Transforming Teaching Through Tablets

In partnership with:

Google & craigslist

Final Report

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Executive Summary

This report is about an ICT Pilot Program to improve Haitian teacher capacity and access to digital educational resources. Inveneo has implemented this pilot program in three primary schools in three different regions in Haiti (Petit-Goave, Hyacinthe, and Cascade Pichon) to demonstrate the benefits of using tablets in a school environment to build teacher capacity and make educational resources available for teachers.

This pilot was created in partnership with Google, Craigslist, UMCOR, Heart to Heart, and Inveneo. The team has used Google Nexus 7 tablets as the centerpiece of this innovative, replicable program to build teacher capacity and improve student access to quality education in Haiti.

Implemented over 10 months, this pilot program has provided 36 educators (including school administrators) from three primary schools with tablets. The equipment came loaded with relevant content for primary education and tools for professional development. In addition, these 36 teachers have benefited from a 60-hour training and mentorship spreading over several months to improve their confidence and capacity to deliver quality education in the classroom.
Approach

Inveneo has used the following approach to implement this pilot project

- Tablet Technical Solution and Program Design
- Pilot Teacher and Administration Capacity Building (for three schools)
- Enhancing Education with Tablets Through Access to Quality Content

Tablet Technical Solution and Program Design

This phase lays the groundwork for this program (and other larger-scale tablet deployments) by developing a tablet management system. The system includes Android and open-source tools we have developed.

Pilot Teacher and Administration Capacity Building

Capacity building started with professional development activities for teachers and school administrators. In participating schools, teachers and school administrators received Nexus 7 tablets that were filled with educational content.

Enhancing Education with Tablets in the Classroom

Teachers and administrators have participated in training and mentoring on how to use the tablets to support their activities around administration and teaching. They also became part of a network of local teachers who collaborate and share their experiences about using technology in the classroom.

Teachers now have access to a world of new tools and resources that include reference books for lesson planning, tablet use, and activities for the classroom. Through access to quality content and resources available on the tablets, teachers can better prepare activities that enhance learning in the classroom. They can make use of innovative strategies and methods that encourage student participation, therefore fostering student-centeredness in the learning/teaching process.

Participation Criteria

For a school to participate, we conducted a site survey where we evaluated the school’s infrastructure (building, electricity, connectivity). We also had an initial conversation with the administrator to talk about the project and the participation criteria. If the administrator thought his/her school could participate, then he/she had to apply and fill out an application, which allowed us to evaluate the extent to which the school would be ready to support the integration of ICT. Once the application was received we determined if the school would be selected and informed the school of its selection. In the end, teachers and administrators received the tablet as a loan, which they would own in time in exchange for full and active participation in the weekly training sessions.

Schools Location

<table>
<thead>
<tr>
<th>Name</th>
<th>Region/City</th>
<th>GPS Coordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Harry Brakeman</td>
<td>Petit-Goave</td>
<td>N 18.547628 W 72.1944268</td>
</tr>
<tr>
<td>Ecole Methodiste de Hyacinthe</td>
<td>Hyacinthe</td>
<td>N 18.36396° W 073.01108°</td>
</tr>
<tr>
<td>Ecoles Nationales de Pichon</td>
<td>Cascade Pichon, Bellanse</td>
<td>N 18.29018° W 72.01493°</td>
</tr>
</tbody>
</table>
The Training Sessions

We designed a curriculum for a 60-hour training that we split into several sessions of 4 to 6 hours per day. A typical session consists of two parts: Technical training and Pedagogical training. Teachers learn to use the tablet in ways that can support teaching and learning. The pedagogical training includes a number of modules that address learning, teaching, and evaluation. We also put an emphasis on reflective practice where the teachers learn to self-evaluate in order to improve their planning and teaching methods.

The Trainers

In terms of human resources, we had a small Haiti team that included Rico Mondesir, Ronald Benjamin, and Inveneo staff member Michelet Guerrier remotely supported by San Francisco staff members. Although we collaborated a lot on tasks, each of us had very specific roles. Later we included Moïse Lazarre, a BATI in Bellanse to support the teachers in Cascade Pichon.

Rico worked mainly on the technical side of the project setting up the tablets, using the Meraki Manager System to have control of the tablets distributed to the teachers and school administrators. He has also designed the modules for the technical tablet training about the use of tablets.

“My experience at the TTT project was fruitful; it allowed me to better-identify Haitian education system weaknesses. Now, it is clear that integrating ICT in education can improve…the Haitian education system.” Rico Mondesir, Trainer

This experience of training rural teachers to use ICT has taught Rico that Haitian teachers in these areas have needs that must be taken into consideration. Therefore, the need to integrate ICT into the Haitian education system at all levels and train more teachers is imperative.

“In my personal opinion, the use of tablets in education can help solve a big part of the difficulties facing teachers and students [who try] to access resources for teaching and learning,” says Michelet.
The Teachers
The teachers are the direct beneficiaries of the TTT project. There are 36 that have gone through the process.

Age of Teachers

- Under 30: 31%
- In thirties: 22%
- Above 40: 30%
- Above 50: 17%
Note: There were 1,183 students impacted by this program.
Results

The results of the program were focused on the direct impact for schools and students in Haiti and a replicable model for larger-scale tablet deployments in education, capacity building, and access to educational resources. The program has allowed the creation of Android-Tablet training, Curriculum, and Pedagogy-related Training modules made available on the tablets.

Project Evaluation

We have used a very simple mechanism to ensure and evaluate the success of the project. From the very beginning, we involved the school administration in almost everything. Besides their commitment to providing the necessary infrastructure for implementation, they were also responsible for leading their teachers to actively participate in the training sessions and do whatever was required from them.

We administered three surveys to the teachers: before, during, and after the training was completed. And since the teachers received the tablet as a loan, they were required to create a learning portfolio, which was another way we evaluated their participation and learning. The tablet loan became their permanent possession upon submission of the portfolio, which we also used as the project post-evaluation.

Project Impact and Stories

The impact of this project will multiply with years. All 36 teachers are now digitally literate, having access to a world of resources for personal and professional development. Being part of a teacher’s network for continuous learning through exchange and collaboration, we do expect better classroom instruction that engages students in their own learning. Besides the personal tablet each teacher has, the school administration also receives a newer version of the Google Nexus 7 tablet and a projector that the teachers can use to share content and teach with the tablet. Although the number of teachers is small, we anticipate that more than a thousand students will be impacted by the program every year through these teachers we have trained. Let us share with you a few quotes from the participants to give you a better view of the project’s impact.

“This training has been a means for me to improve or change the way I work to improve myself as a teacher and have a wider view for my professional life through research and professional training. The tablet used in this program is a very good technical and pedagogical tool. I will make it my best friend for learning and teaching.”
- Emilien Renault, Methodiste de Hyacinthe

“This training enhances the quality of teaching in Haiti. When our teachers learn about technology, [they] get access to resources and new ways of teaching, [and] learning is easier for our children. Teachers can be more creative and confident in their work.”
- Thony Dominique, Director at Methodiste de Hayacinthe

“The tablet is a tool that brings me new methods for learning and teaching.”
- Cinéus Erius, Methodiste de Hyacinthe

What I remember is, if you want to be a successful professional, respected, knowledgeable and always up-to-date, you should always train…and do proper research in the profession you do to be more-or-less with the changing times.”
- Marie-Thérèse Philibert, Primary section director at Harry Brakeman school
“This tablet allows me to search and navigate the Internet. It has also helped me with word processing, communication by [e]mail, listen to music, taking photos, [and] recording audio and video. In one word, using this tablet has made me a bookworm thanks to the digital library, which serves me well as an educator. With this program, participants who have mastered well its different modules have the ability to change the way they teach in order to make knowledge more accessible to learners.”
- Catherine Sincère, Harry Brakeman school.

“My tablet is my teacher. As an educator…with the documents on my tablet, I have realized that I have things to work on to become a better teacher. I hope this is true for most of us.”
- Chango Noncent, Director at Ecole Nationale Bois-de-Lance in Pichon

“I will not be able to find the appropriate words to talk about the benefits of this tablet. I just know that you have put more knowledge in our hands.”
- Vitane Jean, Ecole Nationale Nan Hauteur in Pichon

Colbert Jean-Louis is happy that he created his email account successfully. Bellanse, July 2014.
Alcy David and Pierre Lamirais figures out how Gmail works. Bellanse, July 2014.

Session on "Learning Styles". Cacade Pichon, May 2014.
Opportunities

One key aspect in Inveneo’s projects is empowerment and capacity building. We believe that one way we can help improve life in underserved communities is through the development of local capacity. Although rare and small in numbers, when available, local resources in remote regions can be great assets in training teachers. That has been very helpful during this pilot. When we met the teachers for the first time, we administered a survey that allowed us to collect basic information about each of them. That helped us identify whom to give extra support and training. Fortunately, these resources existed in Hyacinthe, Petit-Goave, and Cascade Pichon. Once identified, we worked together to develop strategies for peer teaching and remote coaching, which we hope to keep throughout the years to come.

From our experience, the use of tablets and technology in schools can give high-quality digital content to thousands, and even millions, of people who live in underserved communities. This is a great opportunity to start closing the gap between city and rural teachers and students in Haiti. When the technology is deployed with appropriate training and local capacity building, the outcomes are hugely beneficial and long lasting.

Challenges

One of the biggest challenges we had to face during the course of this project was traveling to the training sites. Hyacinthe, which is located 27 KM from the city of Petit-Goave, is not easy to reach by car. There is absolutely no pavement and the road is all rocky. Cascade Pichon is probably the most difficult place we have been to so far. When it rains, it becomes just impossible to get there not only because part of the road gets muddy and more dangerous, but also a river that overflows keeps the community...
apart. Although we moved to the schools for the training, most of the teachers walked hours to attend the sessions. We praised their motivation and commitment!

Internet connectivity came as the second big challenge. Not yet quite available in Hyacinthe and Pichon, the teachers had to travel to Petit-Goave and Bellanse respectively to attend a few sessions that required connectivity. Although we had sessions in the city of Petit-Goave where Internet access was supposed to be easy at the school site, that was not always the case. When electricity was down, the Internet was also down. Electricity in the city was rarely available for the time of the training. And the alternative power options the school had at the time of the site survey did not always work as expected. That greatly affected our planned teaching sessions. We sometimes had to move to the Methodist Church nearby to use their generator.

For the sessions in Cascade Pichon, the scenario was a little different. We knew that Internet access would not be available in that community, but we believed the program would still benefit those teachers in need for training. With the support of Heart to Heart and the local organization in Pichon, electricity was not a problem at all during the training. However, teachers had difficulties charging their tablets once they left the training building. But fortunately there are places where they can pay about 25 HTG to recharge them almost on a daily basis.

With the new school building that Heart to Heart International is working hard to get ready for the academic school year of 2014-2015, it is also planned to equip the school with solar energy. That will probably solve part of the charging problem for the teachers.
Lessons Learned

Based on lessons learned, the following conditions have contributed to the success of the program:

- Integration of school administration in the implementation phase
- Participation and strong support from school administrators
- Good knowledge of the environmental and teaching context of the schools
- Training that is relevant to the teachers’ needs and interests
- Availability and commitment of teachers to participate in training sessions
- Commitment of administration to support teachers to complete training activities
- Use of Learner-centered approach for training
- Efficient use of existing local resources in schools for peer coaching
- Long term support to teachers

We also understood that more reliable electricity, wireless networks, and Internet at the school setting or at the teachers’ home would have made the program more successful.

The Google Nexus 7 tablet has proven to be a very good tablet that adapts well with the Haitian environment. Protected with a perfect Gumdrop case, the teachers love it because of its high-quality resolution. Also, it responds quickly to the user’s commands. However, we have learned that a tablet that takes a SIM card would have solved part of the connectivity problem we faced. While it can be costly for a school to pay the monthly fees for Internet connectivity, each teacher can individually add a few gourdes (Haitian currency) on their SIM card to use Internet on their tablet. And access is not limited to one place.
The Nexus 7 donated to the teachers has a 6 GB storage capacity. We found enough space for all the apps installed and content developed for the technical and pedagogical training. But the teachers think they would need some more space for personal documents in the future. If the Nexus had an SD port, that would surely solve the problem of storage capacity.

A few of the teachers adapted more quickly to using the tablets than others. Teachers who had an initial training either at ENI (Ecole Normale Instituteurs) or EFACAP (Ecole Fondamentale d’Application et Centre d’Appui Pédagogique) could adapt at a faster pace to the training material presented compared to the ones who had no training in pedagogy or who did not complete secondary.

Sustainability and Replicability

Several elements make this program sustainable. First of all, because the program used the tablet as a means to an end, the impact of the program will be seen even after all tablets are gone. The training provided has shaped new behaviors, and teachers and students will continue to benefit from that. A second element is that the tablets run using Android; it is almost maintenance-free and easy for users to install newly released applications.

A third element is the training content available on the tablets. All the training material (technical and pedagogical) we developed is in its digital format. So teachers will always have access to them whenever they need to review something about any of the modules. All these resources are free for them to use to train other people in their community.

The fourth element is the local capacity building mentioned earlier. When it comes to teachers who have received extra training and support, we believe that they have gained confidence to work with others, therefore implementing what we call the “culture of collaboration” among teachers. This will ensure a continuing professional development that benefits the whole community through the transformation of teaching practices.

The fifth and last element here is the commitment and contribution of school administration and teachers. The program belonged to them, and they understood and valued the program as their own. As a result, they have learned to work together to improve ICT in the school setting and that is not a one-time investment. It requires time, human, and financial resources. Together they can and Inveneo hopes they will.

Considering that we have worked with very challenging schools, this model can easily be replicated to reach more teachers in less challenging areas of the country (or the world), providing them with access to educational resources and professional development. Inveneo hopes that this report could guide and inspire other institutions either in replicating or better implementing ICT projects in schools in Haiti and elsewhere.

Tablet Setup and Educational Applications

All tablets in the hands of teachers are set up exactly the same way with CATEGORY FOLDERS on the home screen containing each a number of applications. Below the category folders are the basic apps that the teachers can easily access. Each tablet has more than 50 applications installed.
Basic overview of the main screen.
“Math & Sciences” is one of the folders that contains educational applications and resources that support the learning and teaching of math and sciences in primary school.
“Histoire & Géographie” includes offline educational applications and resources that support the learning and teaching of history, general knowledge, and locations.
“Langues” is probably one of the favorite folders of the teachers because it contains reference books (written and audio dictionaries, grammar, and French exercises) that the teachers use for lesson planning and classroom instruction.
“Communauté” is the folder that contains communication tools the teachers use to connect with peers to share and collaborate.
“Bureautique” refers to office applications similar to Microsoft Office in Windows. Kingsoft and Quickoffice do exactly the same work: word processing, spreadsheet, and presentation. They also allow the user to convert and read PDF files.
“Arts & Musique” has a few apps to have fun with music and musical instruments. These apps offer the possibility for learning about musical instruments and the sounds they make.
“Spiritualité”… Haiti is a very religious. With the demand of the teachers, we added this folder with the Bible and book of religious songs in French and Haitian Creole. They are also great resources for reading, poetry, and storytelling.
"Recherche" is the folder with the digital library of hundreds of books, along with Wikipedia, Google, and YouTube. The library is an offline app the user can access wherever and whenever he/she wants.
Conclusion

The Transforming Teaching through Tablets program was carefully designed with the Haitian teachers’ needs in mind as we had learned helpful lessons in previous programs implemented in schools in Haiti. We worked closely with the school administrators to ensure the program would have all its relevance to the teachers’ needs and interests. We understood the need for technology, but we also worked hard to improve access to quality content and resources that support the learning/teaching process through pedagogy that goes beyond technology.

A key component of this pilot program was the focus on the ability for teachers to work collaboratively and reflect on their teaching practice and the students’ learning. Throughout the process the teachers produced a number of reflections (self-reflections) on different topics relating to teaching, learning, evaluation, and classroom practices. That encourages the development of an independent learning culture, which is a very important aspect of continuing professional development.

The enthusiasm, motivation, and interest for learning about technology and improving education showed that our teachers have gained an awareness of the challenges in the teaching profession and the need to develop and teach new competencies to students in the 21st century. We see this as an important step to improving the quality of education in rural Haiti. We are proud to have implemented this pilot project benefiting teachers in areas that are in need. Again, we hope this report could be helpful to anyone with ideas for deploying and implementing technology projects in Haiti and in rural schools around the world.
Sponsors and Partners

Inveneo is proud to partner with other organizations to make this project possible. We would like to thank UMCom, Library for All, Gumdrop Cases, Heart to Heart, the Craig Newmark Philanthropic Fund, Google, and the United Methodist Church of the Resurrection for being a part of this continued project in rural Haiti.

About Inveneo

Inveneo is a non-profit social enterprise working to bring ICT tools to the organizations that need them most, particularly those in rural and remote parts of the developing world. Inveneo designs and delivers integrated ICT solutions, including low-power-consuming hardware, open source software, and connectivity that are designed to be sustainable in these settings. Our clients are primarily NGOs, governments and private sector organizations that deliver critical education, relief, healthcare, microfinance and other services to underserved communities. In addition to designing sustainable ICT solutions, the Inveneo Certified ICT Partner Program (ICIP) trains and certifies in-country ICT entrepreneurs to be capable of installing and supporting projects in low-resource settings. More detailed information about Inveneo and the ICIP programs may be found at www.inveneo.org