



A CONNECTED PLANET
BRIDGING THE DISTANCE FOR EVERYONE'S FUTURE

Phase II: Pilot Program

Final Report



November 2014

Introduction

The mission of ACP is to provide telecommunications and technical assistance for information sharing in education and medical services for children in developing countries. The organization evolved from volunteer work performed in Haiti by the founders. While working in Haiti, we saw an abundance of donated computer equipment; however, much of it was antiquated and inoperable. We received numerous requests to help get the systems running and to find ways to power the systems. We also received a number of requests to help establish Internet services. Our first computer efforts involved the distribution of laptop computers. Our initial Internet connectivity efforts revolved around dedicated satellite connections. Although these efforts worked, we still experienced a number of problems powering the systems and inevitably system maintenance was required which meant we had to return to correct problems.

The problems we encountered led us to look for a better solution. The emergence of low cost tablet computers and 3G Internet data services presented a solution that was not previously available. The devices are configured with both WI-FI and GSM/CDMA cellular service. If any problems are encountered with the device, it can be reset to the factory baseline with the selection of a single option. Most importantly, the device can be powered with a simple \$10 solar charger.

The study described in this paper is required to fully document how the tablets will be used by the recipient organizations, specifically schools. These organizations understand the usefulness of technology, but successfully integrating them into the day-to-day operations of the organizations requires forethought. Additionally, tablet computers require a significant paradigm shift and changes to operations at all levels of the school. In order to successfully integrate tablets into a school's curriculum: current operations, including teacher's pedagogical approaches; managerial changes; and, operational changes will be required. This study will

identify, measure, and recommend the changes necessary to produce a successful tablet program with our partner organizations in Haiti.

Education is a powerful predictor of an individual's future opportunities. 70 % of Haitian schools are not accredited while 60% of its teachers do not hold proper teaching qualifications. Moreover, the inequality promoted by the current education system is easy to see as poverty is passed from one generation to the next. 90% of household heads who live in poverty have no or only primary level education. Sadly, the current school age generation does not show any statistical education gains: therefore, the levels of poverty will be sustained at the very least.¹

This research contends that education is a necessity for progress in developing nations such as Haiti. An inability to access education is a social injustice to the children of these nations. We recognize the time, energy, and money required to build, maintain, and operate a school is quite high; therefore, ACP seeks to increase the return on each education site by working one-on-one with our partners to advance their institutional capacities and accelerate their desired outcomes. This research project strives to answer the question of what are the best practices for implementing technology in the classroom in a developing country. Additionally, this study will contribute to a long-term study and larger body of work which answers the question: Does implementing tablets increase student success in the classroom? This section will be followed by a section which reviews of literature of relevant research in the field, a concise methodology section, in section of findings, analysis and discussion; and, finally, a conclusion.

¹ Insight, Global. "Haiti. May 29, 2007; The World Bank." *Haiti: Options and Opportunities for Inclusive Growth*: 118-121.

Literature Review

This project seeks to maximize the usefulness of tablets to schools in Haiti by identifying the best practices for implementing technology in the classroom. As we are seeking to identify the required changes in our partner organizations, a review of the literature discussing the research of others in regards to tablets in the educational environment is in order. It is important to note that the basic differences in societal structure make some comparisons difficult, but there many underlying principles that ring true regardless of the socio-economic circumstances and societal structure. On some level, human beings are just human beings and kids are just kids.

Even prior to the devastating earthquake of 2010, education problems in Haiti were widely acknowledged. Efforts were made by the Haiti government to reform education² include the Haitian National Plan of Education and Training of 1997 which sought to, in part, change the Haitian educational model from a teacher centered model of learning to a student centered model of learning: a movement from elitism to inclusivism. Essential to this pedagogical paradigm shift is the training of teachers to use tools that support student centered learning. Advancements in technology have made student centered learning a reality in the developed world and have the potential to do so in developing nations. The use of mobile learning devices simplifies implementation of technology in the field.

Mobile learning is learning that uses mobile technologies like tablets that provide “unparalleled access to communication and information.”³ The devices are inexpensive and are

² Marc Prou, "Attempts at Reforming Haiti's Education System: The Challenges of Mending the Tapestry, 1979-2004," *Journal of Haitian Studies* 15, no. 1/2 (2009), <https://www.questia.com/read/1P3-1984710801>.

³ Shuler, Carly, Niall Winters, and Mark West. "The future of mobile learning: Implications for policy makers and planners." (2012).

multipurpose in functioning unlike previously utilized technologies such as the PC.⁴ The problems of these older technologies such as long boot up times and software problems promoted loss of interest by both teachers and students. The new mobile learning devices such as tablets systems are easy to use and integrate.⁵

Larger screens, an increasing variety of interactive apps, greater processing power, greater battery power and the availability of audio and video recording software can be argued to make Tablets more functional than other mobile devices, and as the prices of Tablets continue to come down these functions are becoming available to schools at ever-lower cost.⁶

Mobile technology enables more personalized learning and is more affordable.⁷

Students can learn on their own terms; and, therefore, learning becomes more self-directed.⁸

Researchers have found that personalization, collaboration and authenticity to be the benefits of the use of mobile technology in education. The mode offers a degree of independence to students. Students can personalize their learning by adapting learning content to meet their needs. Learning becomes more authentic because lessons are relevant to the student.⁹ Apps that

⁴ Shuler, Carly, Niall Winters, and Mark West. "The future of mobile learning: Implications for policy makers and planners." (2012).

⁵ Johansson, Sara. "Pedagogers adaption av surfplattor : En studie av implementeringen av iPad i en F-5 skola", Umeå University, Department of Informatics. (2012).

⁶ West, Darrell M. "Mobile Learning: Transforming Education, Engaging Students, and Improving Outcomes." *Brookings Policy Report* (2013).

⁷ Shuler, Carly, Niall Winters, and Mark West. "The future of mobile learning: Implications for policy makers and planners." (2012).

⁸ Wong, Lung-Hsiang. "A learner-centric view of mobile seamless learning." *British Journal of Educational Technology* 43, no. 1 (2012): E19-E23.

⁹ Kearney, Matthew, Sandra Schuck; Kevin Burdenan; Peter Aubusson. "Viewing Mobile Learning from a Pedagogical Perspective." *Research in Learning Technology*, v20 n1 (2012).

are available for these tools help in the assessment process. The continuing electronic evaluation allows students to assess their own learning and promotes autonomy.¹⁰

Teacher's attitudes are very important in the success of integration of the new technologies. Churchill et al found that the teacher's perceptions greatly impact adoption. Teacher's attitudes toward the technology may impact the affects of tablets on learning by students. The greater the independence students had in using technology, they more they were stimulated to learn. Additionally, teachers found it easier to produce and launch content.¹¹

Teachers, on the other hand, found the training was important when dealing with new technology.

Several teachers found planning for the Tablet challenging, and felt that they had not been sufficiently informed about technology before it was introduced. Teachers requested more training, which included technical advice, lists of useful applications, pedagogical discussions, and time to get used to the device.¹²

Barbie and Svanaes model¹³ of acceptance takes teacher training and other areas of importance into account. The authors suggest using this model to monitor one-to-one Tablet adoption and evaluation of factors in favor (or against) implementation. One-to-one implementation is not feasible in our current environment, but the use of the model to evaluate

¹⁰ West, Darrell M. "Mobile Learning: Transforming Education, Engaging Students, and Improving Outcomes." *Brookings Policy Report* (2013).

¹¹ Churchill, Daniel, R. M. K. Fox, and Mark King. "Study of affordances of iPads and teacher's private theories." *International Journal of Information and Education Technology* 2, no. 3 (2012): 251-254.

¹² KARSENTI, Thierry, and Aurélien FIEVEZ. "The iPad in education: uses, benefits, and challenges." (2013).

¹³ Clarke, Barbie, and Siv Svanaes. "An Updated Literature Review on the Use of Tablets in Education."

the factors involved in implement is quite relevant. An explanation of the factors¹⁴ used in the model will follow:

Factors Necessary for Adaption:¹⁵

- 1) Devices qualities include size, portability, battery life, interactivity, connectivity, ease of use, “always on”, availability of apps, access to up to date content in multiple modalities, recording software.
- 2) Teachers’ previous experience with and confidence in using ICT (Information Communication Technology)
- 3) Pedagogical benefits include communication, collaboration, independence, metacognitive skills, motivation, “anytime, anywhere learning’, personalization and customization, organization, *impacts of children with SEN (SEN not relevant to our application)*
- 4) *Pedagogical vision behind the use of Tablets and plans for management of devices.*

These factors necessary for adaption are addressed in the methodology section and lead to a “Culture of Use.”¹⁶ It is this culture of use combined with technical support; pedagogical/administrative support; professional development/collaboration/idea sharing among educators; and pupil involvement which leads to the development of Tablet use over time.¹⁷

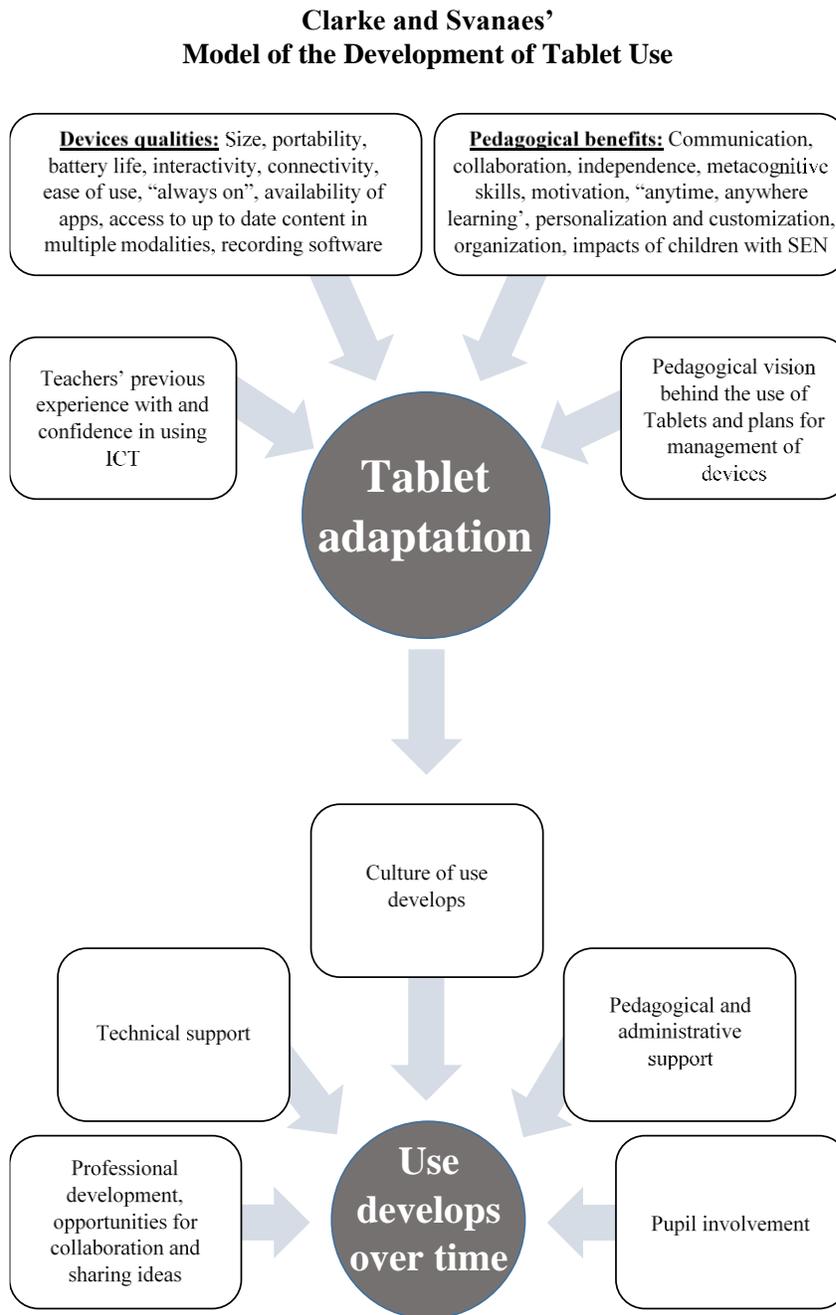
¹⁴ Clarke, Barbie, and Siv Svanaes. "An Updated Literature Review on the Use of Tablets in Education."

¹⁵ Clarke, Barbie, and Siv Svanaes. "An Updated Literature Review on the Use of Tablets in Education."

¹⁶ Clarke, Barbie, and Siv Svanaes. "An Updated Literature Review on the Use of Tablets in Education."

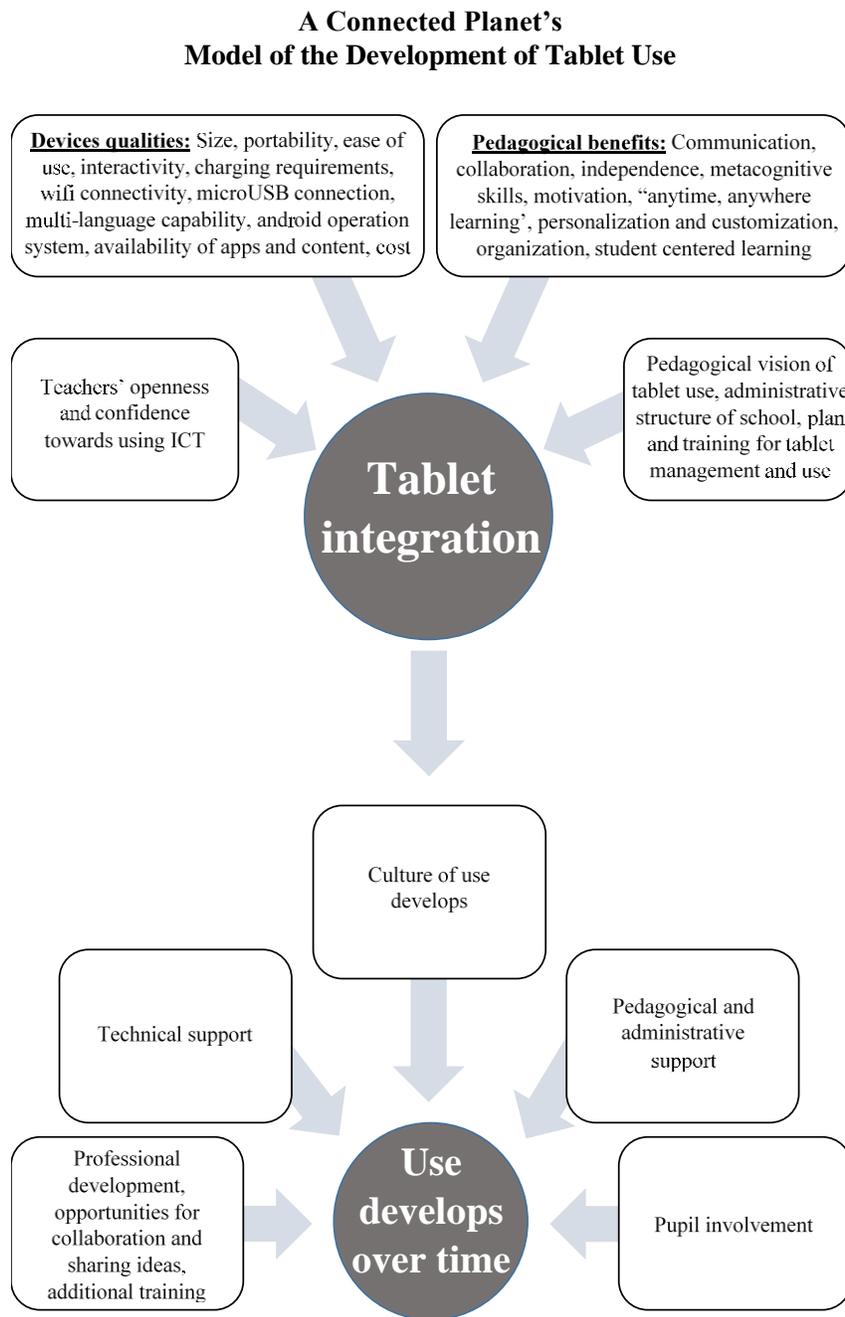
¹⁷ Clarke, Barbie, and Siv Svanaes. "An Updated Literature Review on the Use of Tablets in Education."

Figure 1. Clarke and Svanaes' Model of the Development of Tablet Use



The following methodology is based on an adaption of the factors in Barbie and Svanaes' model. In this study, we seek to answer the question – what are the best practices for implementing technology in the classroom in developing nation? It is, therefore, important that the technology is accepted.

Figure 2. A Connected Planet's Model of the Development of Tablet Use



Method

Partner Selection

Partner Locations and Program Sponsors. Eight potential partner locations were visited and assessed, by ACP researchers, over a three and a half week Discovery Study in November of 2013. Two partner locations were selected to participate in the Pilot Program based on their assessed operational fitness, administrative structure, and location. The first partner location was The Society of Our Lady of the Most Holy Trinity Mission (SOLT) located in Kobonal, Haiti. The Program Sponsor of Kobonal was Father Glenn Meaux. The second partner location was the Haiti Community St. Rose of Lima School (Haiti CSR) located in Jacsonville, Haiti. The Program Sponsor of Jacsonville was Gabriel Thelus.

Designation of Project Manager. A Project Manager was designated for each partner location. The Project Manager was responsible for adhering to the Project Management Plan, and ensuring that the responsibilities of the Tablet Administrator and Teachers were fulfilled. The Project Manager was the point of contact for any issues and was held accountable for all of the tablets. The Kobonal School Project Manager was Philo-Jacques Bernard and the Jacsonville School Project Manager was Micul Pierre, the school principal.

Participants and Provision of Resources

ACP Research Team. The ACP Research Team consisted of a total of five people: the Project Manager, Greg Hearne, who was responsible for overseeing the Pilot Program, and the Senior Methodology Advisor, Sheila Hearne, who was responsible for overseeing the methodology component of the Pilot Program. The ACP in-country team included the Country Director, Benjamin Boggess, and Project Director, Joshua Hearne. Benjamin has extensive experience implementing programs and conducting research in Haiti, and is fluent in English, French and Haitian Creole. Joshua has strong expertise in research methodology and in

conducting projects in a social science-based environment. An educational subject matter expert, Stephen Edwards, ensured all educational components of the program followed educational theory.

Selection of Grade Levels and Subjects. Grade levels 1st, 3rd, and 5th were selected, after completion of ACP's Discovery Study, for the diversification of age range and the limited availability of participants. In addition, the 5th grade was specifically chosen to participate in the program in order to compare their exam scores over time (see Section 1.4 Data Collection for further details). At the Kobonal School, a total of six classes, two out of three total classes per selected grade levels, were provided tablets. At the Jacksonville School, a total of three classes, one existing class per selected grade levels, were provided tablets.

During the Pilot Program and for data collection purposes, tablets were only used in the mathematics and science subject areas. The ACP educational subject matter expert assisted with the development and review of all education-related items. ACP did not retain any Personally Identifiable Information (PII).

Selection of Teachers and Tablet Administrators. Teachers were defined as the individuals who were selected to use the tablets in their classrooms. They were selected based upon the recommendation of the School Administration and approval of ACP. Teachers were under the supervision of their school's principal. The Kobonal School had twelve total teachers, per the six classes, six teachers taught with the tablet and six were assistant teachers. The Jacksonville School had three total teachers, per the three classes.

Tablet Administrators were defined as the individuals, at each partner location, tasked with the charging, maintenance, safekeeping, logging, application searching, application loading, and application usage reporting of the tablets. They were selected based upon the recommendation of the School Administration and approval of ACP. Tablet Administrators were

under the supervision of both the school principal and Project Manager. The Kobonal School had two tablet administrators and the Jacsonville School had one.

Selection and Provision of Tablets and Power. The selection of tablets was based upon research and testing of the available tablets on the market. Tablet selection requirements included cost efficiency, having Wi-Fi capabilities, a micro USB connection, Secure Digital (SD) storage, French language capabilities, and use an Android operating system. A local tablet manufacturer, Sûrtab, in Port-au Prince, Haiti, was selected to produce the tablets. The purchasing of tablets in Haiti helped to boost the Haitian economy; avoided issues with import and custom fees; and, simplified the returns and repairs of the tablets.

The Kobonal School was provided fifty tablets and had the necessary resources required to charge the tablets. The Jacsonville School was provided twenty-five tablets and did not have the necessary resources to charge the tablets. ACP provided the Jacsonville School with two 85 Watt solar panels, four batteries, an inverter system, cables, and three surge protectors to charge the tablets. Both locations had limited access to Wi-Fi.

Provision of Applications. Initial requirements for applications included open source (.apk file) based applications that, if needed, could be modified to include google analytics for more detailed research on the tablet usage and allow the ability for the application to be translated from English into French and Haitian Creole. During the personnel training, ACP asked teachers to fill out a curriculum content request sheet, for the duration of the Pilot Program, specifying subject areas in which tablet assistance would be beneficial to the their lesson plans. ACP then searched for and provided the Tablet Administrators with numerous applications relevant to the teachers' requested content. Tablet Administrators were trained and tasked with searching for relevant applications, upon completion of the Pilot Program (see Personnel Training: Tablet Administrator Application Training for further details).

Personnel Training

Tablet Administrator Configuration and Handling Training. Tablet Administrators were trained on tablet configuration and handling, by the ACP team, during weeks 0-1 of the Pilot Program. The School Administration had the option to attend the training. Follow-up informal training was given, as needed, throughout the Pilot Program.

A Tablet Administrator Training Plan was created to assist in the training. It detailed the areas that needed to be addressed in the tablet administrator training sessions including general use, maintenance, safekeeping, distribution, logging, application loading, and application usage reporting of the tablets. The Tablet Administrator Training Plan can be found in Appendix A.

Tablet Administrator Application Training. Tablet Administrators were trained on searching for applications on the web, using the Internet (referring application websites) and using Google Play Store, by the ACP team, during weeks 6-7 of the Pilot Program. Follow-up informal training was given, as needed. The Tablet Administrator Training Plan can be found in Appendix A.

Teacher Tablet Instruction Training. Teachers were given tablet instruction training, by the ACP team, during weeks 0-1 of the Pilot Program. The Tablet Administrators were also required to attend the training. The training acclimated teachers to using the tablets and prepared teachers to assist ACP in conducting the student tablet instruction training. Follow-up informal training was given, as needed, throughout the Pilot Program.

A Teacher Training Plan was created to assist in the training. It detailed the areas to be addressed in the teacher training sessions including how to handle, use, and integrate the tablets into the classroom, as well as specifying the standard procedures for checking in and out tablets. The Teacher Training plan can be found in Appendix B.

Teacher Classroom Integration Training. Teachers were required to attend two teacher classroom integration trainings, during weeks 2-3 of the Pilot Program. The Tablet Administrators were also required to attend these training. These trainings were added, during the program, in response to the needs of the program. The first training at the Kobonal School occurred before the teachers taught their first lesson using the tablets to their class. It consisted of three teachers teaching a mock lesson plan to fellow teachers to show them ‘how they would use the tablets’. The teachers were pre-selected by the School Principal based upon their expected high performance. The first training at the Jacsonville School occurred before the teachers taught their first lesson using the tablets to their class. It consisted of watching a recording of the Kobonal School teacher training and then having all three teachers at the Jacsonville school teach a mock lesson plan using the tablet.

The second training was held after ACP’s educational subject matter expert observed the teachers’ first time teaching using the tablets at the Kobonal site. ACP’s educational subject matter expert worked with the ACP in-country team to provide a list of recommendations going forward to help teachers in learning and transitioning to using the tablet as a tool. During this training, ACP reviewed and discussed the recommendations with the teachers and addressed other general concerns regarding the implementation of the tablets in the classroom. The same meeting, using the recommendations gathered from the Kobonal School, was held with the Jacsonville School teachers, tablet administrator and school principal before the teachers’ first time teaching using the tablets.

Student Tablet Instruction Training. Students in all classes and grade levels who received the tablets were given a student tablet instruction training (class), during week 1 of the Pilot Program. This training was added, during the study, in response to the needs of the program. The training was co-taught by ACP and the class teacher(s). The training assisted the

teacher with the initial classroom integration, acclimation of the students to using the tablets, and helped to reinforce the teacher training.

A Student Tablet Instruction Training Plan was created to assist in the training. It detailed the areas to be addressed in the student training sessions including how to handle and use the tablets. The Student Tablet Instruction Training Plan can be found in Appendix C.

Procedure

Primary Question: What are the best practices for implementing technology in the classroom in developing nations?

Pre-Program Teacher Questionnaire. A pre-program questionnaire was given to all fifteen teachers at the beginning of the Pilot Program, at the end of the student tablet instruction class, to measure their attitude towards and expectations of the tablet implementation program. A total of ten questions were used, five rating scale questions and five open-ended questions. A rating scale from 1 to 10 (low to high) was used. The open-end questions were guided and phrased in a way that required teachers to respond in detail. Demographics (sample size, age, gender, highest education level, and years of teaching experience) were asked but are not included in the question count. The questionnaire wording was reviewed for language barrier discrepancies and translated into French. The pre-program teacher questionnaire can be found in English in Appendix D.

Pre-Program Student Questionnaire. A pre-program questionnaire was given to the 1st, 3rd and 5th grade students at the beginning of the Pilot Program, on the first day of tablet usage, to measure their attitude towards school and expectations of the tablet program implementation and usage. A total of five rating scale questions, on scale from 1 to 5 (low to high), were used. Demographics (sample size, age, and gender) were asked but are not included in the question

count. The questionnaire wording was reviewed for language barrier discrepancies and translated into Haitian Creole. Demographics for the 1st grade classes were also collected. The pre-program student questionnaire can be found in English in Appendix E.

Observations. Observations were conducted for all three grade levels a total of five times. The first observation was of the student tablet instruction training. The remaining four observations were conducted when tablets were being used in the lesson plan. ACP coordinated with the school administration every two weeks to schedule lesson plan observation times. Kobonal observations were conducted over two to three day periods. Jacksonville observations were conducted over a one day period. Due to power issues at the beginning of the Pilot Program, Jacksonville's 3rd grade class fell behind schedule for one observation which was made up during week 6-7. Additional days were built into the Pilot Program project management plan schedule to account for school holidays and unexpected delays. An ACP translator was present during the observations.

Observation templates, detailing expected changes to look for and questions to answer for each observation, were created for each of the four lesson plan observations in order to keep observers focused and minimize observer biases. Each lesson plan observation template included a theme of baseline integration, low integration, medium integration, and high integration. The observation templates can be found in Appendix F.

Post-Program Teacher Questionnaire. A post-program questionnaire was given to the teachers at the end of the Pilot Program to measure their attitudes towards the tablets, collect their thoughts on the length of time of the implementation, self-report behavioral changes in themselves and their students and to determine if their expectations of the tablet implementation and usage were met. A total of ten questions were used, five rating scale questions and five open-ended questions. A rating scale from 1 to 10 (low to high) was used. The open-end questions

were guided and phrased in a way that required teachers to respond in detail. The questionnaire wording was reviewed for language barrier discrepancies and was translated into French. The post-program teacher questionnaire can be found in English in Appendix G.

Post-Program Student Questionnaire. A post-program questionnaire was given to the 3rd and 5th grade students at the end of the Pilot Program to measure their change in attitude towards school and the tablets. Due to a complete lack of comprehension seen in the pre-program questionnaire, 1st graders were not give a post-program student questionnaire. A total of five questions were used, four rating scale questions and one open-ended question. A rating scale using smiley faces that were coded from 1 to 5 (low to high), was used. The open-end question was guided and phrased in a way that requires students to provide personal feedback about the Pilot Program. Demographics (sample size, age, and gender) were asked but are not included in the question count. The questionnaire wording was reviewed for language barrier discrepancies and was translated into Haitian Creole. The post-program student questionnaire can be found in English in Appendix H.

Secondary Question: Does implementing tablets increase student success in the classroom?

Kobonal School Exam Scores. The Kobonal School location had multiple classes per grade level which allowed for a control group and an experimental group. The control group did not receive tablets for the Pilot Program. Average monthly exam scores were collected for November, December, February, and March of 2014. These four months were selected based upon availability and because they are most relevant to the time period in which the Pilot Program was being conducted. Additional exam scores will be collected for the three months after the study based upon availability. The Kobonal School Project Manager was responsible for providing monthly exam scores to ACP via email, after the two month Pilot Program.

It has been discussed and planned that the same students will be using the tablets over time. Data collection will continue as long as the tablets are being used until each class reaches the end of the 6th grade and this data will be used to compare exam scores over time. This long term data collection will allow a comparison at the end of the 2015 school year of Kobonal School's current 5th grade class who will use the tablets through next year and their final 6th grade national exam score. These exam scores will also then be compared to the 2015 6th grade class at Kobonal School's control group, Pignon's (a nearby town) 2015 6th grade average, and the Haiti 2015 6th grade national average. If possible, the last six years of 6th grade final and monthly exam scores in 2015, since 2009, will be also obtained and compared for these groups.

Jacsonville School Exam Scores. The Jacsonville School had only one class per grade level which allowed for only an experimental group. Average monthly exam scores were collected for February, March, and April. These three months were selected based upon availability and because they are most relevant to the time period in which the Pilot Program was being conducted. Additional exam scores will be collected for the three months after the study based upon availability. The Jacsonville School Project Manager was responsible for providing monthly exam scores to ACP via email, after the two month Pilot Program.

It is expected that the same students will be using the tablets over time. Data collection will continue as long as the tablets are being used until each class reaches the end of the 6th grade and this data will be used to compare exam scores over time. This long term data collection will allow a comparison at the end of the 2015 school year of Jacsonville School's current 5th grade class who will use the tablets through next year and their final 6th grade national exam score. These scores will also then be compared to the 2015 6th grade classes of Kobonal School's control and experimental groups, Pignon's 2015 6th grade average, and the Haiti 2015 6th grade

national average. If possible, the last six years of 6th grade final and monthly exam scores in 2015, since 2009, will be obtained and compared for these groups.

Application Usage Tracking. Top applications used and time spent on the applications was and continues to be tracked, by both partner locations, on a weekly basis using the ‘App Usage Monitor’ application. An email reporting this information is sent from the partner location to ACP weekly. This is the duty of the Tablet Administrator(s) and responsibility of the Project Manager.

Post Implementation Plan

Administration Closeout Meeting. A meeting between the school administration and ACP was held, during the final week of the Pilot Program, for both the Jacksonville and Kobonal Schools to close out the implementation program. The meeting agenda included discussions of next steps for the tablets by the schools, recommending appointing a teacher who will be responsible for ensuring tablet use continues and other teachers are properly trained, reminding the school administration of their continued data collection requirements, and addressing other concerns by either of the school administrations.

Follow-up Visits. The first follow-up visit was conducted five weeks after the end of the Pilot Program. ACP reviewed both the tablet administrators and teachers duties at this time. No concerns or issues were found. The school administrations, tablet administrators, and teachers were reminded to contact ACP if assistance with the program is needed. ACP met with the schools administrations and reviewed the plans for next steps for the tablets by the schools, reminded the school administrations of their continued data collection requirements, and discussed other concerns by the school administrations. The Application Usage Tracking weekly report also continues to assist ACP in monitoring program success.

Results

Teacher Questionnaire

The teacher questionnaire rating scale questions gauged the attitude and interest towards using the tablets. The questions were grouped into five categories, with one pre-program and one post-program question per category. The five categories included experience and comfort with using the tablet, interest in using the tablet, attitude that the tablets assist in student learning, attitude that the tablets assist in teaching, and attitude that the tablets assist in student achievement. Rating scale questions were measured using a 10 point rating scale. Responses were grouped for data analysis 0-3=low (not at all), 4-7=medium (some), and 8-10=high (a great deal). 86% of teachers had at least some experience with the use of tablets or smartphones prior to the study. This prior experience most likely contributed to 100% of teachers feeling very comfortable with using tablets at the end of the study period.

86% of teachers had at least some interest in using the tablets prior to the start of the study while the interest in using tablets in the future increased in the post study to 100% of teachers. Prior to the study 57% of teachers stated that the tablets would assist students a great deal in learning. The post study survey reported that a full 100% of teachers now saw tablets as a great asset to learning. 75% of teachers prior to the study felt that tablets would assist a great deal in teaching while the post study survey found that again a full 100% of teachers observed that tablets would assist in teaching a great deal. Prior to the study 71% of teachers felt that the tablets would greatly assist in student achievement over time while the post study survey observed that 100% of teachers found that tablets would greatly assist student achievement over time. All teachers post study responses fell into the category of “a great deal”, the highest categorical response in this section of the survey. Overall, teachers ‘attitudes improved between

the pre study survey and the post study survey. Table 1 (Appendix I) provides a breakdown of the responses.

Table 1. Teachers Interest and Attitudes Towards Tablet Use (Rating Scale)

Category	Survey	Question	Low	Med	High
Experience/ Comfort	Pre n=14	What is your experience with the use of tablets or smartphones?	14%	71%	14%
	Post n=14	How comfortable are you with using the tablets now compared to your first week of using them?	0%	0%	100%
Interest	Pre n=14	How much interest do you have in using the tablets?	14%	36%	50%
	Post n=14	How interested would you be in using the tablets next year?	0%	0%	100%
Assist Learning	Pre n=14	How much do you think the tablets will assist students in learning?	0%	43%	57%
	Post n=14	How much do you think the tablets assisted students in learning?	0%	0%	100%
Assist Teaching	Pre n=12	How much do you think the tablets will assist your teaching?	0%	25%	75%
	Post n=14	How much do you think the tablets assisted your teaching?	0%	0%	100%
Assist Student Achievement	Pre n=14	How much will using the tablets assist your student's achievement over time?	0%	29%	71%
	Post n=14	How much will using the tablets assist your student's achievement over time?	0%	0%	100%

Prior to the study, teachers were asked what their expectations for using the tablets were. A strong 71% of the teachers anticipated that the tablets would help students learn. In the post study survey, 54% stated that the tablets did, in fact, help them teach while 15% of the teachers stated that the tablets made the students happy.

Teachers were asked before the study if they anticipated any obstacles using the tablets in the classroom. 86% of teachers did not foresee any obstacles with using the tablets. The post study survey showed that 29% of teachers did have difficulty adjusting to using the tablets with the students, 36% had no troubles using the tablets with students and 14% had trouble using the equipment with the students.

Prior to the study, all teachers deduced that the tablets would be useful in teaching math; 79% summarized that tablets would be useful teaching math and science; and, 14% hypothesized that the tablets would be used for math, science and social studies. In the post study survey, all teachers reported that the tablets helped in teaching math and science.

Prior to the study, teachers were asked if they had any concerns about using the tablets in the classroom. 57% were concerned about using the tablets in class and 36% were not concerned about using the tablets in class with an additional 7% of teachers have concerns in regards to the students playing with the tablets and not learning. Additionally, teachers were asked how they thought students would adapt to using the tablets in the classroom. 50% of teachers said that students would adapt with the teachers help and 43% of teachers felt that the students would adapt to the technology on their own.

Following the study, teachers were asked what resources/support would be most beneficial to them to further implement the tablets in the class. 50% of teachers stated that more tools such as additional tablets, access to the internet and projectors were needed; 29% of teachers felt that the ability to use the tablets more often and the expansion of usage to others would be beneficial; and 14% of teachers indicated that more support from the school would be beneficial to further the program. Table 2 (Appendix J) provides a breakdown of the responses.

Table 2. Teachers Interest and Attitudes Towards Tablet Use (Open Ended)

Category	Survey	Question	Response	Percent
Expectations	Pre n=14	What do you anticipate using the tablets for in the classroom?	Help students learn Learn technology Student attention Other/ NA	71% 7% 7% 14%
	Post n=13	How did the tablets meet or not meet you expectations?	Help teach Students are happy Other/ NA	54% 15% 31%
Obstacles	Pre n=14	Do you see any obstacles to using the tablets?	None Other/ NA	86% 14%
	Post n=14	What obstacles arose in your classes when using the tablets?	None Adapting to using tablets with students Problem with tablet hardware or amount Other/ NA	36% 29% 14% 21%
Subjects	Pre n=14	Which subjects do you think the tablets will assist you in teaching?	Math and science Math, science, social studies Math	79% 14% 7%
	Post n=14	Did the tablets help you teach? What specific subjects? How?	Yes science and math	100%
Additional Questions	Pre n=14	Do you have any concerns about using the tablets in the classroom?	Yes No Concerns about use for play	57% 36% 7%
		How do you think students will adapt to learning with the tablets?	Teacher help They will adapt Other	50% 43% 7%
	Post n=14	What type of support and/or resources would be most beneficial for you to further implement tablets into your classroom?	Tools (ex: tablets, internet, projectors) Ability to use tablets more, allow others More support from school Other/NA	50% 29% 14% 7%

Further analysis of the data revealed some interesting demographic differences and trend.

100% of female teachers had had some experience with the use of tablets or smartphones while

82% of male teachers had some or a great deal of experience with the use of tablets or smartphones.

All of the first and third grade teachers had some or a great deal of experience with the use of tablets or smartphones while 40% of the fifth grade teachers had little to no experience with the use of tablets or smartphones.

All of the teachers with High School and less education had some or a great deal of experience with the use of tablets or smartphones while 33% of the university graduated teachers had little to no experience with the use of tablets or smartphones.

All of the teachers with ten or less years teaching experience had some or a great deal of experience with the use of tablets or smartphones while all of teachers with eleven or more years teaching experience had little/no to some experience with the use of tablets or smartphones.

100% of the teacher 25 years old or younger had some experience with the use of tablets or smartphones while 80% of those aged 26 to 30 some or a great deal of experience with the use of tablets or smartphones. Additionally, 100% of the teachers aged 31 to 35 years had some experience with the use of tablets or smartphones while 66% of those aged 26 to 30 some or a great deal of experience with the use of tablets or smartphones.

Prior to the tablet implementation, 100% of female teachers expressed a great deal level of interest in using tablets next year while only 81% of male teachers had some or a great deal of interest in using tablets next year.

In the pre-study survey, all of the first grade teachers expressed a high level of interest in using tablets next year; 100% of third grade teachers had some or a great deal of interest in using tablets next year; and, only 60% of fifth grade teachers had some or a great deal of interest in using tablets next year .

Prior to the study, all of the teachers with High School and less education had some or a great deal of interest in using tablets next year while all of the university graduated teachers had some or little/no interest in using tablets next year.

Pre-study surveys show that 100% of the teachers with five or less years teaching experience had some to a great deal of interest in using tablets next year and 100% teachers with six to ten years teaching experience had some to a great deal of interest in using tablets next year. However, 20% of teachers with eleven or more years had little to no interest in using tablets next year.

Leading up to the study, surveys report that 100% of the teacher 25 years old or younger had a great deal interest in using tablets next year while 80% of those teachers aged 26 to 30 had some or a great deal of interest in using tablets next year. Additionally, 100% of the teachers aged 31 to 35 had some or a great deal of interest in using tablets next year while only 66% of those teachers aged 36 and older had some or a great deal of interest in using tablets next year.

Prior to the tablet implementation, all of the teachers felt that the tablets would somewhat or greatly improve student achievement over time as well as assist teachers in their teaching. Female teachers, those teachers without a college education, those teachers with under five years' experience and those teachers 25 year old and younger were more inclined to see the tablet as tool that would greatly assist in teaching. Also, female teachers, those teachers without a high school education, those teachers with under five years' experience and those teachers 25 year old and younger were more inclined to see the tablet as tool that would greatly assist in student achievement over time. Table 3 (Appendix K) provides a breakdown of the responses.

Table 3. Pre-Study Teacher Interest and Attitudes Towards Tablet Use by Demographics

	Demographics														
	Gender		Grade Level			Degree			Years Teaching			Age			
	F	M	1st	3rd	5th	No HS	High sch	Univ	0-5	10-Jun	11+	25 & under	26-30	31-35	36+
	1. What is your experience with the use of tablets or smartphones?														
Low	0%	18%	0%	0%	40%	0%	0%	33%	0%	0%	20%	0%	20%	0%	33%
Med	100%	64%	80%	75%	60%	100%	50%	50%	80%	67%	80%	100%	60%	100%	33%
High	0%	18%	20%	25%	0%	0%	50%	17%	20%	33%	0%	0%	20%	0%	33%
	<i>n=14</i>		<i>n=14</i>			<i>n=13</i>			<i>n=13</i>			<i>n=14</i>			
	2. How interested would you be in using the tablets next year?														
Low	0%	18%	0%	0%	40%	0%	0%	33%	0%	0%	20%	0%	20%	0%	33%
Med	0%	45%	0%	75%	40%	0%	50%	67%	20%	67%	40%	0%	40%	67%	33%
High	100%	36%	100%	25%	20%	100%	50%	0%	80%	33%	40%	100%	40%	33%	33%
	<i>n=14</i>		<i>n=14</i>			<i>n=13</i>			<i>n=13</i>			<i>n=14</i>			
	3. How much do you think the tablets will assist students in learning?														
Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med	67%	36%	40%	25%	60%	40%	50%	50%	40%	33%	40%	67%	40%	33%	33%
High	33%	64%	60%	75%	40%	60%	50%	50%	60%	67%	60%	33%	60%	67%	67%
	<i>n=14</i>		<i>n=14</i>			<i>n=13</i>			<i>n=13</i>			<i>n=14</i>			
	4. How much do you think the tablets will assist your teaching?														
Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med	0%	30%	0%	25%	50%	0%	0%	60%	0%	33%	33%	0%	20%	0%	67%
High	100%	70%	100%	75%	50%	100%	100%	40%	100%	67%	67%	100%	80%	100%	33%
	<i>n=12</i>		<i>n=12</i>			<i>n=11</i>			<i>n=11</i>			<i>n=12</i>			
	5. How much will using the tablets assist your student's achievement over time?														
Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med	0%	36%	0%	50%	40%	20%	50%	33%	0%	33%	40%	0%	40%	0%	67%
High	100%	64%	100%	50%	60%	80%	50%	67%	100%	67%	60%	100%	60%	100%	33%
	<i>n=14</i>		<i>n=14</i>			<i>n=13</i>			<i>n=13</i>			<i>n=14</i>			

*Attitudes and interest measured using a 10 point rating scale. Responses were grouped for data analysis 0-3= low (not at all), 4-7=medium (some), and 8-10=high (a great deal).

In the post study survey, all teachers expressed a high comfort with using the tablets and a high interest in using the tablets. Additionally, all teachers felt that students were greatly assisted in learning using the tablets and that the tablets greatly assisted their teaching practices. Finally, all the teachers believe that the tablets would greatly assist students in the achievements over time. Teachers' attitudes towards the tablets positively increased from the pre study survey to the post study survey after using the tablets in the classroom. Table 4 (Appendix L) provides a breakdown of the responses.

Table 4. Post-Study Teacher Interest and Attitudes Towards Tablet Use by Demographics

		Demographics											
		Grade Level			Degree			Years Teaching			Age		
		1st	3rd	5th	No HS	High sch	Univ	0-5	6-10	11+	25 & under	26-30	31-35
		1. How comfortable are you with using the tablets now compared to your first week of using them?											
Low		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High		100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%
		<i>n=14</i>			<i>n=13</i>		<i>n=13</i>			<i>n=14</i>			
		2. How much interest do you have in using the tablets?											
Low		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High		100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%
		<i>n=14</i>			<i>n=13</i>		<i>n=13</i>			<i>n=14</i>			
		3. How much do you think the tablets assisted students in learning?											
Low		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High		100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%
		<i>n=14</i>			<i>n=13</i>		<i>n=13</i>			<i>n=14</i>			
		4. How much do you think the tablets assisted your teaching?											
Low		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High		100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%
		<i>n=14</i>			<i>n=13</i>		<i>n=13</i>			<i>n=14</i>			
		5. How much will using the tablets assist your student's achievement over time?											
Low		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High		100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%
		<i>n=14</i>			<i>n=13</i>		<i>n=13</i>			<i>n=14</i>			

*Attitudes and interest measured using a 10 point rating scale. Responses were grouped for data analysis 0-3= low (not at all), 4-7=medium (some), and 8-10=high (a great deal).

Student Questionnaire

During the administering of the pre-program questionnaire, researchers observed a complete lack of comprehension by the 1st graders. As a result, no post-program questionnaires were conducted for the 1st graders. During the administering of the pre-program and post-program questionnaires for the 3rd and 5th grades, researchers observed a combination of lack of comprehension of the questions and the copying of answers from other students. Therefore, the student questionnaires were not included as part of the data analysis and results.

Best Practices

A total of 81 observations, over one tablet training phase and four lesson observations for all nine classes, were conducted by the two ACP in-country research team members. The purpose of the observations was to observe the changes from the introduction of the tablet through the full integration of the tablet into the classroom. The educational subject matter expert was present for sub-phase 1 to assist the teachers in transitioning the tablets into the classroom and provide/develop these best practices. Researchers used these observations to develop a list of recommended best practices. These best practices can be broken down into four categories including tablet, classroom management, pedagogical implementation, and general management. Tablet best practices ensure the tablets are setup to function efficiently and maintained appropriately. Classroom management best practices provide information about how to deal with managing the introduction of the new tablet tool into the classroom. Pedagogical implementation best practices provide teachers helpful guidance on how to use the tablets with their students. General management best practices provides additional information that researchers concluded would be beneficial to include in future implementation projects. See Appendix M.

Exam scores

Exam scores were collected for each class participating in the study. There is currently not enough data to draw sufficient conclusions regarding a change in student scores as a result of tablet use. Data collection will continue as long as the tablets are being used until each class reaches the end of the 6th grade and this data will be used to compare exam scores over time.

Discussion

The Pilot Program was designed to collect the best practices for implementing technology in developing nations. The results from the teacher questionnaires suggest a few possible conclusions. These include the theory that university educated teachers, teachers who have been teaching the longest, and higher grade level teachers need to experience the possibilities of a tablet in the classroom before they will buy-in to using the tablets. The observations provided a large amount of information about the best and worst ways of implementing the tablet program with the school administration, tablet administrators, teachers and students. Partners should use the best practices collected by ACP as a guide for implementing a tablet program in order to increase the ease and efficiency, while decreasing the implementation and adaptation time of the program.

Future efforts need to focus on improving project management specifics. Additional follow-up visits are needed to acquire information on problems that were encountered and how they were solved in order to ensure mistakes are not repeated in future programs. ‘App Usage Monitor’ statistics and test scores need to continuously be collected to monitor the success of the program over time. If solar power is needed at a partner location, ACP should require the partner to install a system prior to ACP arrival to avoid difficulties. A contract should be developed for the Tablet Administrator position to avoid issues regarding their required duties. The importance of the Tablet Administrators should be stressed to all stakeholders. Two Tablet Administrators

should be trained per school in order to ensure a backup is present. If the school does not have internet access and if funds allow, a 3G tablet should be purchased for the Tablet Administrators to solve internet issues.

The capabilities and research of the tablet implementation program need to be increased. The research conducted by ACP should be built upon to include larger scale programs using the tablet implementation program such as incorporating reading and writing programs to help with literacy efforts. Collecting and developing content is needed. A local server should be built to store all the content creating a digital content library per school. An educational consultant should be hired full time to close the gap between ACP's technology and research expertise and education. To avoid issues with student survey's in the future, researchers should meet face to face with a sample of students pre- and post-implementation to gather feedback regarding the program. Teacher surveys for future programs should be in Haitian Creole to avoid any comprehension issues. Future programs should focus on spending extra time with university educated professors and higher grade teachers to show them the capabilities of the tablets to ensure buy-in.

Appendix A: Tablet Administrator Training Plan

Purpose

This document details the training that will be given by A Connected Planet to the Tablet Administrators in Haiti. This training will provide the Tablet Administrators with a fundamental understanding of the configuration and handling of the tablets, as well as their features that will be used by teachers in the classroom setting.

Participants

ACP staff will work directly with the Tablet Administrators to administer the training.

When

The first training will be conducted during weeks 0-1 of phase II. Follow-up informal training will be available throughout the study. ACP will allocate 2 hours for training. A second training will be conducted during week 6-7 of Phase II.

Where

The training will be conducted in each school's administration building, and/or, if possible, in a location with access to Wi-Fi. The training session must be in a quiet well-light place, and must be supplied with chairs and water.

First Training Session Plan

1. Explain what a tablet is
2. Tutorial:
 - a. Tablet Quick Start Training Guide in French
 - i. Train on how to turn on and off versus sleep mode
 - ii. Train on how to unlock/lock
 - iii. Train on how to scroll/navigate
 - b. Application Practice
 - i. Coloring for Kids
 - ii. Kids Numbers
 - iii. Atlas
 - iv. Whiteboard
3. Acclimation: Allow Tablet Administrator to play with tablets for 5 minutes to start familiarizing themselves with tablets
4. Distribution and Safekeeping:
 - a. Provide Tablet Administrator with tablets in boxes and surge protectors and USB and adapter
 - b. Discuss storing location
 - c. Discuss security
 - d. Discuss distribution hours
 - e. Provide and explain Tablet Log Book
 - f. Provide protective cases
 - g. Numbering the tablets, cases, and boxes (provide property tags if applicable)
 - h. Assist teacher with daily classroom distribution
5. Handling and Maintenance:
 - a. Daily Proper Care of Tablets
 - i. Wiping off the tablets – ACP provide cloth?

- ii. Keeping the tablets fully charged
 - b. Resetting the tablets if software problems occur
 - c. Touchscreen hardware issues
 - i. Try recalibrating the tablet in ‘settings’
 - ii. Remove screen protector
- 6. Pre-Loaded Application Training:
 - i. Train on ‘Settings’ application
 - ii. Train on pre-existing applications (file browser...)
- 7. Answer any questions

Best Practices to Implement the Tablets

- a. Set tablets into French language
- b. Set screen lock to time out at 10 minutes
- c. Set tablets into ‘airplane mode’
- d. Check option in ‘settings’ to allow applications to be downloaded from ‘unknown sources’ (ex: apk files)
- e. Remove cords and chargers from boxes
- f. Place Tablets back in the box face down

Second Training Session Plan

- 8. Coordination with Tablet Manufacturer – Sûrtab:
 - i. Provide Sûrtab contact information – send introductory email?
 - ii. Provide and explain Work Order Tablet Repair Form
- 9. Application Uploads & Download Training:
 - a. Train SD Card and USB file transfer
 - b. Train participants on using and accessing applications on Knappsack
 - c. Accessing applications on google play store
 - d. Show them the list of additional application resource sites
 - e. Pre-load selected applications to tablets using thumb drives
- 10. Reporting: Application Usage Log:
 - a. Train on turning on and resetting ‘App Usage Monitor’ Application
 - b. Weekly Email
 - iii. Record top 5 applications – provide App Usage Monitor sheets and/or electronic versions
 - iv. Record their application usage time
- 11. Answer any questions

TABLET LOG BOOK

Date	Name of Teacher	Tablet Prop Tag	# Tablets Out	Time Out	Initial Out	# Tablets in	Time In	Initial In
04/02/14	BEN BOGGESS	TAB 6-21	15	8.05 AM		15	10.16 AM	
10/02/14	JOSH HEARNE	TAB 1,2,3,16,24,44	6	10.02 AM		6	12.12 PM	

Tablet Administrator must verify that all tablets have been returned to the school's administration by the end of each school day. If all tablets have not been return please notify ACP and then the school administration.

WEEKLY APPLICATION USAGE LOG

TA
Name: _____

Week End Date/Date
Recorded: _____

Tablet #	App 1		App 2		App 3		App 4		App 5	
	Name	Time	Name	Time	Name	Time	Name	Time	Name	Time
Example	Geometry AD	65:34	Kids Numbers	60:23	Atlas	55:49	Whiteboard	45:57	Camera	25:13
1										
2										
3										
4										

Application usage log should be recorded by COB each Friday and sent to ACP (@aconectedplanet.org).

WORK ORDER TABLET REPAIR FORM

A CONNECTED PLANET
P.O. Box 7605
McLean, VA 22106
+1 (703) 328-1656
staff@aconectedplanet.org
www.aconnectedplanet.org

	Work Order Number #	
	Work Order Date	
JOB	BILL TO	SHIP TO (if different)
	Sheila Hearne	[NAME]
	A Connected Planet	[COMPANY NAME]
	P.O. Box 7605	[STREET ADDRESS]
	McLean, VA, 22106, USA	[CITY, STATE, ZIP CODE]
	+1 (703) 328-1656	[TELEPHONE]
	staff@aconectedplanet.org	[EMAIL]

QUANTITY	DESCRIPTION	UNIT PRICE	LINE TOTAL

OTHER COMMENTS OR SPECIAL INSTRUCTIONS 	SUBTOTAL	
	TAX	
	SHIPPING	
	OTHER	
	TOTAL	

I agree that all information listed above is correct.

Name:

Date:

Appendix B: Teacher Training Plan

Purpose

This document details the training that will be given by A Connected Planet to teachers in Haiti in order to help acclimate and assist the teachers in using the tablets and implementing them in their class rooms.

Participants

Teachers using the tablets and the mission tablet administrator(s) will be required to attend the training. The school administration will be able to attend the teacher training, but it is not required. It is at this time that we will get the contact information for all of the teachers, and provide them with ACP's pre-program questionnaire

When

Training will be conducted during weeks 0-1 of Phase II. Follow-up informal training will be available throughout the study.

Where

Training will be conducted at the school, in a quiet location, with sufficient seating to accommodate the participants.

First Training Session Plan:

1. **Distribution:** Provide teachers with tablets packaged in the same way we expect them returned
 - a. Explain our log book and rules
 - b. Each teacher will receive a tablet
2. **Explanation of a tablet**
 - a. Description
 - b. Background
3. **Handling:** Inform participants on proper handling and treatment of tablets
 - a. Hands should be cleaned before touching the tablets
 - b. Tablets should remain away from food and drink
 - c. Tablets should remain away from edges of desks and tables
 - d. Tablets should be carried and transported using two hands
 - e. Tablets should be held with two hands when holding up answers to questions
 - f. Tablets should remain away from direct sunlight unless being transported
 - g. Tablets should not come into contact with any water including rain
 - h. Tablets should have a protective case
 - i. Tablets should be numbered and should return in to the appropriate box
4. **Tutorial:**
 - a. Run through Tablet Quick Start Training Guide
 - b. Application training
 - i. Teachers should, in preparation of their curriculum, advise the TAs of the themes/topics that they will be teaching, and TAs will search on their behalf as well
 - c. Answer any questions
5. **Acclimation:** Allow teachers to play with tablets for 5 minutes to start familiarizing themselves with the tablets

6. Application Practice (led by ACP):
 - a. How to use apps to teach children example
 - i. Kids Painting App (Language Arts)
 1. Show teachers how to access the app – ask them to find the umbrella - ask them to color the umbrella red
 - ii. Kids Number App (Math)
 1. Show teachers an addition problem - show them how to access the math app. Demonstrate usage of the app, then allow teachers to practice on their own
 - iii. Atlas App (Social Studies)
 1. Show teachers how to open Atlas App – ask them what country they are from and to find it on the map – now ask them to find the capital of Haiti – ask them where we are from (US) ask them to find our capital
 - iv. Whiteboard
 1. Have the teachers open up any basic coloring app – ask them a question – then have them turn the tablets in our direction showing us the answers – makes sure tablets aren't held up in the air rather they should still be touching the desk
7. Best Practices: Provide teachers with initial best practices to implement the tablets into their classrooms
 - Review proper handling and treatment of tablets before each use
 - Start with the basics of how to use the tablet
 - Turning on the tablet
 - Turning off the tablet
 - Opening specific apps
 - Exiting an App
 - When teaching students using tablets, give step-by-step instructions. Allow for every student to complete a step before moving to the next step.
 - Model using the tablet in front of the class. Before telling students to do something with the tablet, show them how to do it on your own tablet. Don't do it for them!
 - Have students work in groups or partners to use the tablets.
 - Rearrange classroom – boys and girls mix – move rowdy students up front – bring classroom closer to the front for better hearing and better attention – less spread out
 - Remember how you felt when you first used your tablet! Learning to use a tablet can be fun, exciting, and frustrating all at once. Remember that students are in the same position as you.
 - Apps are better as supplemental – teach class regularly and then have them practice on tablet (ex: addition)
 - Talk with other teachers to see how they are using the tablets in class
8. Informal Follow-up 'Help' Sessions:
 - a. Encourage teachers to come to ACP with questions regarding tablet use and help with the applications

9. Acclimation: If allowed by school administration, teachers may take tablets home to familiarize themselves with tool for the evening. Teachers must log the tablets out using the Log Book.
10. Collection: Ask teachers to return tablets at the beginning of the next school day to the tablet administrator. Log the tablets back in using the Log Book.

Second Training Session Plan:

11. Teacher Tablet Integration Training: Before the tablets are used in the classroom a Teacher Tablet Integration Training session will be held. Three pre-selected teachers, based upon expected high performance, will teach a mock lesson plan to fellow teachers to show them ‘how they would use the tablets’ in their classroom.

Appendix C: Student Tablet Instruction Training Plan

Purpose

This document details the training that will be given by A Connected Planet to the students in Haiti in order to help acclimate and assist the students in using the tablets in their class rooms.

Participants

All students, teachers using the tablets and the school tablet administrator(s) will be required to attend the training. The school administration will be able to attend the student training, but it is not required. It is at this point that we survey the students.

When

Training will be conducted during weeks 1-2 of Phase II.

Where

Training will be conducted at the school, in a quiet location, with sufficient seating to accommodate the participants.

Training Plan

1. Distribution: Provide students with tablets packaged in the same way we expect them returned
2. Explanation of a tablet
 - a. Description
 - b. Background
3. Handling: Inform participants on proper handling and treatment of tablets
 - a. Hands should be cleaned before touching the tablets
 - b. Tablets should remain away from food and drink
 - c. Tablets should remain away from edges of desks and tables
 - d. Tablets should be carried and transported using two hands
 - e. Tablets should be held with two hands when holding up answers to questions
 - f. Tablets should remain away from direct sunlight unless being transported
 - g. Tablets should not come into contact with any water including rain
 - h. Tablets should have a protective case
 - i. Tablets should be numbered and should return in the appropriate box
4. Tutorial:
 - a. Run through Tablet Quick Start Training Guide
 - b. Answer any questions
5. Application Practice:
 - a. How to use apps to teach children example
 - i. Kids Painting App (Language Arts)
 1. Show teachers how to access the app – ask them to find the umbrella - ask them to color the umbrella red
 - ii. Kids Number App (Math)
 1. Show teachers an addition problem - show them how to access the math app. Demonstrate usage of the app, then allow teachers to practice on their own
 - iii. Atlas App (Social Studies)

1. Show teachers how to open Atlas App – ask them what country they are from and to find it on the map – now ask them to find the capital of Haiti – ask them where we are from (US) ask them to find our capital
- iv. Whiteboard
1. Have the teachers open up any coloring app – ask them to answer a question – then have them turn the tablets in our direction showing us the answers – makes sure tablets aren't held up in the air rather they should still be touching the desk

Best Practices for Trainer:

- Review proper handling and treatment of tablets before each use
- Start with the basics of how to use the tablet
 - Turning on the tablet
 - Turning off the tablet
 - Opening specific apps
 - Exiting an App
- When teaching students using tablets, give step-by-step instructions. Allow for every student to complete a step before moving to the next step.
- Model using the tablet in front of the class. Before telling students to do something with the tablet, show them how to do it on your own tablet. Don't do it for them!
- Draw on board the different icons and images to help with the visual teaching
- Have students work in groups or partners to use the tablets.
- Rearrange classroom – boys and girls mix – move rowdy students up front – bring classroom closer to the front for better hearing and better attention – less spread out
- Remember how you felt when you first used your tablet! Learning to use a tablet can be fun, exciting, and frustrating all at once. Remember that students are in the same position as you.
- Apps are better as supplemental – teach class regularly and then have them practice on tablet (ex: addition)
- Talk with other teachers to see how they are using the tablets in class

Appendix D: Pre-Program Teacher Questionnaire

Name: _____ Age: _____ Gender: _____										
Highest Education _____ Total Years Teaching: _____ Grade You Teach Now: _____										
This questionnaire gauges your attitude towards the Tablet Program. Please rate and then circle on a scale of 1-10 (low to high) the following questions:										
0	1	2	3	4	5	6	7	8	9	10
Not At All			Some				Alot			
1. What is your experience with the use of tablets or smartphones?										
0	1	2	3	4	5	6	7	8	9	10
2. How much interest do you have in using the tablets?										
0	1	2	3	4	5	6	7	8	9	10
3. How much do you think the tablets will assist students in learning?										
0	1	2	3	4	5	6	7	8	9	10
4. How much do you think the tablets will assist your teaching?										
0	1	2	3	4	5	6	7	8	9	10
5. How much will using the tablets assist your student's achievement over time?										
0	1	2	3	4	5	6	7	8	9	10
Please answer the following questions in detail.										
6. What do you anticipate using the tablets for in the classroom?										
7. Do you see any obstacles to using the tablets?										
8. Do you have any concerns about using the tablets in the classroom?										
9. Which subjects do you think the tablets will assist you in teaching?										
10. How do you think students will adapt to learning with the tablets?										

Appendix E: Pre-Program Student Questionnaire

Student Questionnaire				
1. How old are you?				
2. Are you a boy or girl?				
Please color ONE face to answer how you think:				
3. I like school				
				
Not At All	No	Sometimes	Yes	Absolutely
4. I like to learn				
				
Not At All	No	Sometimes	Yes	Absolutely
5. School is hard for me				
				
Not At All	No	Sometimes	Yes	Absolutely
6. New things excite me				
				
Not At All	No	Sometimes	Yes	Absolutely
7. I know what a computer tablet is				
				
No	Yes			

Appendix F: Observation Templates

Date: _____					
<u>Sub-Phase 1 Observation Sheet</u> (Wk 1-2)					
Day:	M	T	W	R	F
Time Start:	_____		Time End:	_____	
Teacher:	_____		Grade:	_____	
Subject:	Math	L. Arts	Science	Soc Stud	Tab Inst Other_____
Observer(s):	Ben	Josh	Other: _____		
Translator:	Ben		Other: _____		

Sub-phase theme: Baseline

- Teachers have gone through tablet training in the last week
- Work with the teacher's to build a relationship
- Offer any assistance we can outside of their class time - record any assistance we provide

Questions to answer:

- How is the teacher integrating the tablet into the classroom? What is their tablet teaching style? What applications are they using?
- How is the teacher keeping structure in the class? Are we as observers distracting?
- What is the behavior of the teachers and students in classroom with regards to the tablets? How are they using the tablets - Play or work? Etc. (In general)
- How are the teachers and students reacting to using tablets in the class? Positively or negatively in terms of benefits to the lesson? (Lesson)
- How are the students interacting with the teacher? Do you notice any frustrations?

Observations made :
Star items to follow-up on at end of class

Date: _____

Sub-Phase 2 Observation Sheet (Wk 3-4)

Day:	M	T	W	R	F	
Time Start:	_____		Time End:	_____		
Teacher:	_____		Grade:	_____		
Subject:	Math	L. Arts	Science	Soc Stud	Tab Inst	Other _____
Observer(s):	Ben	Josh	Other: _____			
Translator:	Ben	Other: _____				

Sub-phase theme: Low Integration

- Check-in on how integrating the tablet is going
- After class ask for needs including resources and new apps

Questions to answer:

Compared to sub-phase 1:

- Has the teacher's tablet teaching style changed? How? Are we as observers distracting?
- What other changes has the teacher made that might be a result of this new tool?
- How are the students interacting with the teacher? Do you notice any frustrations?
- What is the behavior of the teachers and students in classroom with regards to the tablets? How are they using the tablets - Play or work? Etc. (In general)
- How are the teachers and students reacting to using tablets in the class? Positively or negatively in terms of benefits to the lesson? (Lesson)
- In your opinion and the teachers will 2 months be enough time to implement and integrate the tablets? why or why not?

Observations made :

Star items to follow-up on at end of class

Date: _____

Sub-Phase 3 Observation Sheet (Wk 5-6)

Day: M T W R F

Time Start: _____ **Time End:** _____

Teacher: _____ **Grade:** _____

Subject: Math L. Arts Science Soc Stud Tab Inst Other _____

Observer(s): Ben Josh **Other:** _____

Translator: Ben **Other:** _____

Sub-phase theme: Medium Integration

- We should be seeing the tablet being used more as a tool vs a distraction

Questions to answer:

Compared to sub-phases 1 and 2:

- Has the teacher's tablet teaching style changed? How? Why? Are we as observers distracting?
- What other changes has the teacher made that might be a result of this new tool?
- How are the students interacting with the teacher? Do you notice any frustrations?
- What changes has the teacher made because of the students interaction?
- What is the behavior of the teachers and students in classroom with regards to the tablets? How are they using the tablets - Play or work? Etc.
- How are the teachers and students reacting to using tablets in the class? Are we starting to see changes in teachers and students when using the tablets for the lesson? Examples?

Observations made :

Star items to follow-up on at end of class

Date: _____

Sub-Phase 4 Observation Sheet (Wk 7-8)

Day: M T W R F

Time Start: _____ **Time End:** _____

Teacher: _____ **Grade:** _____

Subject: Math L. Arts Science Soc Stud Tab Inst Other _____

Observer(s): Ben Josh **Other:** _____

Translator: Ben **Other:** _____

Sub-phase theme: High Integration

- Tablet should be integrated into the class as a tool (just like using a chalkboard or projector)
- In the following months tablets will continue to become further integrated

Questions to answer:

Since sub-phase 1:

- How has the teacher's tablet teaching style changed? Why? In what ways? Give examples.
- Are the tablets now successfully being used as a tool? Do you notice any frustrations?
- Do teachers and students appear to be distracted by the tablets? by us as observers?
- How has student interaction and behavior with the tablet and teacher changed since sub-phase 1?
- What major changes has the teacher made because of the students interactions with the tablets?
- In your opinion and the teachers is 2 months enough time to implement and integrate the tablets? why or why not?

Observations made :

Star items to follow-up on at end of class

Appendix G: Post-Program Teacher Questionnaire

Name: _____ Grade You Teach Now: _____										
This questionnaire gauges your attitude towards the Tablet Program. Please rate and then circle on a scale of 1-10 (low to high) the following questions:										
0	1	2	3	4	5	6	7	8	9	10
Not At All			Some				Alot			
1. How comfortable are you with using the tablets now compared to your first week of using them?										
0	1	2	3	4	5	6	7	8	9	10
2. How interested would you be in using the tablets next year?										
0	1	2	3	4	5	6	7	8	9	10
3. How much do you think the tablets assisted students in learning?										
0	1	2	3	4	5	6	7	8	9	10
4. How much do you think the tablets assisted your teaching?										
0	1	2	3	4	5	6	7	8	9	10
5. How much will using the tablets assist your student's achievement over time?										
0	1	2	3	4	5	6	7	8	9	10
Please answer the following questions in detail.										
6. How did the tablets meet or not meet you expectations?										
7. What obstacles arose in your classes when using the tablets?										
8. Did the tablets help you teach? What specific subjects? How?										
9. What type of support and/or resources would be most beneficial for you to further implement tablets into your classroom?										
10. Please provide other comments for A Connected Planet on our Tablet Implementation Pilot Program. We need both positive and negative input in order to better help others in need.										

Appendix H: Post-Program Student Questionnaire

<u>Student Questionnaire</u>				
1. How old are you?				
2. Are you a boy or girl?				
Please color ONE face to answer how you think:				
3. I like school				
				
Not At All	No	Sometimes	Yes	Absolutely
4. I like to learn				
				
Not At All	No	Sometimes	Yes	Absolutely
5. School is hard for me				
				
Not At All	No	Sometimes	Yes	Absolutely
6. New things excite me				
				
Not At All	No	Sometimes	Yes	Absolutely
7. I liked the tablets because _____				

Appendix I: Teachers Interest and Attitudes Towards Tablet Use (Rating Scale)

Category	Survey	Question	Low	Med	High
Experience/ Comfort	Pre n=14	What is your experience with the use of tablets or smartphones?	14%	71%	14%
	Post n=14	How comfortable are you with using the tablets now compared to your first week of using them?	0%	0%	100%
Interest	Pre n=14	How much interest do you have in using the tablets?	14%	36%	50%
	Post n=14	How interested would you be in using the tablets next year?	0%	0%	100%
Assist Learning	Pre n=14	How much do you think the tablets will assist students in learning?	0%	43%	57%
	Post n=14	How much do you think the tablets assisted students in learning?	0%	0%	100%
Assist Teaching	Pre n=12	How much do you think the tablets will assist your teaching?	0%	25%	75%
	Post n=14	How much do you think the tablets assisted your teaching?	0%	0%	100%
Assist Student Achievement	Pre n=14	How much will using the tablets assist your student's achievement over time?	0%	29%	71%
	Post n=14	How much will using the tablets assist your student's achievement over time?	0%	0%	100%

Appendix J: Teachers Interest and Attitudes Towards Tablet Use (Open Ended)

Category	Survey	Question	Response	Percent
Expectations	Pre n=14	What do you anticipate using the tablets for in the classroom?	Help students learn Learn technology Student attention Other/ NA	71% 7% 7% 14%
	Post n=13	How did the tablets meet or not meet you expectations?	Help teach Students are happy Other/ NA	54% 15% 31%
Obstacles	Pre n=14	Do you see any obstacles to using the tablets?	None Other/ NA	86% 14%
	Post n=14	What obstacles arose in your classes when using the tablets?	None Adapting to using tablets with students Problem with tablet hardware or amount Other/ NA	36% 29% 14% 21%
Subjects	Pre n=14	Which subjects do you think the tablets will assist you in teaching?	Math and science Math, science, social studies Math	79% 14% 7%
	Post n=14	Did the tablets help you teach? What specific subjects? How?	Yes science and math	100%
Additional Questions	Pre n=14	Do you have any concerns about using the tablets in the classroom?	Yes No Concerns about use for play	57% 36% 7%
		How do you think students will adapt to learning with the tablets?	Teacher help They will adapt Other	50% 43% 7%
	Post n=14	What type of support and/or resources would be most beneficial for you to further implement tablets into your classroom?	Tools (ex: tablets, internet, projectors Ability to use tablets more, allow others More support from school Other/NA	50% 29% 14% 7%

Appendix K: Pre-Study Teacher Interest and Attitudes Towards Tablet Use by Demographics

		Demographics														
		Gender		Grade Level			Degree			Years Teaching			Age			
		F	M	1st	3rd	5th	No HS	High sch	Univ	0-5	10-Jun	11+	25 & under	26-30	31-35	36+
		1. What is your experience with the use of tablets or smartphones?														
Low		0%	18%	0%	0%	40%	0%	0%	33%	0%	0%	20%	0%	20%	0%	33%
Med		100%	64%	80%	75%	60%	100%	50%	50%	80%	67%	80%	100%	60%	100%	33%
High		0%	18%	20%	25%	0%	0%	50%	17%	20%	33%	0%	0%	20%	0%	33%
		<i>n=14</i>		<i>n=14</i>		<i>n=13</i>			<i>n=13</i>			<i>n=14</i>				
		2. How interested would you be in using the tablets next year?														
Low		0%	18%	0%	0%	40%	0%	0%	33%	0%	0%	20%	0%	20%	0%	33%
Med		0%	45%	0%	75%	40%	0%	50%	67%	20%	67%	40%	0%	40%	67%	33%
High		100%	36%	100%	25%	20%	100%	50%	0%	80%	33%	40%	100%	40%	33%	33%
		<i>n=14</i>		<i>n=14</i>		<i>n=13</i>			<i>n=13</i>			<i>n=14</i>				
		3. How much do you think the tablets will assist students in learning?														
Low		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med		67%	36%	40%	25%	60%	40%	50%	50%	40%	33%	40%	67%	40%	33%	33%
High		33%	64%	60%	75%	40%	60%	50%	50%	60%	67%	60%	33%	60%	67%	67%
		<i>n=14</i>		<i>n=14</i>		<i>n=13</i>			<i>n=13</i>			<i>n=14</i>				
		4. How much do you think the tablets will assist your teaching?														
Low		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med		0%	30%	0%	25%	50%	0%	0%	60%	0%	33%	33%	0%	20%	0%	67%
High		100%	70%	100%	75%	50%	100%	100%	40%	100%	67%	67%	100%	80%	100%	33%
		<i>n=12</i>		<i>n=12</i>		<i>n=11</i>			<i>n=11</i>			<i>n=12</i>				
		5. How much will using the tablets assist your student's achievement over time?														
Low		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med		0%	36%	0%	50%	40%	20%	50%	33%	0%	33%	40%	0%	40%	0%	67%
High		100%	64%	100%	50%	60%	80%	50%	67%	100%	67%	60%	100%	60%	100%	33%
		<i>n=14</i>		<i>n=14</i>		<i>n=13</i>			<i>n=13</i>			<i>n=14</i>				

*Attitudes and interest measured using a 10 point rating scale. Responses were grouped for data analysis 0-3= low (not at all), 4-7=medium (some), and 8-10=high (a great deal).

Appendix L: Post-Study Teacher Interest and Attitudes Towards Tablet Use by Demographics

Demographics

	Grade Level			Degree		Years Teaching			Age					
	1st	3rd	5th	No HS	High sch	Univ	0-5	6-10	11+	25 & under	26-30	31-35	36+	
	1. How comfortable are you with using the tablets now compared to your first week of using them?													
Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High	100%	100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%	100%
	<i>n=14</i>			<i>n=13</i>			<i>n=13</i>				<i>n=14</i>			
	2. How much interest do you have in using the tablets?													
Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High	100%	100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%	100%
	<i>n=14</i>			<i>n=13</i>			<i>n=13</i>				<i>n=14</i>			
	3. How much do you think the tablets assisted students in learning?													
Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High	100%	100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%	100%
	<i>n=14</i>			<i>n=13</i>			<i>n=13</i>				<i>n=14</i>			
	4. How much do you think the tablets assisted your teaching?													
Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High	100%	100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%	100%
	<i>n=14</i>			<i>n=13</i>			<i>n=13</i>				<i>n=14</i>			
	5. How much will using the tablets assist your student's achievement over time?													
Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Med	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High	100%	100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%	100%
	<i>n=14</i>			<i>n=13</i>			<i>n=13</i>				<i>n=14</i>			

*Attitudes and interest measured using a 10 point rating scale. Responses were grouped for data analysis 0-3= low (not at all), 4-7=medium (some), and 8-10=high (a great deal).

Appendix M: Recommended Best Practices

Tablet

<p>1. Place tablet on Airplane mode. Airplane mode saves battery life by stopping the tablet from transmitting and receiving signals.</p>
<p>2. Place tablet on a 10-minute screen lock: When first using the tablets, the screens defaulted to a 30-second screen lock setting. This resulted in an interruption to lessons and required teachers having to repeatedly help students unlock the tablet. Switching the tablet to a 10-minute screen lock setting resolved the issue.</p>
<p>3. Place the tablet to the French language setting: Upon selecting the French language setting, some of the applications used automatically translated the application language into French (ex: Pocket Geometry AD). Changing the language also helped the Tablet Administrators and Teachers better navigate the tablet.</p>
<p>4. Check the Unknown Sources setting on the tablet: If not directly downloaded from the Google Play Store, applications such as the ‘apk files’ on the USB-drive will not upload to the tablet unless the ‘Unknown Sources’ box is checked in settings>security>device administration.</p>
<p>5. Number the tablets when first receiving them: This helped track the tablets through the logbook process, provided an organized method for charging the tablets, allowed consistent data collection (App Usage Monitor report), and in the future provides a tracking system for the exchange and/or repair of malfunctioning tablets.</p>
<p>6. Protect the tablets: Tablets will get dirty, dusty, scratched and broken. Protective cases should be ordered and placed on each tablet. Screen protectors will become scratched and will impact the touch screen. Additional screen protectors should be ordered and replaced as needed. Plastic tubs should be purchased if available to transport tablets to and from the classrooms.</p>
<p>7. Clean the tablets: Tablets should be cleaned on a bi-weekly basis. Special inexpensive cleaning clothes are available for both the front screens and backs of the tablets.</p>

Classroom Management

<p>1. Provide rules to protect the tablets: No food or drink should be consumed while using the tablets. Pencils should be put away when using the tablets and not used as a stylus on the tablets.</p>
<p>2. Student-tablet ratio: The common belief is that 1:1 computing is the only option, however observations showed that for non-independent learning activities 1:2 and 1:3 ratios increased collaborative learning amongst the students. In order to do a 1:3 ratio, the three students must be sitting together in a line and the tablet must be placed in the middle. The maximum recommended ratio is no more than 1:3.</p>
<p>3. One teacher teaching: At first, classrooms had multiple adults present at one time including teachers, assistant teachers, tablet administrators, and school administrators which caused distractions, interruptions and noise in the classroom. When using tablets in the classroom, the ‘main’ teacher should be the only one teaching and the other teachers/administrators should be divided amongst the class and assist confused students.</p>
<p>4. Managing the classroom layout: Sometimes classes were too crowded, noisy, disorderly and/or students could not see the teachers writing on the chalkboard. Re-arranging the classroom by moving the desks around and mixing up the boys with the girls helped to</p>

alleviate the issues. Having an attentive and symmetrical classroom led to better concentration, less distractions and brought students closer together to participate in collaborative learning.

Pedagogical Implementation

- 1. Lesson plans:** The tablets and applications must be integrated into the lesson plan. Lesson plans that include using the tablets should be relevant to the curriculum. Teachers must ensure that the use of the applications match the instruction time provided and that lessons are not rushing through the content of an application. Student capabilities need to be considered such as not using applications that require reading skills if students cannot read yet.
- 2. Tablet uses:** Teachers used a majority of applications to serve as visuals for students (human body visual for anatomy, and geometric shape visuals for geometry.) Although these visuals proved to be advantageous supplemental visuals for the students, there are several applications that could be used to apply content knowledge and show understanding. Moving forward with the implementation of tablets, teachers should not only use the tablets as visual aids, but they should try to use them to assess students understanding of content knowledge. In one of the teacher training sessions, teachers were provided with one such application, White Board, which would allow students to use the tablets to apply their knowledge interactively. This specific application has many cross-curricular uses that can be incorporated in lessons.
- 3. Starting the lesson with a ‘fun’ activity:** Many of the observed lesson plans observed began with a song or ‘fun’ physical activity. This brought focus and attention to the teacher while also exciting and energizing the students for the lesson.
- 4. Let the students unpack and repack the tablets from the boxes:** Having students individually unpack the tablets at their desk and repack them at the end of the lesson saved more time. Students should be instructed where to place their tablet boxes for the lesson. Saving time with the distribution of the tablets allowed for more instructional time. For future programs, purchasing plastic bins for tablet transportation and eliminating the tablet boxes would allow teachers to pass the tablets out with more efficiency.
- 5. Use the index finger and not the fingernail:** Students used their fingernail(s) when first using the tablet touchscreen. Using the index finger instead of fingernails ensured the touchscreen worked properly, remained unscratched, and clean.
- 6. Counting when turning on/off the tablets:** Students found it difficult to turn the tablet on/off and to distinguish between turning the tablet off and putting the tablet into ‘sleep mode’. Counting seconds when turning the tablet on/off helped the students to resolve this issue.
- 7. Giving step-by-step instructions:** Teachers who were most effective in incorporating the tablets in their lesson were those who gave explicit step-by-step instructions for operating and navigating through the tablet. This kept the students’ attention and provided a structured, order and timely tablet navigation.
- 8. Teacher modeling:** When giving step-by-step instructions, teachers need to model each step on their own tablet before instructing students to do so. The tablet screen should be facing the students as the teacher models. This allows students to visually comprehend the instructions.

<p>9. Allow sufficient ‘wait time’: When teachers were giving and modeling step-by-step instructions, they moved too quickly and students were not given enough time to process and then complete the instructions, causing many students to get lost. It is necessary to allow students enough ‘wait time’ between giving an instruction and allowing students to complete the instruction. Circulating the room allows teachers to see if students have followed each direction. ‘Wait time’ amount varies from grade level to grade level.</p>
<p>10. Define a common tablet language: A common language for specific words that are used throughout every lesson was developed. This involved creating names for the main icons that were being used, and for navigating instructions like “tap”, “touch”, “hold”, “swipe left” and “swipe right”. Developing a common language will prove valuable as the teachers continue to implement the tablets across grade levels. As students progress through school, each teacher will have adopted the same common language, which will eliminate confusion as the implementation process continues into other grade levels. Effective teachers reinforced this common language at the beginning of every class.</p>
<p>11. Drawing instructions on the chalkboard: At times, when modeling instructions, students found it difficult to see what the teacher was instructing. Improvising by drawing tablet instructions on the chalkboard allowed students to visualize the teacher’s instructions. Teachers should draw the common language tablet buttons including the “home”, “menu”, “back” buttons. Drawing a sketch of the application icon and the name of the application on the chalkboard for each lesson also proved helpful.</p>
<p>12. Small group instruction: If multiple teachers are available in classroom, breaking the students up into groups cuts down on the teacher to student ratio, and allows for teacher assistants to provide more support in using the tablets.</p>
<p>13. Collaborative learning: Students were able to help each other when someone was confused or on an incorrect screen. Further implementation of tablets in the classroom would be more productive if students were instructed to work collaboratively to learn and solve problems.</p>
<p>14. Teacher directives: Teachers should develop a clear directive for transitioning student’s attention to and from tablets. For example, when the teacher wants to have student focus on them, they can instruct the students by saying, “Tablets down, hands on your lap, eyes on me!” By giving students a directive for focusing attention to and from the tablets, teachers can better instruct the class and keep the attention of all students.</p>
<p>15. Review lesson when using tablets: The tablets are meant to be supplements to the lesson plan taught by the teacher. Though tablets provide many forms of independent student learning, it is important that the teacher reviews the lesson instructed with the tablet and ensures that all of the students (especially on a 1:2 or 1:3 ratio) fully understand the lesson. This is recommended throughout the lesson by using the tablets and the chalkboard. In parallel to reviewing the lesson, exercises that were done on the tablet should be repeated on the chalkboard.</p>
<p>16. Physical exercise as practice: As the lesson is concluding, exercises and practice are important for solidifying the lesson taught. Physical exercise (having students come to the front of the class for example) will bring more attention and focus, and will reinforce what the students just learned.</p>
<p>17. Student tablet navigation: Once students appear to understand how to use the tablet teachers should ask the students to navigate the tablets by themselves without teacher instructions. This leads to increased collaborative learning amongst the students.</p>

General Management

<p>1. Teacher proficiency: Teachers need to be fully proficient with the tablet and the various applications that they will use to complement their lesson plans in order to effectively and efficiently teach their students. Teacher proficiency is a key milestone in creating a successful tablet implementation program.</p>
<p>2. Applications need in French: Moving forward with the implementation of the tablets, it would be beneficial to find additional apps that provided literature or texts in Haitian Creole. It was evident that there is a limited amount of print material at all grade levels. Teachers and students would benefit from having a rich text environment, and finding applications to create such an environment would be highly beneficial.</p>
<p>3. Applications with sound: Some of the teachers chose applications that use sound. More often than not, the sound disrupted the attention of the students and created noise and disorganization. If using an application with sound, the teacher should explain how to use the application in detail beforehand including teaching the ‘volume’ button, providing step-by-step instructions and going through the application together, as a class.</p>
<p>4. Tablet lesson time length: The average lesson time in the two observed schools was between 30-40 minutes. Instruction time should be no less than 30 minutes.</p>
<p>5. Smaller classrooms: The smaller the classroom the easier and faster the implementation program is.</p>