implementing bodies, ECBP and Eduvision in collaboration with the Universities of Groningen and London. However, Eduvision has also completed and published an implementation report aimed at assessing the impact of the software content they have provided.

The literature, and comments made by those involved in OLPC deployments in various countries, indicates that formal evaluation mechanisms are rarely embedded in the earliest stages of project planning. For example, in Brazil's 2007 trial of three different one-to-one laptop computers in five schools, there was reportedly no funding for a continuous evaluation process.⁸ At the end of 2008, the Inter-America Development Bank (IADB) revealed plans to fund a project to evaluate the five schools but this did not occur until after the Brazilian

⁷ Presentations are available on the conference's website: <http://nml.bmukk.gv.at/>

⁸ Marta Dietrich Voelcker, via email, January 2009.

government had made a decision on which one-to-one laptop to use in its nationwide implementation.⁹

In another instance in Nepal the formative evaluation was initiated two months after the start of program implementation.¹⁰ In projects where more informal evaluation activities are carried out, these often start at the beginning of the implementation program but tend to be sporadic and short-lived (or, at least the project's wiki does not get updated until the later stages of the project).

Exceptions to this are those projects that receive funding from, or have had involvement with international donors. In Ethiopia, where a Swiss education company was involved in implementation, and in Russia, where a foundation from The Netherlands was involved, evaluation measures were determined early and included in the project plans. The same applied in Haiti, where the IADB provided funding and were involved from the start.

Methodology

The methodology chosen varies across OLPC deployment projects and can be either formal or informal.

In projects where informal evaluation methods have been used, the preferred methodology is case studies with accompanying photos. The reporting method ranges from sporadic to regular uploads of information on to the project's wiki. Projects that use this informal evaluation do so extensively. OLPC programs in Ethiopia, Pakistan, Peru and Russia use their wikis to provide regular updates of the projects' progress, case studies that are often accompanied by photos, and project documents such as implementation plans and presentation materials.

At times an informal evaluation has been conducted in the form of requests for feedback, which are then included in a report or a number of formal reports that are not explicitly evaluation reports. In Papua New Guinea, for example, project personnel visited trial schools five months after the implementation of the trial and sought feedback from teachers. The feedback was then included in a more general report on the challenges and impact of OLPC.¹¹

Where formal evaluations have been conducted and written reports produced, the preferred methodology is a combination of quantitative and qualitative data collection. Classroom observations, interviews with teachers, focus group interviews with students, and surveys with students, teachers and parents are widely used. In Nepal, data from school records and school census were also analysed. In Haiti, where UNESCO is involved with the development of a quantitative evaluation of the pre-pilot OLPC project, standardised mathematics and language tests were conducted before and after the project.

For examples of the instruments used in evaluating OLPC deployments, in the form of questionnaires, observational sheets and interview schedules, reports from evaluations in Australia, Ethiopia and Haiti appended the instruments they used (see links to documents in Table).

In many formal evaluations, the scope of the evaluation was limited to the educational effects of the XO's in school as measured by analysis of school grades and attendance records, feedback from students and teachers, or standardised testing. At times, however, the scope was widened to include the social and psychological effects of the project (as in the Ethiopian evaluation) and to include changes outside of the classroom (as in the Haitian evaluation). Evaluators have even expressed interest in attitudes towards the project from outside the immediate community surrounding the deployment schools. Results from the evaluation study of the pilot deployment in Uruguay included the recommendation to conduct national public opinion surveys following nation-wide implementation.

Timing of the evaluation also affected the evaluation methodologies chosen. Only projects that included formal evaluation measures right from the start of the project had access to baseline

⁹ Ibid.

¹⁰ Karmacharya, Rabi. 2008. 'Formative Evaluation of OLPC Project Nepal: A Summary'. <http://blog.olenepal.org/index.php/archives/321>

¹¹ Leeming, Thomson and Forster, 2009, *Challenges and Impacts of One Laptop Per Child*, The PRIDE Project Pacific Education Series, <http://www.usp.ac.fj/index.php?id=publications>

data that would allow comparison with subsequent data. A number of studies raised the issue of whether or not some conditions that are unique to the early stages of the program affect the results. For example, how sustainable is a program likely to be after the departure of project staff that might have been supplied at the beginning of a project? Most of the formal reports also acknowledge that longitudinal studies are required to properly evaluate the effects of projects of this kind.

More recent evaluations announced are showing signs of increased utilisation of rigorous impact evaluation methods. In Sri Lanka, for example, the World Bank is working with the Ministry of Education to employ randomised deployment in their trial and collecting baseline data prior to this, allowing for a rigorous evaluation that will be able to measure the net impact of the program, including any spill over effects on siblings (as students will be allowed to take the laptops home). The Peruvian evaluations also reportedly employed experimental and quasi-experimental research methods.

In addition to collecting baseline and post-deployment data, these impact evaluation methodologies require the construction of a control group. This further stresses the need to embed an evaluation framework into initial project design.

Impact identified

There is wide agreement that further studies are needed to evaluate the impact of ICT use in education in general and many more are needed to evaluate one-to-one computing programs specifically. Although the field is growing, few methodologically rigorous studies currently exist.¹²

Box 1 Recent research on impact of ICT on education outcomes

Laptops and Literacy: A Multi-Site Case Study, M. Warschauer (2008)

A two year study of the effects of one-to-one computing programs in 10 schools in Southern California on literacy practices found important changes in the teaching and facilitating of reading and writing in classrooms that utilised laptops. Although it also found that laptop use did not result in higher standardised test score results, this was attributed partly to the fact that students and teachers still in early stages of learning about how to best use the laptops in the classrooms, and the mismatch between what is tested by these standardised tests and what is gained from laptop use. The study also found that lower SES schools had more difficulties in developing and sustaining successful programs, but noted that as this may be due to the students' and teachers' lack of prior experience with computers, long-term studies would be required to indicate whether this gap will diminish as low SES students catch-up.

The use and misuse of computers in education: Evidence from a randomized experiment in Colombia, F. Barrera-Osorio and L.L. Linden (2009)

Evaluation of a large-scale Computers for Education program in Colombia, with data collected from 100 schools (divided into treatment and control groups) over two years. The study found that although the program successfully increased students' use of computers, it had little impact on their math and Spanish test scores, as well as little effect on hours of study, perception of school, and relationship with their peers. The limited impact was attributed to the finding that in most instances, the computers were only used to teach the students computer usage skills, and not a range of subjects, because despite receiving training and technical assistance, "teachers in the program simply failed to incorporate the new technology into their classroom teaching"

Complement or Substitute? The Effect of Technology on Student Achievement in India, L.L. Linden (2008)

This study, an evaluation of a novel computer assisted learning program in India involving 60 schools in two years of implementation, found that overall, the program did little to improve students' math scores. However, there were significant variation in the effectiveness of the program depending on the method of implementation, where although when implemented as a substitute to regular curriculum presentation the progress is much less productive, when it is implemented to complement existing curriculum arrangements (provided out of school), the program was found to be generally effective in raising test scores.

¹² See: Infodev. 2005, *Knowledge Maps: ICTs in Education*; Penuel, WR. 2005. *Research: What it says about 1 to 1 learning*, Cupertino, CA: Apple Computer; OECD. 2005. *Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us*. <http://www.oecd.org/dataoecd/28/4/35995145.pdf>

Findings from a number of recent studies internationally show that computer use in school so far have little to no correlation with test scores in numeracy and literacy, but that different types of programs and different ways of utilising the computers lead to widely different results. The studies summarised in Box 1 above, all tracked projects involving ICT use in education programs over two year periods of implementation.

It will be interesting to see if continuous tracking of the programs' impact on students' literacy and numeracy scores appear in the next two or three years. Results from the 2003 round of the OECD's Programme for International Student Assessment (PISA) found positive relationship between students' achievement in mathematics and the length of time they have been using a computer, with students who have used a computer for more than five years on average performing at almost two levels ahead of those who have used a computer for less than one year¹³.

As the implementation models in the OLPC deployment program evaluations we reviewed varied in size, location and other conditions (for example, students were not allowed to take their XO's home in some instances) and, as mentioned above, the methods of evaluation vary greatly, it is difficult to make comparisons between identified impacts and whether or not they can be attributed to the program model.

However, when looking at general effects identified by these evaluations, common themes appear. In Peru and Mongolia, there were reports of increased student attendance, and in Ethiopia, students in laptop schools in rural areas reported a significant increase in motivation to go to school.

In Mongolia, Mali, Nepal and Peru, changes in classroom behaviour of students were reported, with students showing more interest and eagerness to learn. Some studies observed attitudinal changes as well, with the evaluation in Haiti reporting a shared perception of the XO as a symbol of opportunity and progress; the evaluation in Mongolia reporting an observed sense of pride; and the evaluation in Peru reporting a more positive attitude from students towards their peers and class activities.

In evaluations that took into account effects on parents and community members, in the deployments in Mali and Uruguay, the feedback was positive, with the evaluators in Uruguay reporting that some parents also started taking up computer classes.

Issues identified

A number of common issues were also identified by the OLPC project evaluations reviewed below. In line with findings from other impact studies from ICT use in the classroom, these issues were linked *how* the XO's were actually used in the classrooms, and with how well classes respond to constructivist methods. More specifically, most of these issues were concerned with the way or the extent to which teachers were able to incorporate the XO's into their classroom activities.

In OLPC pilots in Ethiopia, Haiti, Nepal, Rwanda, Uruguay and in Birmingham, evaluators observed issues surrounding teachers' acceptance and preparedness in using the XO's in their class. In the evaluation reports for Ethiopian and Haitian pilots, the difficulties teachers faced with shifting to a constructivist approach were explicitly addressed. The Ethiopian evaluation noted that most teachers found trouble changing their teaching approach, so the use of the laptops in class was very limited, which affected student engagement. On a similar vein, in Haiti, evaluators found that greater teacher engagement led to students being less distracted, stressing the importance of providing ongoing assistance to teachers.

A number of implementation projects also reported facing some dissatisfaction and/or resistance from teachers. In Ethiopia, some teachers were sensed to be dissatisfied with the program because they had initially expected financial incentives for participating. In Uruguay, there were some resistance from teachers because of lack of training. Even in Nepal, where all teachers reported that the XO's had positive effects on their teaching practices, they also reported feeling that their workload had significantly increased.

¹³ OECD. 2005. *Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us*. <http://www.oecd.org/dataoecd/28/4/35995145.pdf>

Evidence and observations from OLPC trials and pilots so far suggest that although the OLPC project's strong grounding in constructivist principles focuses on the value that "the laptop takes learners beyond instruction"¹⁴, teachers' participation is still essential to the success of any deployment project, mainly because deployments to students are carried out through schools. This seems to be especially noticeable in developing countries, where the method of learning is very often very much teacher-centred. A move away from such a strongly ingrained notion to a constructivist approach requires, as some of the evaluations we found reported, considerable amounts of preparation work as well as continuous support for the local educators involved.

Child ownership is one of the main principles of the OLPC project, but some of the OLPC deployments included in this review observed issues with students being able to take an XO home. In Haiti (and the Ethiopian pilots), this was due to unexpected shortages in XOs. In Nepal, the use of XOs in the home was found to be limited as there was a limited number of chargers. Deployments in the Pacific found unease in local communities with the concept of child ownership¹⁵, and in the Haiti deployment, some students reported security concerns when taking the laptops home.

Other One-to-One Computing Projects

While the scope of this review did not cover evaluations that have been done on other one-to-one projects, the review revealed some literature on other projects, mainly those competing for the bigger deployment markets, such as the Brazil, Uruguay, India, Russia and the US.

As shown in the Brazilian and Uruguayan examples above, Intel Classmate and Mobilis are two laptop models that are also being offered for one-to-one computing projects. Mobilis is produced by an Indian software company called Encore, while the Classmate laptop is produced by Intel. Both form part of for-profit ventures. There is also a possibility of other low-cost laptops being used in one-to-one initiatives as reported in Russia where the EEE laptop from Asus is being considered for use by a potential private donor.

The World Bank's InfoDev has attempted to compile a list of known 'low-cost computing devices and initiatives in the developing world' which, although it came with a disclaimer that it is not exhaustive, came up with more than 50 items.¹⁶

So far, the only studies that have included an element of comparison between OLPC and other educational ICT projects have been the evaluation studies in Peru, where there were already shared computers in labs, and of the school in Harlem, New York, where the teachers already had 'laptop carts' that are rotated. None of the formal reports included in this review, however, have compared OLPC with other one-to-one computing projects. The report that will result from the IADB's study of the Brazilian trials of all three laptops will be an important source of information in comparing their benefits and showcasing the difference between them.

Conclusion

Several conclusions can be drawn from the review of evaluations carried out on OLPC projects around the world. The most obvious one is that because most of the deployment projects have only started recently, there has been little time to conduct any longitudinal assessments of its impact. Because of this as well, little formal documentation currently exists on evaluations of recent projects and the ones that do exist vary greatly.

¹⁴ OLPC website, <http://laptop.org>

¹⁵ Leeming, Thomson and Forster, 2009, *Challenges and Impacts of One Laptop Per Child*, The PRIDE Project Pacific Education Series, <http://www.usp.ac.fj/index.php?id=publications>

¹⁶ Trucano, Michael. 2008. 'Quick guide to low-cost computing devices and initiatives for the developing world'. An *infoDev* briefing sheet. Washington, DC: *infoDev* / World Bank. <http://www.infodev.org/en/Publication.107.html>

The evaluations are affected by variations in project implementation models. A more informal approach, often using the OLPC wiki, is preferred by deployments run by local foundations or organisations, often along with representatives from the OLPC team, whereas projects that involve international entities – either multilateral agencies such as the IADB or individual organisations based in countries other than the deployment country – favour more formal evaluation mechanisms.

The results of existing evaluations tend to be positive, highlighting educational and attitudinal impacts on students, effects on teacher-student relations, and impact on the wider community. Recommendations arising from these evaluations often relate to preparatory and ongoing training needs as well as technical matters, such as charging and network support.

Methodological issues highlighted in the review include the need to build evaluation into the planning and design stage of the program, and to ensure that the evaluation is conducted in culturally appropriate ways. Data collection also needs to take account the availability of teachers and parents in planning the timing and types of evaluation activities to be done. The need for longitudinal studies to measure impact on educational achievement is a recurring theme in both OLPC evaluations specifically and evaluations of ICT in education programs in general.

Below is a Table that summarises the key elements of the evaluations that are known to have been undertaken of the OLPC programs globally. These and other evaluations will be monitored to build up our understanding of what is being done, by whom, for what purpose, and with what results.

Country	Brief description of OLPC project	Funding/ implementing institution	Who conducted the evaluation (if any) and when	Methodology	Impact identified	Issues	Source(s)
Region: AFRICA							
Ethiopia	Following a trial of 60 laptops in Addis Ababa, 5000 laptops were distributed in October/November 2008 to four schools: two rural and two in Addis Ababa. Laptops were kept in schools during pilots, but students can take them home in the wider deployment	Laptops from G1G1, implementation by GTZ (German Society for Technical Cooperation), the Ethiopian Engineering and Capacity Building Program (ECBP, under its on.e project) and BlankPage (previously Eduvision - a Swiss ICT/education company).	<p>M&E conducted by GTZ, ECBP, BlankPage, University of Groningen.</p> <p>Ongoing since the preparatory phase of the project. The first report is due in March 2009 at the end of the first 6 months.</p> <p>In 2007, two students completing their diploma theses were employed by GTZ to develop monitoring tools.</p> <p>Eduvision also compiled an evaluation report, although the focus is limited to the content that they provided. A doctoral student from the University of London also conducted an evaluation focusing on the use of BlankPage-provided content.</p>	<p>Class observations, interviews, focus groups, baseline tests, questionnaires all with control group; teacher and student diaries; interviews with parents and community members.</p> <p>Methods aimed at getting feedback on both the primary (educational) effects and secondary (social and psychological) consequences. Plan for longitudinal monitoring of students, for at least 2 years.</p>	<p>XOs mainly used at home, often shared with parents;</p> <p>Children with laptops reported writing as a favourite activity;</p> <p>At rural schools, laptops increased motivation to go to school.</p> <p>A very slight (3%) increase in test scores.</p> <p>High-percentage of on-task activities when XOs as used. Students were able to handle the machines.</p> <p>Akili Reader (content from BlankPage) widely appreciated for its ability to deliver clear text driven content.</p>	<p>Tendency for students to want to play with laptops in the classroom; teachers used to instructivist model had issues with losing control of class;</p> <p>Teachers reported time shortage to test laptop features; Most did not change their teaching approach, used laptops only to read textbooks electronically, which students found boring.</p> <p>Some evidence of dissatisfaction among teachers but there was reluctance to engage in critical feedback.</p>	<p>Wiki; Márton Koscev, on.e e-business solutions (via email); Innovative learning in Ethiopia (Kocsev et.al, 2009); Initial reflections on the Ethiopia XO 5000 Programme (Hollow, 2009); Low-cost devices in educational systems: The use of the "XO-Laptop" in the Ethiopian Educational System (gtz 2008)</p>
Mali	Pre-pilot program with 30 XOs as an 8-week summer camp in July-September 2008.	<p>Implementation by OLPC Mali in collaboration with Laptop Magazine.</p> <p>Funded by Bedford Communications Inc and Laptop Magazine.</p>	<p>Conducted by Salimata Fandjalian Bangoura (Project Coordinator, OLPC Mali) and Abraham Jaffe.</p>	<p>Observations; Interviews with teachers, parents, and volunteers; Daily evaluation sheets completed by teachers and volunteers.</p>	<p>Overall positive feedback from community;</p> <p>Increased interest from parents in their child's education;</p> <p>Children's interest in education and learning at home augmented.</p>	<p>Teachers and volunteers were asked to complete a daily evaluation sheet, however because of the perception that negative opinion may jeopardise the project, this process was considered biased.</p>	<p>One Laptop Per Child Mali Summer Camp Pre-Pilot Program Final Report (Bangoura & Jaffe, 2009)</p>

Country	Brief description of OLPC project	Funding/ implementing institution	Who conducted the evaluation (if any) and when	Methodology	Impact identified	Issues	Source(s)
Rwanda	<p>Trial project was run in October/November 2007 in Primary Five class of Rwamagana B Primary School. This trial involved 96 P5 pupils and 4 teachers and about 106 laptops were tried.</p> <p>Pilot project of 5000 laptops deployed in October 2008.</p>	Laptops from G1G1, implemented by Ministry of Education	Conducted by Justin Nsengiyumya (Secretary General of MINEDUC) and Richard Niyonkuru (M&E Advisor to Ministry's ICT Department).	Survey based, aimed at establishing whether students who received laptops 'benefited from the computer' and to assess whether the laptops in any way 'uplifted their learning'	Students have benefited, 'children appreciated education content', learnt how to interact with the computer, surf the internet, and get maps and scientific diagrams.	Students are learning faster than teachers.	Rwanda: One Laptop Per Child Pilot Project Evaluated , The New Times, Gahigi 2008
Region: ASIA							
Afghanistan	As of October 2009, 2,500 XO laptops have been deployed to students in grades 4, 5 and 6 at 6 schools in Afghanistan: 1,529 laptops in Kabul, 396 in Jalalabad and 515 in Herat. Deployments began June/July 2009.	<ul style="list-style-type: none"> USAID's Afghan SME Development: funding Roshan (private telecom company): funding, internet connectivity, project management support Paiwastoon Networking Services: developed Dari and Pashto translations of XO software, manuals, training materials; open source software expertise, research into applications Ministry of Education Ministry of Communications & IT 	<p>Monitoring and Evaluation Plans have been developed with three focus areas: Educational, Health and Economic Impact Assessments. Plans developed by OLPC Afghanistan personnel, inviting other parties interested in research collaborations.</p> <p>In September 2009, the OLPC Education team conducted an educational impact evaluation. A local educational specialist developed the tests used in the evaluation, based on the Afghan curriculum.</p>	<p>M&E Plan for Educational Impact included pre-testing in reading, writing, mathematics, and active learning skills, followed by tests at regular intervals, as well as focus group with teachers to assess use of teaching methods and ability to access materials.</p> <p>Students were given a test on three subjects (Dari Language, Mathematics and Drawing) before they learned they will receive XOs. Two months after deployment, they were given tests of the same difficulty level.</p> <p>Logistical problems prevented the inclusion of control schools.</p> <p>Qualitative evaluation of educational outcomes and evaluation of education stakeholders were also conducted.</p>	<p>Report from the first set of follow-up tests (administered 2 months after deployment) was completed October 2009.</p> <p>The report described an average improvement of 21.33% in pre- and post- testing in language, mathematics, and arts. The evaluation was conducted without a control group, however.</p> <p>Qualitative research findings attributed the increase to: increased interest in learning activities due to new laptops, and improved access to more educational resources and programs.</p>	<p>As the evaluation was conducted without a control group, it is impossible to separate the impact of the laptops with the effect of 2 months of additional learning at school.</p> <p>There are currently plans to undertake more rigorous full external evaluation using experimental methods.</p>	<p>Wiki; OLPC Effectiveness Monitoring & Evaluation Plan: Educational Impact Assessment; OLPC Afghanistan: 2nd Education Evaluation Report (October 2009); Mike Dawson (OLPC Afghanistan), via email; OLPC Effectiveness Monitoring & Evaluation Plan for Health Impact; OLPC Afghanistan website</p>

Country	Brief description of OLPC project	Funding/ implementing institution	Who conducted the evaluation (if any) and when	Methodology	Impact identified	Issues	Source(s)
Mongolia	As the first beneficiary of the 2007 G1G1 program, 1,000 XO's arrived in Mongolia in January 2008. 9,000 more arrived in June 2008.	Laptops from G1G1 program A team from OLPC were involved with the implementation on the ground, including a group of OLPC volunteers to translate the XO interface.	Evaluation reports were written for internal purposes, focusing on the transition of the OLPC team's handover to an entirely local team of both governments and non-government entities. Brief updates on project's progress and photos are on OLPC wiki.	The OLPC team is finalising a template for assessment, to be shared with the local groups overseeing the project, to assist them in assessing their own work. Elements include formal and non-formal metrics: grades, community engagement, online networking.	Observed sense of pride and ownership in students resulted in better attendance and participation in the classroom. Behaviour improvement of students previously considered troubled.	Report available internally.	Wiki; Elana Langer, OLPC Learning Consultant (via email)
Nepal	In April 2008, XO laptops were distributed to all 135 students in grades 2 and 6 at two secondary schools in a district in Nepal.	Pilot implemented by Open Learning Exchange (OLE) Nepal - a non-profit organisation. Nepalese Government has a three-tier committee to implement wider OLPC program under the Ministry of Education: Steering Committee, Coordination Committee and Task Force.	Formative evaluation conducted by Uttam Sharma, doctoral student at the University of Minnesota Department of Applied Economics, for OLE Nepal's internal purposes. Initiated 2 months after start of program implementation	Surveys of teachers, head-teachers, students and their family, and some school management; as well as data from school records, school census, and discussions with OLE Nepal officials and meeting with teachers.	Increased student interaction through student-centred approach; increased curiosity and eagerness to learn; developed cooperative spirit as students learn to use laptops together; teacher-student relationship became more interactive and challenging, breaking down traditional lecture mode; All 17 teachers felt that the use of the XO's helped their teaching. Teachers saw great promise in reducing disparity between private and public schools.	Teacher workload significantly increased. Differences in the two pilot schools due to external pre-existing reasons raise the question of whether some schools will need more preparatory activities than others. XO use at home limited because of charger shortage. The evaluator found it difficult to measure quantitatively the positive impact of XO's on students' academic performance mentioned by teachers and parents.	Wiki; Formative Evaluation of OLPC Project Nepal: A Summary (2008); Uttam Sharma (via email).

Country	Brief description of OLPC project	Funding/ implementing institution	Who conducted the evaluation (if any) and when	Methodology	Impact identified	Issues	Source(s)
Sri Lanka	Pilot project involving 1,300 XO's deployed to all students in 9 primary schools in November 2008. Students are allowed to take XO's home.	OLPC Sri Lanka was established and is run by prominent business people and former high ranking public officials. Pilot project funded by the World Bank, and implemented by OLPC Sri Lanka, and the Ministry of Education	Evaluation being conducted by World Bank, led by Professor Anil Deolalikar of the University of California at Riverside, starting in May 2009 (baseline).	The deployment is randomised to be able to evaluate impact. In May 2009, baseline survey of 973 students in grades 1-3, drawn across eight treatment and eight control schools, was conducted. Includes surveys of the students, families, schools, principals, and teachers. Surveys planned for the end of the current school year (Dec 2010), and resources permitting, endline survey conducted in Dec 2011.	Objective of the impact evaluation is to understand effects of OLPC program on educational outcomes. Study will attempt to measure spillover effects on primary school-age siblings. It will additionally analyze the effects of the OLPC scheme on school attendance, learning practices and processes, and extracurricular and co-curricular activities to which the laptops can be an effective aid. Report not yet available.	Report not yet available.	Wiki; OLPC Sri Lanka website ; Evaluating the OLPC initiative in Sri Lanka
Region: AMERICAS							
Brazil	UCA (<i>Um Computador por Alun</i>): five pre-pilot schools in 2007. Two schools used XO's, two Classmates (Intel) and one used Mobilis (Ncore Software, India) In January 2009, following a public bid, the government announced it will use Mobilis laptops for a wider pilot of 150,000 laptops in 300 schools. Then changed to Classmate (the second place bidder).	Funding from IADB and Brazilian Ministry of Education. Implementation by Fundacao Pensamento Digital (FCP).	No funding for formal evaluation of pilot. From 2009, IADB will commence funding for a year-long research project in the 5 original trial schools which will be conducted by IADB and LSI-TEC (Integratable Systems Lab). The reports and videos are intended to describe the process of intensive use of low cost laptops in public schools. They are not considered formal evaluations.	Reports consisted of the school context, infrastructure and network problems and solutions, school management problems and solutions, 10 experiences that describe different ways the laptops were used with students and teachers, and case studies that describe in detail educational experiences that were achieved with the laptops and that wouldn't have been possible without them.	Government exam results (4th and 8th graders every 2 years) used as achievement indicators. No improvement to these exam scores were observed for public schools that received laptops. Important case studies identified include learning about Africa, developing animations using Scratch and measuring Body Mass Index.	Issues identified during deployments in the two XO schools included technical issues (outdated electrical structures, internet connectivity issues), staff (teachers have little time for training, and limited knowledge of XO's' resources) to security (no locks in rooms leading to hardware thefts).	Wiki; Marta Dietrich Voelcker, FPD (via email), Irene Karaguilla Ficheman, Ph.D (via email); Case studies – "Educational Experiences in Sao Paulo" (in Portuguese); Pre-pilot reports (in Portuguese)

Country	Brief description of OLPC project	Funding/ implementing institution	Who conducted the evaluation (if any) and when	Methodology	Impact identified	Issues	Source(s)
Colombia	Several foundations funded pilots in different areas of Colombia (working with OLPC Colombia and Ministries), covering urban/rural, primary/secondary. Estimated 20,000 in Bogota, 90,000 in Cartagena, 65,000 in Caldas region (Ministry of Education) and 1,000 in remote areas dominated by the FARC rebel group.	Different private foundations funded deployments as part of services / partnerships they have with schools, including Marina Orth Foundation and Barefoot Foundation (Fundación Pies Descalzos). Foundations and private donations were also behind the other deployments. Negropronte personally visited to oversee deployment.	One of the pilots countries (with Argentina, Brazil, Chile, Costa Rica and Uruguay) supported by IDRC to undertake evaluation.	Report not yet available.	Report not yet available.	Report not yet available.	Colombia signs up for XO laptop , BBC, 2008; Colombia signs up for OLPC laptops with Windows , CIO, 2008, Negropronte takes OLPC to Colombia , TED, 2008
Haiti	Around 100 XOs deployed in an all-female public school as a pre-pilot project. The project was conducted as a summer camp held daily from 8.30am – 12pm for duration of 3 weeks. Larger pilot expected to commence in April 2009.	The Haitian Ministry of Education and Vocational Training (MENFP) carried out the pre-pilot implementation in collaboration with IADB.	IADB and Columbia Teachers' College conducted qualitative evaluation on pre-pilot project UNESCO's Regional Office on Education in Latin America and the Caribbean will conduct standardised mathematics and language tests before and after the pilot project to evaluate its performance from a quantitative standpoint.	Pre-pilot evaluation used qualitative methods (structured observations and interviews) and tracking usage of XOs. For the pilot, qualitative evaluation will include classroom observation to gauge whether one-to-one computing affects attitudes and behaviours. The pilot will also examine how families value education, use of laptops at home, and perceived educational progress of students.	Pre-pilot evaluation identified perceived improvement in student reading and writing; Perception of the XO as a symbol of opportunity and process. UNESCO pilot evaluation report will be due 1.5-2 years from implementation.	Due to unexpected shortage of XOs in some instances one laptop was shared by two students - led to unequal sharing; Great variation in attention span (rising until around 10.30am, then declining); Greater teacher engagement decreases student distraction; Need for help in transition into constructivist learning, in-depth technical and pedagogical prior training and support throughout; Students reported feeling afraid to take laptops home.	Wiki; OLPC Pre-Pilot Evaluation Report (Haiti) ; Emma Naslund-Hadley, Project Team Leader, IADB (via email)

Country	Brief description of OLPC project	Funding/ implementing institution	Who conducted the evaluation (if any) and when	Methodology	Impact identified	Issues	Source(s)
Paraguay	<p>Deployment began in April 2009 with XO's deployed to 3,607 primary students (grades 1 to 6) and 156 principals and teachers in the Caacupe district.</p> <p>In July 2010, it was announced that the project will be expanded with XO's deployed to all schools in the Caacupe district.</p>	<p>4,000 XO's donated by SWIFT (Society for Worldwide Interbank Financial Telecommunication). Program funding from the IADB (US\$300,000) and Paraguay Educa (US\$900,000).</p> <p>Implementation by Paraguay Educa, an NGO established specifically for this purpose. Support from Ministry of Education and local government. Fundación en Alianza, Paraguayan textbook publisher, provides digital content.</p>	<p>Paraguay Educa is responsible for the design and implementation of evaluation tools. A doctoral candidate at Stanford University conducted a social and educational evaluation as an intern for Paraguay Educa.</p> <p>An external evaluation will be undertaken at the end of the technical cooperation between the stakeholders (IADB, Paraguay Educa and Ministry of Education).</p>	<p>Evaluation is described as one of three components of the program, with focus on a 'systematic evaluation that will serve as a base and follow-up for future XO implementations'.</p> <p>The evaluation is planned to cover: 1) the impact of new technologies in improving learning, 2) the impact of the pedagogical model, 3) the teaching environment, 4) Paraguay Educa's decentralised and multi-sector system.</p>	Report not yet available.	Report not yet available.	<p>Wiki; Paraguay Educa's site; One Computer Per Child - Paraguay;</p>
Peru	<p>Pilot project deployed laptops to all 46 students in a primary school in Arahua in June 2007.</p> <p>School already has 5 computers and internet connection, provided by the Ministry of Education</p> <p>In January 2008, over 40,000 XO's were deployed to other areas in Peru.</p> <p>In July 2010, the Director General of Educational Technology at the Ministry of Education announced that Peru will equip all primary students in the country with XO's in 2011.</p>	<p>Public funds used.</p> <p>OLPC Arahua pilot team consisted of consultants from General Directorate of Educational Technologies (DIGETE) Ministry of Education.</p>	<p>The MOE team produced a project report, which documents brief observations on the implementation.</p> <p>An OLPC Learning Consultant wrote progress and case study reports on OLPC Arahua wiki.</p>	<p>Observation; teacher and school staff interviews</p> <p>Reporting on progress and a number of case study reports uploaded on to OLPC Arahua wiki.</p> <p>An article on the wiki mentions that the MOE is running short term pre- and post- pilot studies with an OLPC group only.</p>	<p>School staff reported decline in absenteeism; teachers reported behavioural change, with students showing more positive attitude towards their peers and class activities.</p>	<p>To resolve server issues the implementation team had to travel to the centre of town to make long distance calls to the technical support team, which raised questions how the students/school would resolve technical issues.</p>	<p>Wiki; <i>Pilot Program "One Laptop Per Child"</i> (2007); Programa "Una laptop por niño" llegará al 100% de escuelas de primaria en 2011</p>

Country	Brief description of OLPC project	Funding/ implementing institution	Who conducted the evaluation (if any) and when	Methodology	Impact identified	Issues	Source(s)
Uruguay	<p>Ceibal Project launched by the Government of Uruguay in December 2006.</p> <p>The pilot project took place between February 2007 - March 2008 and deployed 150 laptops.</p> <p>In October 2007, following a bidding process involving OLPC and Intel Classmate, Uruguay became the first country to place a government bulk order of 10,000.</p> <p>Another order of 200,000 is expected in 2009 to equip every primary school student with an XO.</p>	Pilot project implemented by Laboratorio Tecnológico de Uruguay (LaTU), in collaboration with Canada's International Development Research Centre.	Pilot evaluation conducted internally (by Sylvia Gonzales Mujica, a project manager at LaTU who also wrote an interim report)	Pilot evaluation: literature review; interviews with informants; surveys of teachers, students and parents at pilot school and at a control school; direct classroom observation at pilot school	Pilot evaluation: Widely positive reaction from students, teachers and parents; teachers' and parents' active involvement was encouraged; many started taking computer courses.	<p>Recommended more consultation with teachers, as there were some resistance from teachers at the pilot school over lack of training; lack of national content.</p> <p>Report recommended use of collected survey data as baseline data for wider deployment; evaluate different behaviours, such as responsiveness or rejection among students, teachers, parents and wider community; outcomes of teacher training; yearly sampling and a national public opinion survey.</p>	Wiki; OLPC - Analysis of the implementation of first pilot Project number: 104261-002 (2008)
USA (Birmingham, AL)	<p>In late 2007, the Mayor of Birmingham and the city council announced an initiative to purchase 15,000 XOs to provide every student in grades 1 to 8 with one.</p> <p>In April-September 2008, 1,000 laptops were deployed to 1st through to 5th grade students at an elementary school,</p>	Birmingham City Council (funding), g8four (conducted teacher training, and ran XO camp with 27 students from grades 4 and 5)	<p>As yet unknown if formal evaluation of pilot took place.</p> <p>In an interview (Sept 08), Joanne Stephens, executive director of instructional technology for Birmingham City Schools, noted that they are trying to find an instrument to assess and track progress.</p>	As yet unknown.	As yet unknown.	Despite training workshops with 145 teachers, there were still concerns over teachers' preparedness.	"Low-cost laptop experiment under way", <i>eSchool News</i> , Vol 4, No.9 – September 2009; http://g8four.com/practice/projects/olpc/olpc-birmingham

Country	Brief description of OLPC project	Funding/ implementing institution	Who conducted the evaluation (if any) and when	Methodology	Impact identified	Issues	Source(s)
USA (Harlem, NY)	<p>Pilot school gave a laptop to each of the 24 sixth grade students at a school in Harlem, to be used for the final 3 units of a year-long Teaching Matters literacy curriculum. Students are allowed to use them in other classes if approved by teachers.</p> <p>The school already had 'laptop carts' that are wheeled into classrooms on an as-needed basis. Teachers take turns using them. At times the laptops do not all work so students have to share.</p>	Teaching Matters (content provider - <i>Writing Matters</i> , a 'non profit professional development organisation that partners with educators to improve public schools') in collaboration with NYC Department of Education	Conducted by Dr Susan Lowes (Director, Research and Evaluation) and Cyrus Luch (Research Assistant) from the Institute of Learning Technologies, Teachers College Columbia University	Post-implementation student surveys; pre- and post- implementation parent surveys; focus groups with small groups of students (mid-semester and towards end of semester); interviews with teachers and Teaching Matters staff at school.	Students used XOs more than other laptops, therefore spent more time doing research, wrote more, revised more and published more; students took much more responsibility for the XOs than the old laptops; the laptops were cost-effective.	How much of the pilot's success was due to the fact that the pilot school was chosen because of its conducive setting and the manageable size of the pilot? Will the effects be replicable?	Evaluation of the Teaching Matters One Laptop Per Child (XO) Pilot at Kappa IV (2008).
Region: EUROPE							
Austria	<p>First OLPC deployment in a school in the EU. Implementation worked with student teachers. Four classrooms were originally planned to be involved, however only one ended up taking part, with 25 XOs in a classroom of 6 year old students.</p> <p>Students will be in the school for 4 years and will have the XOs throughout. The XOs remain at school and are only activated when needed – used daily in several 30 minute blocks.</p>	<p>The Federal Ministry for Education, Arts and Culture called for participation in OLPC. OLPC Austria, a non-profit organisation which has also sponsored deployments in South Africa and Central Europe, funded the XOs. They also provided technical knowledge through their global network.</p> <p>Partnership also involves technical, training and research input from: Graz University of Technology (TU Graz) and University of Teacher Education in Styria (PHST).</p>	<p>TU Graz released a first report on the progress of the deployment in 2009.</p> <p>Monitoring done by two PHST students.</p>	<p>Two bachelor students from PHST are working on their theses by monitoring the students' progress in mathematics and writing.</p> <p>Four tests in seven months are planned to establish a pre/post-test experimental control group design. Additionally, real working time (as opposed to handling time, to distinguish from time taken to deal with technical errors) in the classrooms will be measured as well.</p>	Monitoring / evaluation report not yet available.	Due to delay in delivery, XOs were only received eight weeks after start of term. Therefore, they could not be tested to brief teachers. Some technical difficulties also made it difficult for teachers to use the XOs during lessons. Although the XOs were built to be understood without reading, some prompts (e.g. to save) are in text form, difficult as the students still cannot read.	Wiki; OLPC Austria site [olpc.at]; First Experiences with OLPC in European Classrooms , Ebner et.al, 2009

Country	Brief description of OLPC project	Funding/ implementing institution	Who conducted the evaluation (if any) and when	Methodology	Impact identified	Issues	Source(s)
Russia	Pilot test project involved the deployment of 15 XO's in Pskov and 35 XO's at a secondary school for visually impaired students (with Text2Speech software) and an ecological camp at Nizhy Novgorod Pedagogical University and School for Visually Impaired Children. Commenced in August 2008.	Funding from OLPC The Netherlands and Making Miles for Millennium. Implementation by MMM and OLPC Russia, with translators, developers and educators from Nizhy Novgorod. They aim to target the Ministry of Education, which has announced its intention of supplying a computer to every child, and a prominent Russian tycoon who has plans for buying 1 million laptops for Russian schools (although he is reportedly focusing on Asus EEE).	Two evaluation reports were included as part of project deliverables, one on the added value of the XO for students (to be done by Foundation MMM), and another with a go/no go for larger scale development (to be done by the Centre for Distance Learning Education, Nizhy Novgorod). In the project plan, the evaluations were scheduled for a 10-day period in the one-year implementation timeline.	The evaluation used a 4P (Power, Performance, Price, Portability), 4C (Communication, Collaboration, Creation, Content), 4S (Safety, Sturdiness, Serviceability, Storage) approach developed by a writer at olpcnews.com The findings were published in a series in the Russian educational press.	Compared to other mobile pc brands used in Russia, XO's found to be more power- and cost-efficient (with bulk-purchase) though their performance is at times slower. Sturdiness (after being exposed to the summer camp environmental elements) one of their strongest aspects. Important uses of the XO's in the camps included creative writing, drawing, reading e-books in .pdf formats and using software to develop their own content.	Financial concern that the actual cost of purchasing 50 XO's is about \$500 each, including fees and taxes Difficulty sourcing replacements for parts and accessing technical support	Wiki; Project Initiation Document (concept) Introduction of XO laptops for (visual impaired) school students in Pskov and Nizhy Novgorod, Russia (2008) ; Boris Yarmakhov (OLPC Russia coordinator) via email
Region: OCEANIA							
Australia	In May 2009, XO's were deployed to 3 trial schools in remote indigenous communities. Since then, wider deployment has taken place with approximately 4,500 XO's.	Implementation by OLPC Australia. Supported by funding and other support from private companies (Commonwealth Bank, Nortel, Watterson and News Limited).	OLPC Australia commissioned ACER to evaluate the impact of the laptops on teaching and learning in the 3 trial schools.	Interviews prior to the integration of the XO's; collation of empirical evidence six months following deployment, taking into account differences in student attendance, student morale and the teachers' capacity. Evaluation focused on qualitative data, combining face-to-face and telephone interviews at the start of deployment and after eight months, and email feedback from teachers during the evaluation.	Interim report has not yet been made available.	Interim report has not yet been made available.	Wiki; OLPC Australia website ; ACER

Country	Brief description of OLPC project	Funding/ implementing institution	Who conducted the evaluation (if any) and when	Methodology	Impact identified	Issues	Source(s)
Niue	Deployments in Niue started in July 2008 with the goal of being the first country in the world to achieve 100% saturation. Around 400 primary and secondary students received XOs.	Secretariat of the Pacific Community (SPC), supported by Niue Computer Society. Volunteers from OLPC Australia rolled out the servers and wireless infrastructure with local assistance, and assisted with training for teachers and Ministry of Education staff.	University of the South Pacific has been funded to conduct an in depth evaluation of the OLPC Oceania initiative with particular focus on Niue.	Report not yet available. Details will be published on the OLPC Niue wiki site.	Report not yet available.	Report not yet available.	Wiki
Papua New Guinea (PNG)	<p>Deployments began in 2009. As of May 2010 11 schools (none saturated) have received a total of 1,000 XOs with full server/wireless and solar power infrastructure.</p> <p>XOs issued with DC Power Share Solar Panels, allowing the laptops to be charged whilst in use in the classrooms, with no need for expensive fixed solar power infrastructure.</p>	<p>Funding from PNG Sustainable Development Programme (PNG SDP), a private company whose mission is to reinvest profits from the Ok Tedi mine in western PNG into sustainable community development, including education.</p> <p>Implementing partner is Divine World University, with local partners in the three areas of North Fly, Western Highlands and Telefomin District (primarily the Catholic and Baptist Education authorities).</p>	The Secretariat of the Pacific Community (SPC) and OLPC Oceania staff have reported on feedbacks received from the PNG Trials. They noted this process is not a substitute for an evaluation, for which the strategy is to work with the Departments of Education.	<p>As of December 2009, the SPC and OLPC Oceania noted that the Departments of Education is yet to develop an objectives framework and implement the M&E component.</p> <p>Based on a report posted on the wiki site on the trial deployment in Dreikikir, teacher training included discussions on evaluation. Approaches were decided by teachers and agreed with the education officials: teacher log book / diary, "oral session" to get feedback from students every morning, parent evenings and staff meetings to get feedback, a volunteer to be based at Dreikikir for 2 weeks will provide additional evaluations on behalf of OLPC Oceania.</p>	<p>Feedback collected by program staff reported enthusiastic support from teachers and increased engagement and motivation from students. Potential for children with disabilities noted.</p> <p>Evaluation report not yet available.</p>	<p>Very few issues were reported in the feedback report on PNG.</p> <p>Evaluation report not yet available.</p>	<p>Wiki; Some Feedback on Challenges and Impacts of OLPC; Wiki report on Dreikikir deployment; Visit to Jim Taylor Primary School, Kisap PNG (Part III: OLPCs in the Classroom)</p>

Country	Brief description of OLPC project	Funding/ implementing institution	Who conducted the evaluation (if any) and when	Methodology	Impact identified	Issues	Source(s)
Solomon Islands	<p>Trial began in June 2008, with XOs deployed to three primary schools in the Western Province of the Solomons as a trial program.</p> <p>The schools were selected as they are part of ongoing projects to provide internet connections to rural areas. However, they do not yet have convenient day-time power source or school servers.</p>	<p>A number of organisations were involved in the initiation and implementation of the OLPC trials, including:</p> <ul style="list-style-type: none"> • Ministry of Education and Human Resource Development (MEHRD) • Secretariat of the Pacific Community • OLPC Oceania <p>The deployment is linked to the Distance Learning Centres Project (DLCP), which is funded by the EU and NZAID.</p>	<p>In late 2009, MEHRD commissioned the Australian Council for Educational Research (ACER) to conduct a small-scale evaluation of the trials, conducted with a modest budget and within a two-month timeframe.</p>	<p>MEHRD's Monitoring and Evaluation Framework served as the basis for the evaluation.</p> <p>The evaluation relied mainly on interviews and short questionnaires, as many quantitative indicators were not available. There were no baseline data.</p> <p>To make best use of existing local skills and knowledge and to keep costs down, it was decided to train local interviewers rather than fly in external researchers.</p>	<p>Parents, students, teachers and community members see major benefits in the program. MEHRD officers also see clear potential benefits for schools. The provision of the laptops has been greatly appreciated as a step in improving learning for students. This appreciation was repeatedly expressed in interviews.</p>	<p>There have been some difficulties of a technical nature, such as battery charging of the machines in some instances. The program will be strengthened by the provision of more technical and preferably local support, by further training for teachers, and by training for parents and community members.</p>	<p>Wiki; Evaluation of the OLPC Trial Projects in the Solomon Islands</p>