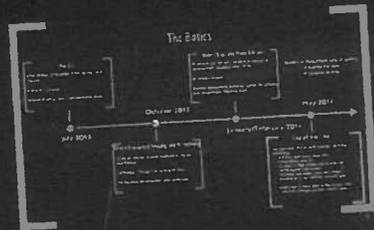


# Access Learning: Year 1

Presentation to the Hawaii State Board of Education Finance Committee



### What Has Happened in the Schools?

With an Google app for Schools, there is a wide range of different reports that we can generate.

### What do Educators, Parents, and Students Think?

[Text describing survey results and feedback from stakeholders]

<http://goo.gl/5H0n1>

# The Basics

## Phase I

6,913 devices (170 tablets, 6743 laptops) and chargers.

8 schools: 2 islands

Schools develop their implementation plans

## Phase I Ends and Phase II Begins

All schools completed a series of professional development modules from CRDG.

All devices imaged.

Student deployment continues across the schools and completes in February 2014.

Combined loss/theft rate of .089%

-2 teacher devices

-4 student devices

October 2013

July 2013

January/February 2014

May 2014

## Device Deployment/Imaging and PD Planning

2 schools deploy devices to students (Keaau and Pahoa)

OITS team "images" remaining devices.

Professional development gets underway

## End of Year One

Approximately 99% of funds expended (pending payroll lag).

- 329 theft deterrent storage carts.
- 456 projector adapters.
- Licenses for digital ELA curricular materials.
- 50 PD days for each school.
- Peripheral technology, using cost savings - headphones, cases, software, extra chargers.

Additional \$1 million spent on PD services, theft deterrent software, and safe school program.

**Total funds retained at state level.** \$99,894.52

**Total funds to purchase goods and services that went directly to schools.** \$8,983,107.65

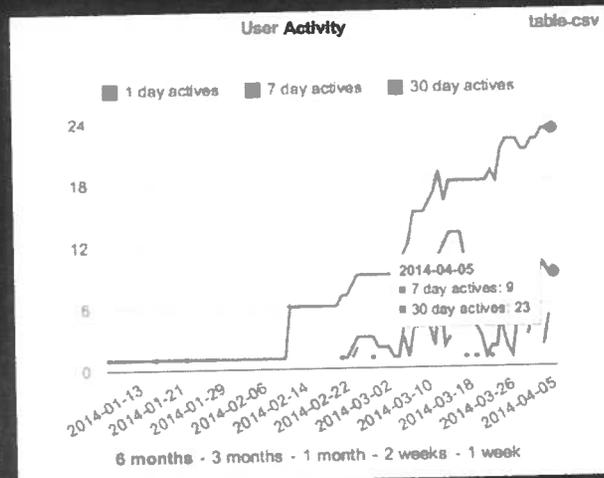
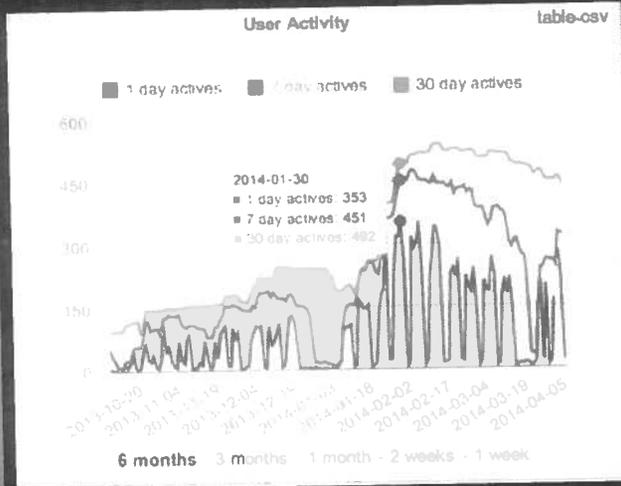
**Total funds that went directly to schools.** \$187,517.40

**Total C Funds** \$532,467.65

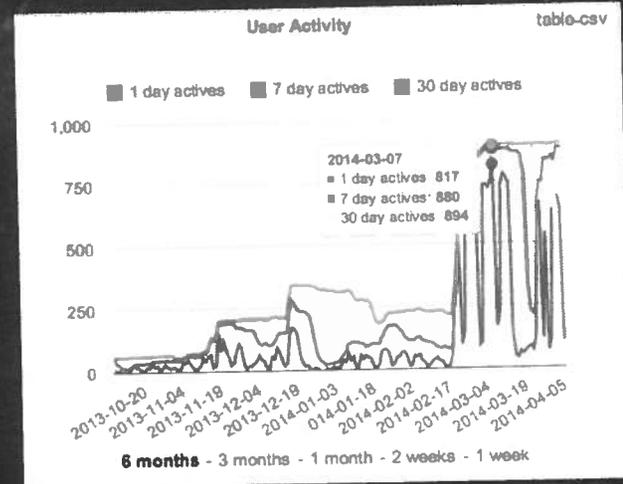
**Total B Funds** \$8,586,551.92

**Total A Funds** \$151,500.00

# What Has Happened in the Schools?

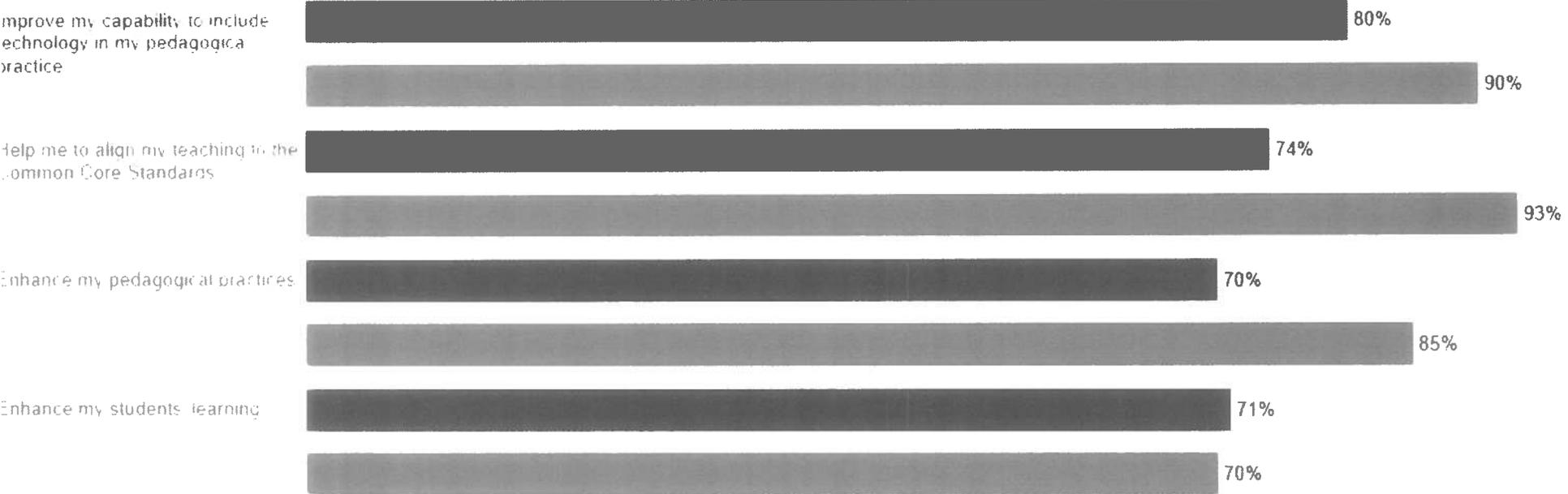


Activity on Google Apps for Education.  
 Three schools, three different contexts,  
 three different rollout plans.



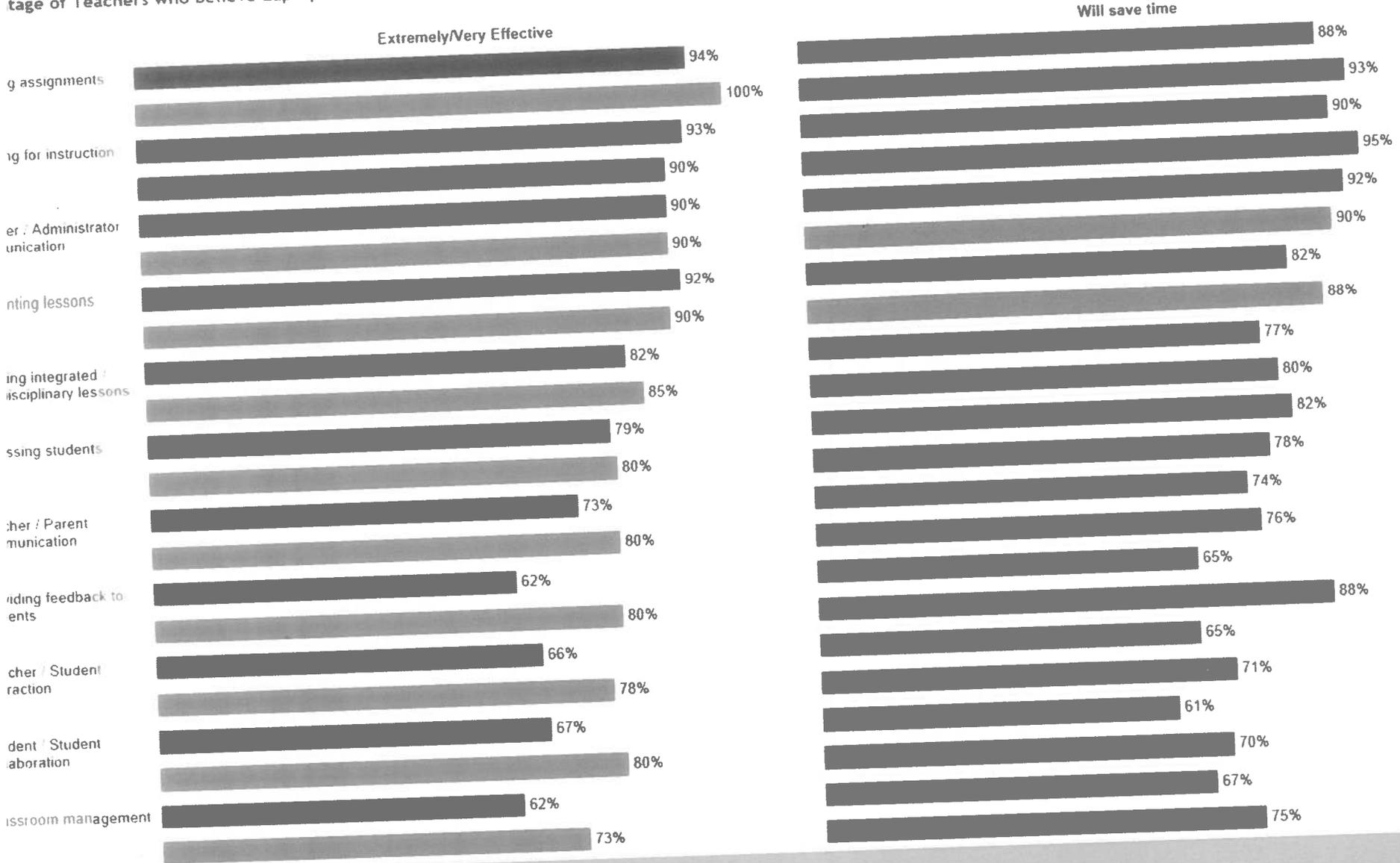
Teacher who agree that using Computers to implement new curriculum will

Fall 2013 Spring 2014



■ Fall 2013 ■ Spring 2014

Percentage of Teachers who believe Laptops are Effective and Save Time



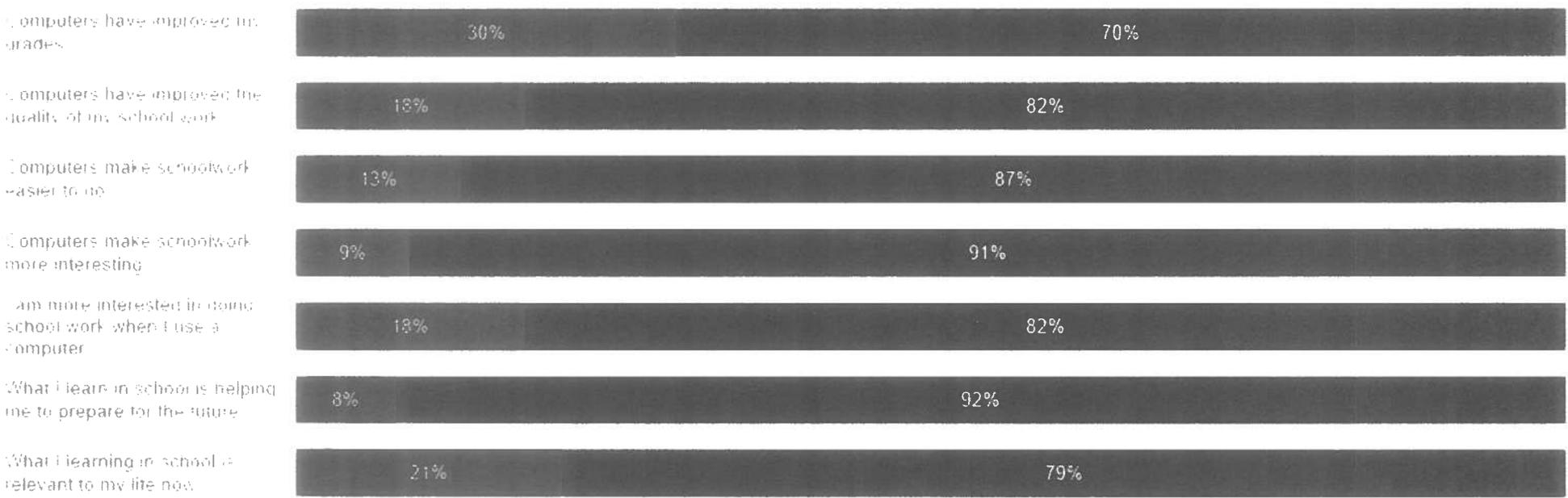
Fall 2014 Spring 2014

### Teacher Feedback on How Technology Integration can Benefit High-Needs Students



Percentage Agree/Disagree Among Students Using Laptops At Least Once A Week

No Yes



**Challenges from Year 1**

Additional time for professional development (year 1 PD concentrated to half of a semester in order to meet the legislative requirements).  
Need more opportunities for teachers to see their peers using the devices

Customized professional development sessions (in order to ensure a strong foundation, year 1 PD had a menu of modules that schools all had to complete).

Provide more opportunities for collaboration.

Access to a library of resources

Allow for customized implementation plans

Commitment of resources to ensure viability of project in the long term.

**How the Department is Helping in Year 2**

- ✓ Schools will have a full school year to complete professional development offerings.
- ✓ Increased collaboration opportunities on the project community site.
- ✓ Additional opportunities to visit the UH Lab school classrooms.
- ✓ Schools offering site visits to their pilot peers
- ✓ Menu of professional development modules that schools may access.
- ✓ Schools meeting with the vendor to review the menu and develop a school specific approach.
- ✓ Continuation of wiki wiki professional development sessions from OCISS.
- ✓ Increased usage and expansion of the project community site.
- ✓ Creation of collaboration communities specifically for technology coordinators.
- ✓ Continue to update the project community and resource sites.
- ✓ Disseminate information via the wiki wiki professional development sessions.
- ✓ Bi-weekly project updates.
- ✓ Continue to support schools as they modify the plans they developed in year 1
- ✓ Provide locally customized professional development strategy.
- ✓ Provided guidance on existing procurement pathways.
- ✓ Unbudgeted needs request for year 2 to continue project management support, wiki wiki professional development, in depth professional development modules, and project evaluation.

**Table 1: Year 2 Funding Strategy**

Item	Cost	Funding Source
12 month state office teacher (project management)	\$72,000	Unbudgeted Needs Request
12 month state office teacher (PD)	\$72,000	Unbudgeted Needs Request
10 month state office teacher (PD)	\$66,000	Unbudgeted Needs Request
Professional Development with CRDG	\$329,737.50	OITS Money (\$150,000) and Unbudgeted Needs Request (\$179,737.50)
Travel for PD	\$18,300	Unbudgeted Needs
Evaluation	\$24,900	Unbudgeted Needs Request
<b>Total</b>	<b>\$600,000</b>	

**Table 2: Comparison of Supplemental Budget Request and Unbudgeted Needs Request**

Item	Supplemental Budget Request	Unbudgeted Needs Request	Difference
12 month state office teacher	\$72,000	\$72,000	None
12 month state office teacher	\$72,000	\$72,000	None
10 month state office teacher	\$66,000	\$66,000	None
Professional Development with CRDG	\$275,000	\$329,737.50	\$54,737.50 increase (\$275K was an estimate)
Travel for PD	\$18,300	\$18,300	None
Funds to schools for tech support	\$96,700	\$0	Removed from request, will not fund.
Evaluation	\$0	\$24,900	\$24,900 increase
<b>Totals</b>	<b>\$600,000</b>	<b>\$432,937.50</b>	<b>\$167,062.50 reduction</b>

# What do Educators, Parents, and Students Think?

More collaboration and communication. More efficient and effective. More level playing field.

"Technology has provided a means for all my students, including those with disabilities and my ELL students to be able to show me what they've learned in various formats. **It has allowed me to make learning more engaging, exciting, and fun.**"

"The 1:1 laptop program has improved education opportunities for students. **The school has finally caught up with private schools.**"

"In real life when I try to get a job that includes computers probably it's gonna be easier because I got a lot of practice when I was in school."

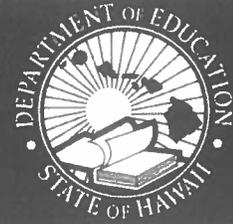
"The students in this community are at a disadvantage because they don't have access to the things people in this complex (name removed) have access to. Students over here don't really know how to type, they don't know where the home keys are. So just providing them with the laptop itself is helping them improve their situation. Because in this community, we know that it's like the circle of welfare, or the circle of, being in the social system."

<http://goo.gl/5hJOn1>



Prezi

# Access Learning



## Background

In school year 2013-2014, the Department embarked in an ambitious project to support schools' efforts to integrate technology into instruction. The Access Learning Pilot Project provided teachers and students in eight schools with digital devices, digital curricular materials, and significant professional development. The eight schools spent Fall 2014 participating in professional development on the new devices, curricular materials, and how to leverage technology as a tool to help support student learning. Three of the schools deployed devices to students in the Fall, the remaining five in the Spring. More online: [bit.ly/AccessLearn](http://bit.ly/AccessLearn)

### FUNDING

To support this work, the Hawaii State Legislature provided \$8.2 million to expend fully during the 2013-2014 school year.

- Spent 99.99% of funds allocated (\$10 remaining). Money went toward purchasing devices, digital curricular materials, chargers, storage carts, substitute teachers so classroom teachers can attend PD, and other peripherals.
- Spent an additional \$900,000 on professional development and theft deterrent software.

### THEFT/LOSS

The Department is excited to report a combined theft and loss rate of .089 percent; or, 6 devices (2 teacher, 4 student) out of nearly 7,000 total.

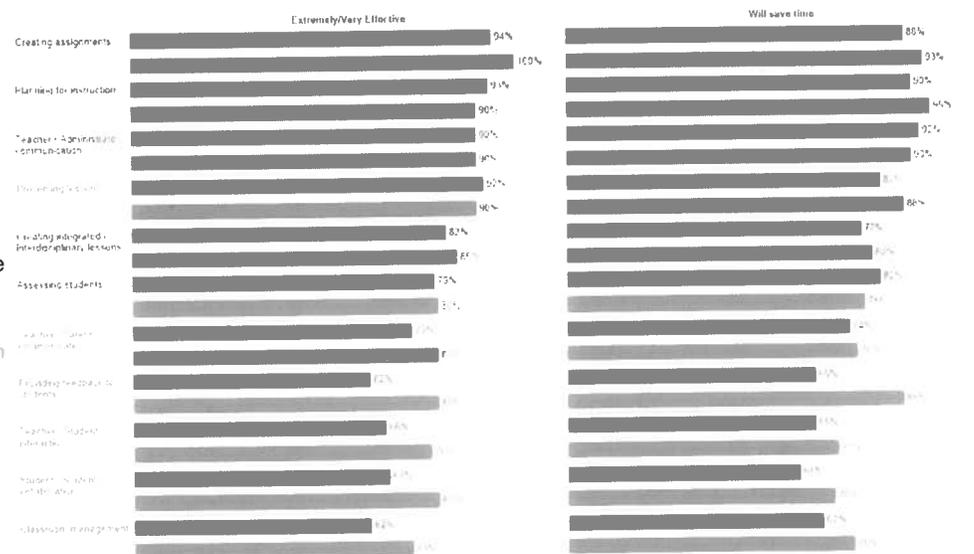
### OVERVIEW OF RESULTS

- VERY high percentage of teachers believe the laptops are effective and help them save time on tasks such as assignment creation, planning for instruction, communications, presenting lessons, etc.
- VERY high percentage of teachers believe the computers will benefit SPED and ELL students.
- The computers (and how the teachers used them) have increased student motivation, provided new ways for students to learn, promoted responsibility, resulted in higher quality products, helped students be better organized, improved communication between teachers and students, leveled the playing field with private schools, and enhanced teaching.
- 93% of teachers surveyed believe the devices will help them align their teaching to the Common Core (up from 74% in the fall).
- The pilot project activities have resulted in increased collaboration and communication between and across administrators, teachers, students, and parents.
- The pilot project activities have resulted in increased efficiency and quality at the administrator, teacher, and student levels.



*"Technology has provided a means for all my students, including those with disabilities and my ELL students, to be able to show me what they've learned in various formats. It has allowed me to make learning more engaging, exciting, and fun."*

Percentage of Teachers who believe Laptops are Effective and Save Time



The Impact of **H**awaii's Access Learning Program on  
Teachers in Eight **P**ublic Schools: Year One Summary Evidence  
Prepared by Dr. Jonathan Schwartz  
Uni**v**ersity of Hawaii West Oahu

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## **Foreword**

The evaluation team consisted of one part-time researcher.

Dr. Jonathan Schwartz is an Associate Professor in the Division of Education at the University of Hawaii West Oahu.

Dr. Schwartz was hired to be the external evaluator on the Access Learning (formerly CCDC) Pilot Program.

This report has been written by Dr. Schwartz who also collected and compiled all evaluation evidence.

## **Overview of Research**

The Access Learning pilot program (September 2013 to May 2014) provided all teachers in eight schools on two islands with laptop computers, and provided schools and teachers technical assistance. All schools received professional development for integrating laptop technology into their curriculum and instruction.

## **Summary of Findings**

How are the computers being used, what impacts have they had on teachers and students, what are the perceptions of professional development, and what obstacles do teachers, schools encounter?

The evaluation evidence collected over the first year of the program and presented in this summary report indicates that teachers use computers in a wide variety of ways to improve job performance and teaching, and that usage has increased since fall. Four factors were identified that are key influences of computer usage and acceptance: technology skill level, prior computer experience and usage, and participation in professional development activities. Another factor in influencing usage is support by leadership/administration. In situations where leadership is using laptops and Google applications, teachers feel more supported and have stronger feelings about the potential benefits of the initiative.

Teachers, technology coordinators and principals view the one-to-one computer program as positive. Teachers believe that computers will help improve performance, efficiency, and communication so that they can accomplish more in less time. They believe that computers will make them better organized and prepared. They also think that students benefit by having greater access to educational opportunities and more individualized instruction. This includes students with special needs as computers help make accommodations and modifications.

At school, students are using the devices primarily for reading, writing and math. Student usage is highest for a variety of activities including: completing homework assignments, searching for information, answering math or reading questions on websites, and completing writing assignments.

Students who use computers in the classroom are overwhelmingly positive about their benefits. More than 90 percent of the students surveyed reported that the laptops make schoolwork more interesting and better prepare them for the future. Students also report that computers help them to be better organized, get their work done more quickly, and with better quality. Students believe that computers enhance their learning and make them more responsible. Enhanced collaboration is a result of using computers, both teacher-to-student and student-to-student.

There is a strong belief among principals, teachers and parents that computers enhance the quality of public education in Hawaii. They believe that computers give students access to learning opportunities that they may not have had before. Parents believe that computers create a perception of a higher quality public school education. Teachers think that using computers along with the new digital curriculum will improve their practice and enhance learning, and that the computer is a tool that has the potential to transform teaching and learning. Parents believe that computers will get them more involved in their child's education and will change their understanding of technology. They believe that computers provide students with the skills to compete globally. They also believe that computers offer an opportunity for them to gain a better insight into the happenings in the classroom.

Teachers were satisfied with professional development offered by the Department of Education and by outside vendors. However, there were suggestions on ways to improve future professional development including time for exploration and practice, opportunities to watch other teachers use computers, customized professional development sessions, practical learning, collaboration with colleagues and access to library of resources.

Obstacles have been reported in the implementation of the laptop program. Teachers, principals, and technology coordinators believe that there was a lack of a customized/localized implementation program by school. Many teachers also report that there was insufficient time given to teachers for the planning and implementation process. Teachers seek a sustained commitment of resources including software for special populations such as students with special needs and native Hawaiian students. Principals, teachers and parents expressed concerns about the need to oversight, and control theft and damage. There is a need to get more stakeholders involved in the program. Efforts must continue to help teachers achieve high levels of integration.

Because this is only the first year, more data needs to be collected to determine the success and viability of the program. Best practices are emerging and are being documented so that lessons can be learned. There is substantial self-reported evidence that 1:1 computing has the potential to transform student learning. In the coming years, the impact on student learning needs additional attention and study. A sustained and systematic analysis will require new types of assessments, along with traditional ones, to capture the potentially new and more varied ways of learning that are occurring through the implementation of Hawaii's innovative 1:1 laptop technology program.

Presently, a level of performance for the overall program must be determined in order to determine if the program will be considered successful. The key to answering this question is to work with individual schools to help them conduct their own evaluations. In that way, the school can determine benefits in a way that is consistent with their own goals and approaches to

teaching, learning and data collection. This remains consistent with the Legislature's intent to empower each school to be directly accountable for student achievement.

There are a number of key questions to address as we move forward. These questions align with the key questions guiding the evaluation.

RQ1: How are laptops being used?

- How do we gauge commitment level?
- What levels of usage will be considered acceptable?

RQ2: What are the impacts of laptops on teachers and students?

- What measures will be used to evaluate student achievement?

RQ3: What are the perceptions of professional development?

- How will feedback from teachers be used to improve professional development?
- How will innovative and effective teaching be shared with other teachers?

RQ4: What obstacles have schools and teachers encountered using a computer in the classroom?

- How will the lessons learned be used to improve project effectiveness?

## **Background**

In school year 2013-2014, the Hawaii State Department of Education began implementation of the Access Learning Pilot Program, with the goal of providing teachers and students in participating schools with the opportunity to leverage technology to transform teaching and learning. During the fall of 2013, laptops computers were provided to teachers in eight schools with funds to offset the costs of a new digital curriculum, and support for teachers and school leaders on integrating technology into teaching. During the Spring 2014, laptops were deployed to the students (it is noted that two schools -- Keaau and Pahoa Elementary Schools -- deployed both teacher and student laptops in the Fall 2013 semester). This report provides some descriptive evidence about teacher use and the impacts on teachers and students. Additional evidence will come in reports written during the second year of the Access Learning program.

The Department of Education seeks to investigate the impact that technology can have on supporting innovative and effective teaching, engaging students in learning by providing interactive and quality content, and the potential for technology to alleviate burden on educators. Based on the results of the Access Learning Pilot Program, the Department will further explore expanding access to digital learning opportunities across the state.

In 2012, the Department approached the Legislature with an ambitious ask for \$42 million over two years for the first phase of a three-phased rollout to ultimately provide all teachers and students with a digital device. This program was proposed to begin with focused professional

development and the leasing of computer devices over a 4-year period. The Legislature approved a smaller-scale pilot and appropriated \$8.2 million for the purchase and implementation of digital devices within one school year. According to DOE representative Stephanie Shipton, the shift to a one-year purchase and rollout as opposed to a multi-year rollout required the DOE to adjust their program. Adjustments included compressing the professional development schedule and revising a budget that was originally based on costs estimated from a multi-state request for proposal with devices leased as opposed to purchased and services/supports from the vendor included as part of the proposal.

In June 2013, 12 schools applied for the pilot program and 8 were selected. Schools were selected based on technology infrastructure and commitment to participate in key aspects of the program (professional development, program evaluation, and implementation of a digital curriculum). Complex area superintendents and school principals worked together to complete the application and review project requirements. In addition to the application, selected schools completed a project agreement. Each school's project agreement included enrollment and teacher counts (to inform device purchase), the number of classrooms in the school (to inform device cart and other peripheral purchases), the resources the Department was able to provide, the school responsibilities, and the school points of contact/project team.

The DOE purchased devices for all teachers and students, charging and storage carts for each classroom, software (academic and security), and professional development, as well as providing funds to schools to offset costs associated with curriculum, asset tags, and substitute teacher days.

In the fall of 2013, the first implementation phase began. Schools completed professional development with three vendors: Apple Computers, the Curriculum Research & Development Group (CRDG) from the University of Hawaii at Manoa, and McGraw Hill or College Board. Apple Computers provided training that focused on fundamentals of using a Macbook or iPad, integrating computers into curriculum, language development in literacy, and creativity. CRDG provided training on Internet safety, good digital citizenship, and Google Applications for Education. McGraw Hill and College Board provided training on their digital English language arts curriculum. The Office of Curriculum, Instruction and Student Support (OCISS) provided on-demand wiki training sessions, scheduled and customized to meet each school's individual needs. Different vendors offered different professional development designs, mostly catered to the individual schedules and needs of each school.

By May 2014, all 8 schools had completed all scheduled professional development with CRDG, Apple Computers and McGraw Hill or College Board.

Computers were deployed to students at varying pace. Two schools deployed computers to students in fall 2013. Schools on Oahu deployed in early spring 2014.

## **Evaluation Design**

In May 2013, a team of staff from the Office of Curriculum, Instruction and Student Support (OCISS), Office of Information Technology Systems (OITS), Office of Strategic Reform (OSR), and the Systems Accountability Office (SAO) met to discuss the key goals, research questions and data points that would drive implementation of the Pilot project. The group decided on goals for the Pilot project to include:

- Support student mastery of the Common Core State Standards;
- Improve and increase the use of technology to support student learning; and
- Identify best practices and lessons learned to inform work across the state, in non-pilot schools.

In June 2013, the DOE created a team to construct a research design for the evaluation of the Pilot project. Taking into account research on existing 1:1 pilot projects in other states and districts, project staff and developers identified three core areas to examine: (1) Teachers and Teacher Training; (2) Student Learning; and (3) Schools and Community. Based on these areas, research questions were developed.

The evaluator and the DOE recognize that policymakers and others require evidence to inform their assessment of the program. Thus, the evaluation focused on answering four questions:

- How are laptops being used by teachers?
- What are the impacts of the laptops on students and teachers?
- What are the perceptions of professional development?
- What obstacles have school and teachers encountered?

A mixed-methods approach was used to collect and analyze evidence. A mixed-methods approach integrates a variety of qualitative and quantitative data collection techniques. For this research, the researcher started with the collection and analysis of quantitative data (surveys) to determine a relationship between variables. The researcher then used the information to inform the collection of qualitative data (interviews and observations). Using multiple evaluations and sources of evidence provided a triangulation of evaluation evidence, and increased the validity and reliability of findings. Specifically, evaluation was collected using the following tools:

1. Online surveys: Web-based surveys were used as the primary means of gathering data from students, teachers, technology coordinators, and principals.
2. Hard copy surveys: Paper surveys were used as the primary means of gathering data from parents and younger students.

3. Interviews: Focus group and individual interviews took place at all sites. During site visits, the evaluator met with students, teachers, team leaders, technology coordinators, vice principals, and principals. Interviews took place with individuals as well as small groups. In some cases, the evaluator attended team meetings and was granted time at the beginning or end to speak with the group.

4. Observations: Observations of classrooms were conducted during site visits.

5. The researcher also reviewed evaluations collected as part of professional development courses.

6. Case studies: The evaluator met with officials from public and private schools with one-to-one computer programs in the state of Hawaii. These schools included: Kalani, Ben Parker, Hale Kula, MidPac, Iolani, and Punahou. The review and analysis of these one-to-one computing programs helped inform the evaluation.

### **Evaluation Data**

Teachers, technology coordinators, students and parents and principals in the Pilot program were surveyed during the 2013-2014 school year. Table 1 reports the number of participants surveyed and returned, and the response rates. Response rates varied by school.

Teachers at pilot schools completed a pre-survey in the fall and a post-survey in the late spring in order to measure growth during the school year. All 448 teachers at the 8 pilot schools were contacted in the fall, and surveys from 161 teachers were returned and analyzed in the fall and 208 were returned and analyzed in the spring. There were 118 teachers who completed both pre surveys in the fall and post surveys in the spring. The pre-post analyses in this report are based on those 118 teachers.

All eight technology coordinators completed surveys in the fall and in the spring. All eight principals completed surveys in the fall and in the spring.

Students and parents were surveyed in the spring.

In addition to the surveys, 25 site visits were conducted at pilot schools from October 2013 to April 2014. During those site visits, 152 teachers were interviewed at the 8 schools and 93 students were interviewed. 35 lessons were observed.

*Survey responses:*

Groups	Fall 2013			Spring 2014		
	Number Surveyed	Number Returned	Response Rate	Number Surveyed	Number Returned	Response Rate
Teachers	448	161	36%	448	208	46%
Technology Coordinators	8	8	100%	8	8	100%
Principals	8	8	100%	8	8	100%
Students: K to 3	0	0	0%	2719	906	33%
Students: K to 8	0	0	0%	3372	2106	62%
Parents	0	0	0%	4856*	1188	24%

\*Estimated number of parents surveyed. Schools were asked to send home one survey per child. Student and parent surveys were not administered at one of the pilot schools, due to logistical challenges.

*Total number of site visits, observations, and interviews:*

Site Visits	Teacher Interviews	Tech Coordinator Interviews	Principal/VP Interviews	Student Interviews	Parent Interview	Classroom Observations
25	152	13	11	93	0	35

All teachers in the 8 schools in the pilot program were contacted and asked to participate in this evaluation study.

It is important to note that the results of this evaluation represent only the teachers, students and parents who returned questionnaires. While there are sufficient sample sizes to do a thorough data analysis, the samples do not represent all teachers and students because of the lack of data from non-responders.

## **Findings**

This section of the report provides evaluation evidence addressing the four questions in the evaluation:

1. How are the laptops being used?
2. What are the impacts of the laptops on teachers and students?
3. What are the perceptions of professional development?
4. What obstacles have schools, teachers, and students encountered in implementing the laptop program?

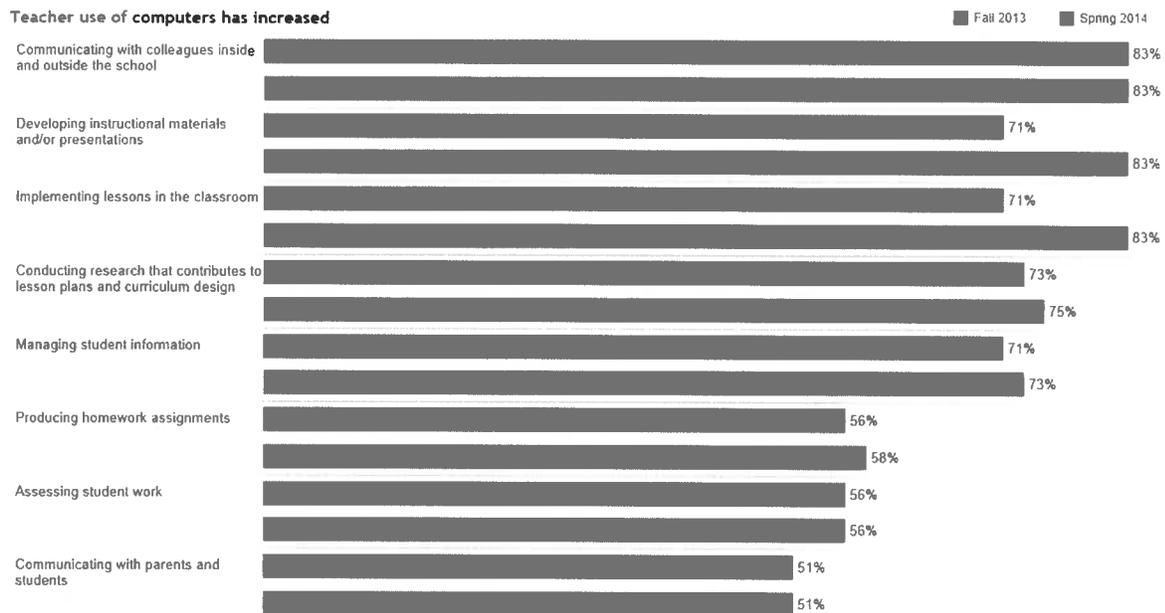
Additional evidence on related questions is also embedded in this section of the report. It is important to note that the evidence presented here addresses a very limited set of questions, albeit important ones. Additional research is needed in the future to more fully understand the longer-term impact of pilot on instructional practices, the learning process, student achievement, and the nature of schooling.

### How are the laptops being used?

Prior to the introduction of the pilot, there was extensive usage of computers by teachers in the public schools. According to the pre-survey, 93% of teachers reported using a computer. Teachers are using the laptops in a variety of ways in support of their instruction, and usage of the laptops has stayed steady or increased over the course of the implementation of the pilot.

The greatest increase in use is in the areas of developing instructional materials and/or presentations and implementing lessons in the classroom. Specifically, 71% of teachers surveyed in fall reported developing instructional materials and/or presentations versus 83% in the spring. Similarly, 71% of teachers surveyed in fall reported implementing lessons on the classroom versus 83% in the spring.

Teachers are using computers for these purposes more frequently. Usage a few times a week increased from 46% in the fall to 66% in spring. Daily usage increased from 34% in the fall to 49% in spring. The graph below provides additional details on how teachers are using the computers.



*We are expected to use the computers, and it's great. (Teacher Interview, Spring 2014)*

*In the past, we never had the luxury. Now we do. We can plan and teach different. It's made a huge difference. (Teacher Interview, Spring 2014)*

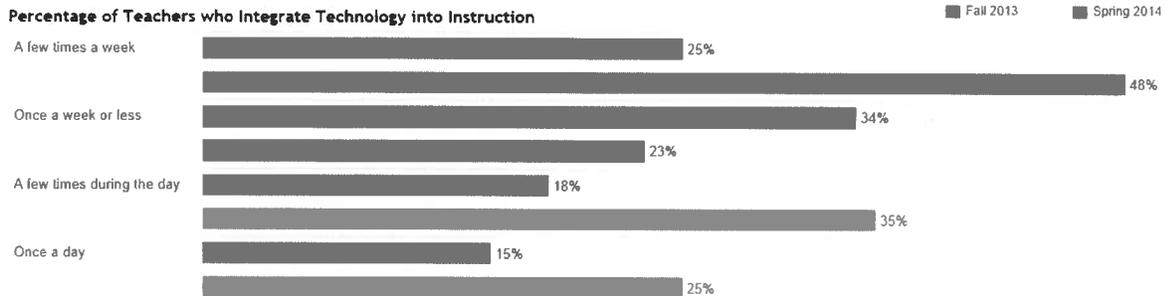
Additional comments suggest that high levels of usage can be attributed to expectations and usage by administration. Comments by these two teachers were typical.

*Administration is using it along with us. This is great. We feel supported. (Teacher Interview, Spring 2014)*

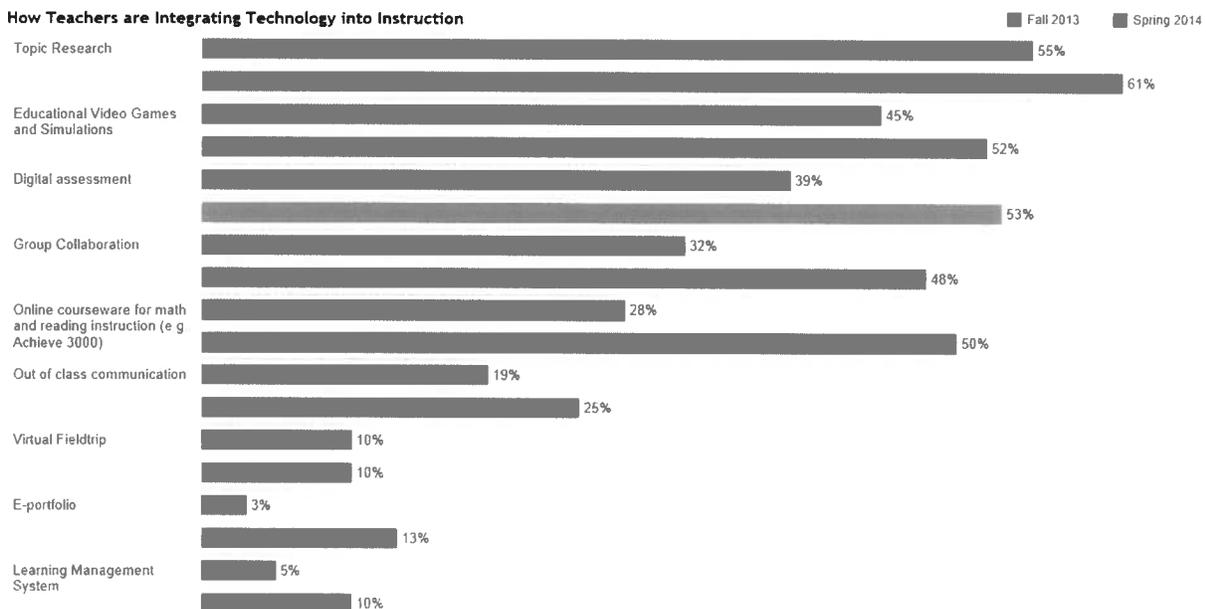
*There is an expectation that are that we are going to use it in the classroom - they [administration] are using it also (Teacher Interview, Spring 2014)*

## How Are Computers Being Integrated In The Classroom?

The data show that integration is occurring often and across a variety of teaching activities. As of spring 2014, more teachers were integrating a few times a week and on a daily basis.



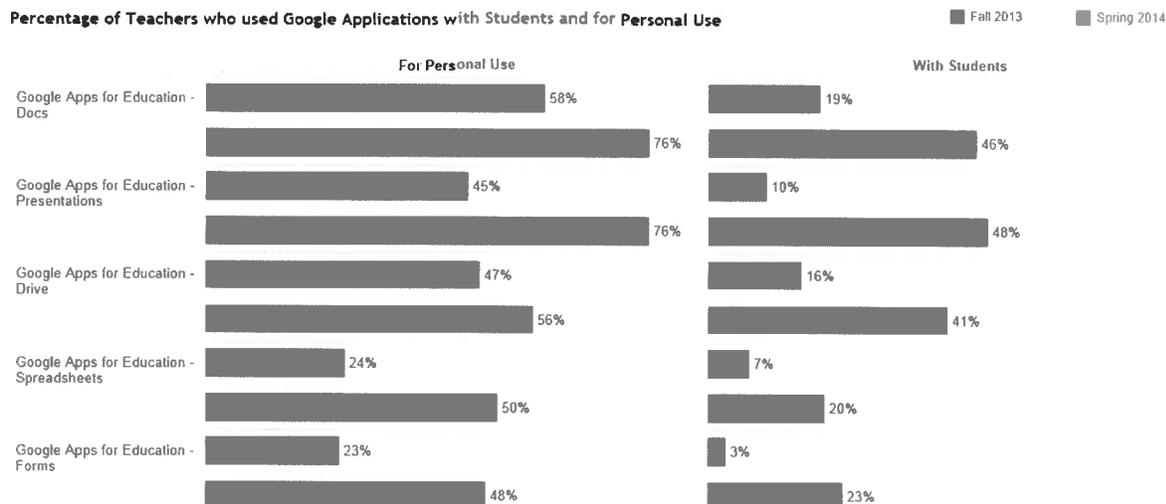
Integration consists of a broad variety of teaching activities and has increased significantly from fall 2013 to spring 2014.



## Are Teachers Using Google Apps For Education?

Google Applications for Education was a major part of the professional development provided as part of this pilot project. It is interesting to note that very few teachers who previously used Google Applications for Education for personal use were using these applications with their students in fall 2013. By the spring 2014, this was no longer true. With professional development provided during the Fall 2013 semester to the Access Learning schools and the deployment of

student devices in the Spring 2014 semester, teacher use of Google Applications for Education with students increased significantly.



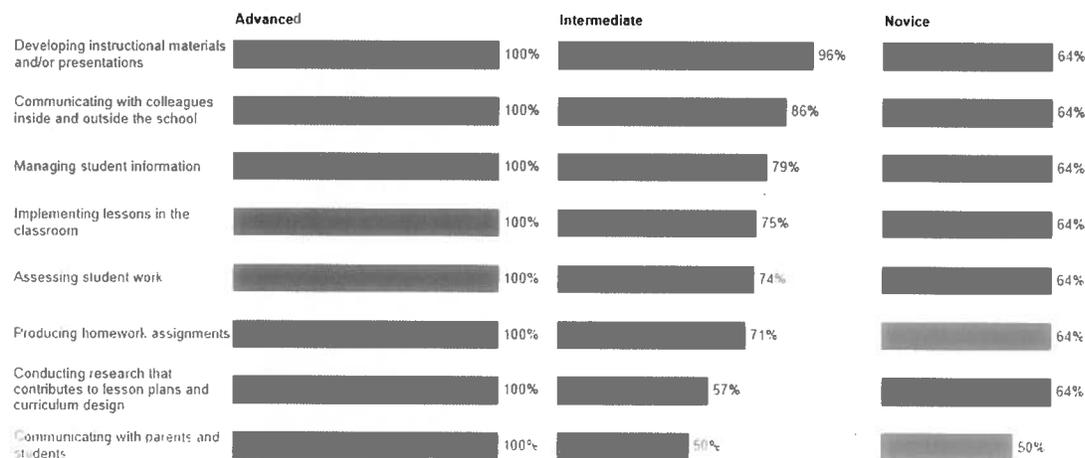
### What Drives Teachers' Computer Usage?

The key drivers of use of the technology are 1) prior computer experience and usage, 2) participation in professional development activities, and 3) teachers' skill levels.

#### 1. Computer experience

In almost all cases, the more computer experience a teacher had, the more they used their computer. This indicated that higher perceived skill level resulted in higher usage levels.

Spring 2014: Skill Level of Teachers who use the Laptop at least a few times a week



Teachers identified as “Advanced” are able to use pro software to edit and create videos, create websites using advanced tools, use blended learning models daily for instruction, and participate in online professional learning communities.

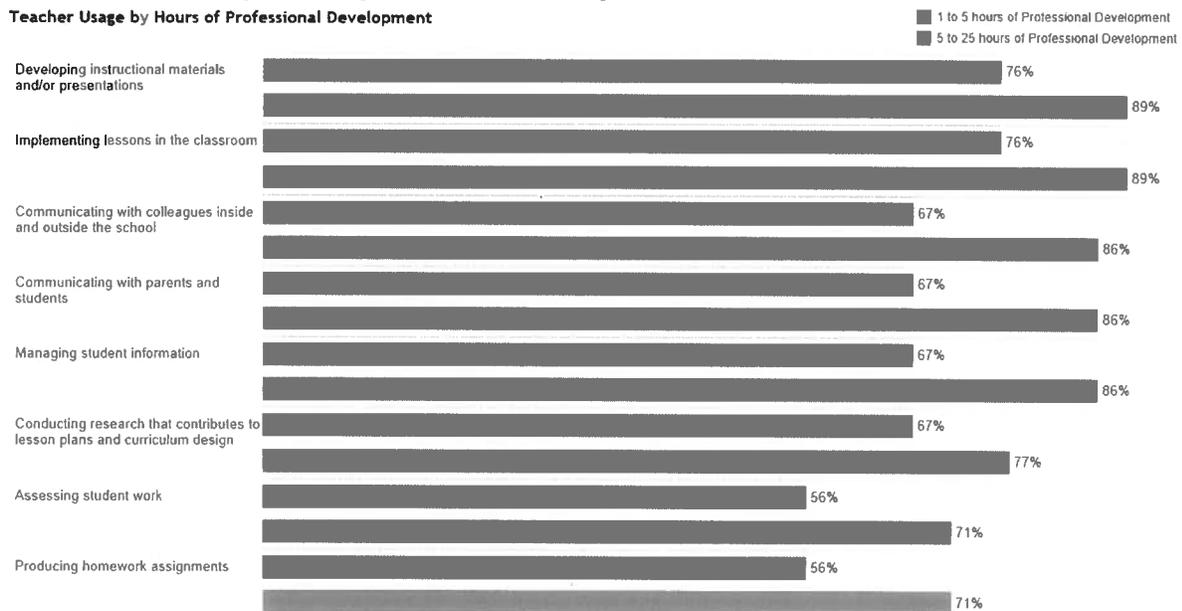
Teachers identified as “Intermediate” are able to create and edit photos and videos for classroom use; use online Web 2.0 tools for communicating and teaching; create and use online assessments for formative instruction; and use a digital whiteboard.

Teachers identified as “Novice” rarely use a computer.

## 2. Participation in professional development

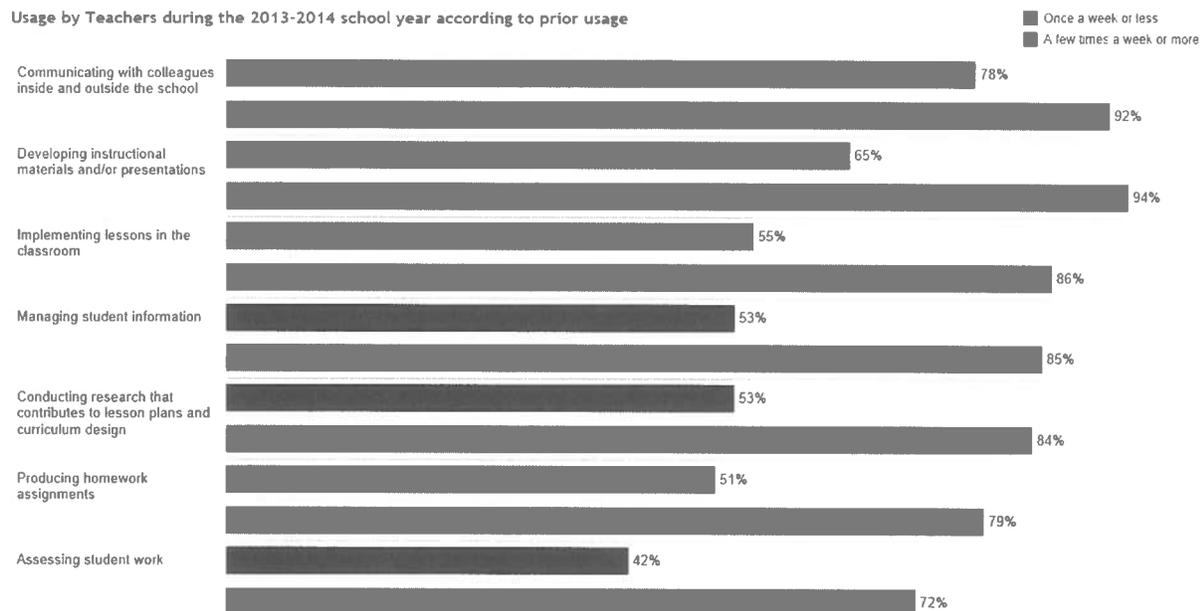
Professional development leads to higher usage levels. Usage levels are higher among teachers with greater participation in professional development activities.

**Teacher Usage by Hours of Professional Development**



## 3. Prior computer usage

Prior usage results in higher usage levels. The table below shows that usage levels were considerably higher among teachers who had integrated computers prior to the 2013-2014 school year.



#### 4. Leadership

Teachers and principals agree that leadership at all levels is needed to ensure usage.

*Leadership within the school (with and beyond the principal) helps to guide the vision for the implementation of initiatives such as this. (Principal Survey, Spring 2014)*

*I also felt it was important that I took the lead with using Google Drive for my Department business as soon as possible; so I created a lot of Department work on the computer. This was aided by the fact that a department member was very knowledgeable with Google everything when I needed help. Once I knew a start date for the students use of computers, I began to create the necessary folders, documents, and presentations so that students would be constantly using their computer in my Science class. The constant use of my iBook Air has led to great leaps and bounds in my competency in Google Drive. (Teacher Survey, Spring 2014)*

*It's good, I know that. I can see my principal, other administrators using the laptops with Google apps. We are all in this together. (Teacher Survey, Spring 2014)*

#### How Are Students Using Computers?

Student usage began in most schools during the spring 2014. By class, usage was highest in Reading classes (87%), Writing classes (71%) and Math classes (71%) with science and social studies also at high levels. By activity, student usage is high across the board, with completing homework assignments, and searching for information generating the highest levels.

*Percentage of Students who use a Laptop for the following classes:*

<b>Class</b>	<b>% of students using computers</b>
Reading	87%
Writing	71%
Math	71%
Science	60%
Social Studies	60%
Music	24%
Art	17%
PE	16%
Foreign Language	10%
None	1%

*Percentage of Students who use the Laptop at least once a week or more to:*

<b>Activity:</b>	<b>% who use at least once a week</b>
Complete homework	78%
Search for information	76%
Answer math or reading questions on websites	69%
Complete writing assignments	62%
Work on assignments in small groups	56%
Organize information	56%
Take notes	53%
Take a quiz or test	50%
Create presentation and projects	42%
Create website movies, or music	15%
Go on a virtual field trip	12%

Some comments:

*The time when we used the computer for music. We had to use this thing called Garage Band. I had a blast using it because it was like we got to make music like our favorite artists. It was just so fun to make my very own music! The next time we use it, we might even get to record our voices to hear along with the music. I had so much fun playing around with the different types of genera's. Thats the most interesting class project I have done using the computer. (Students Survey, Spring 2014).*

*IMovie because it will help me if i ever become a movie director or movie editor i will know how to put the movie together. (Students Survey, Spring 2014).*

*The coolest thing I did was work on a video that I am doing for a memory for the end of the school year (Students Survey, Spring 2014).*

*When i made my Power Point or keynote project of Walt Disney l because i wanted to do more of those kinds of projects after i realized how fun it was to do that. The second project i have done was Henry Hudson, the computers made me want to learn more about those things because the computer allows me to watch videos about it so that then i can understand it more that paper and pencil. (Students Survey, Spring 2014).*

*when we did research on hawaiian caste system and we did very well researching and making Power Points. (Students Survey, Spring 2014).*

*The most interesting class project I did with the computer was the Science Fair boards. I used the computer to type my information and research my information. It was fun because I got to look for my information and receive it fast. (Students Survey, Spring 2014).*

*a project about traveling to different places in the world. When looking for places I found pictures of exotic paradises. This was also fun because it allowed me to visit places I've been to or want to go to (Students Survey, Spring 2014).*

*The most interesting thing I did in school is the bishop museum writing . I like it because we type and we can write our stuff in a different way . I also like it because we are in a new generation and its fun learning new stuff like the computers . Also for the bishop museum writing I get to keep my stuff on it so I don not get it lost in a big pile of mess when on the computer I can delete if I want to and to not lose it. (Students Survey, Spring 2014).*

*when I do learning games on my computer, we should do that all day!! (Students Survey, Spring 2014).*

*The most interesting class project I have done with a computer was when we did our nellie bly booklets. thats when we had to type and copy and paste pictures. thats the most interesting class project I've done with computers. (Students Survey, Spring 2014).*

*Right now in science we are designing a group rovers we need to research what we need to do to our rover that will make it survive on different plants (Students Survey, Spring 2014).*

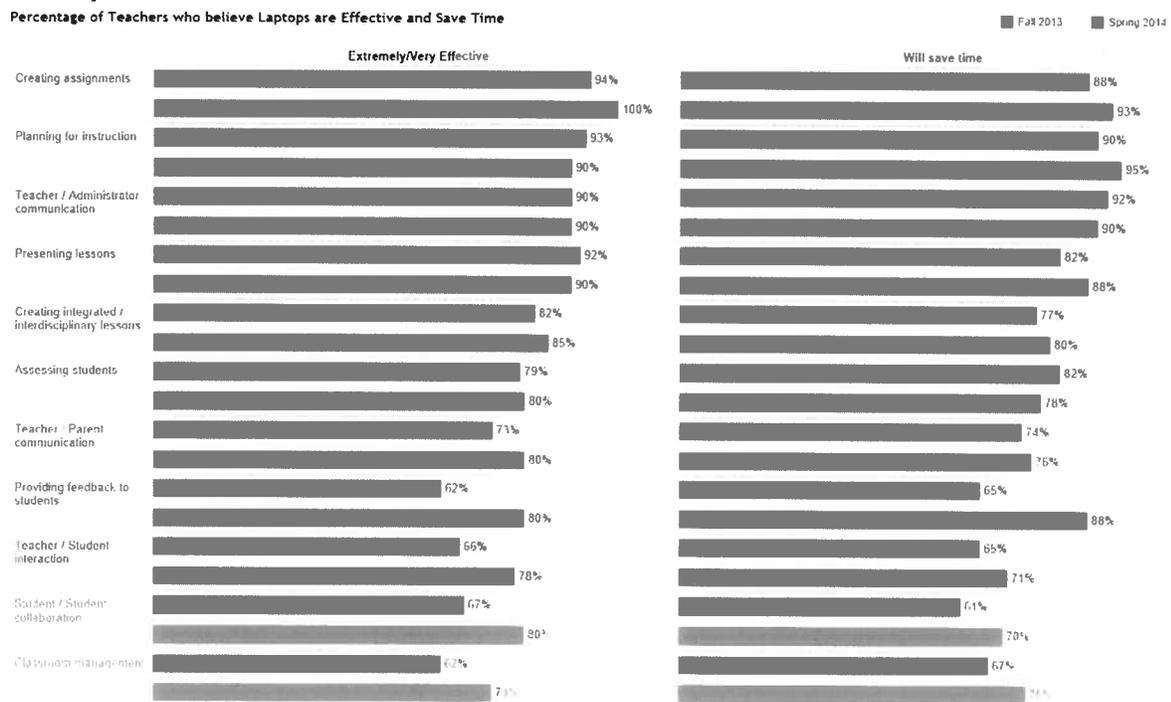
*...I did a project on the sea stars. We researched on computers, articles,and books. Then we recorded and drew out what we learned about the sea star. There was different topics about the sea star that we had to do. I remembered that I researched on whats on the bottom side of the sea star. (Students Survey, Spring 2014).*

*eye on the world project because it was really fun saying my speech because it really improved me not being scared (Students Survey, Spring 2014).*

## What Are The Impacts Of Laptops On Teachers And Students?

### What Are The Impacts Among Teachers?

1. The very large majority of teachers surveyed in spring 2014 are very positive about the potential of computers in the classroom. Teachers think that computers will help them improve performance, efficiency and communications so that they can be a lot more effective, and accomplish more in less time.



2. Improving efficiency is a critical benefit. More than half of teachers surveyed believe a computer saves a significant amount of time when planning for instruction, presenting lessons, creating assignments, managing students, and communicating with students, administrators and parents. Their view was that computers save time improved over the school year as computer usage increased in the classroom.

*As an English teacher, grading writing assignments can be a real chore/pain. Grading writing assignments on the Drive helps grading significantly. (Teacher Survey, Spring 2014)*

*My directions and agenda are clearer because students receive them orally as well as in the class blog. Engagement and my ability to read through student responses is so much faster. My ability to share responses with the students is fast and easy. (Teacher Survey, Spring 2014)*

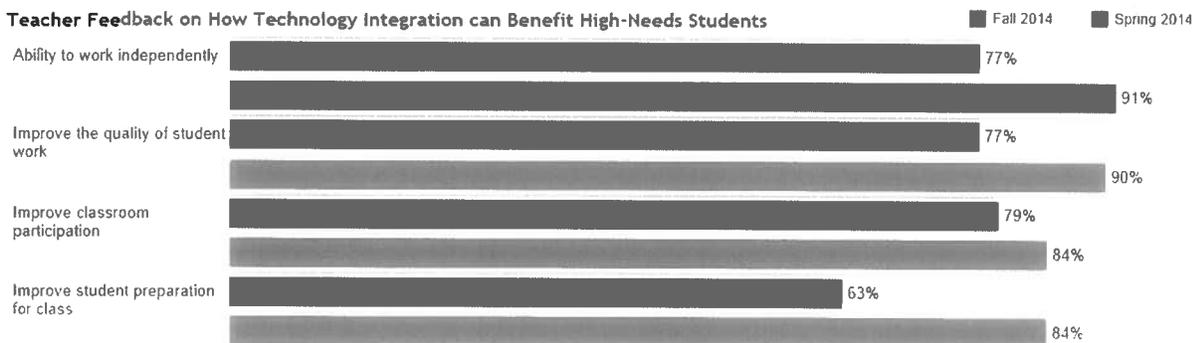
*Google forms dumps test results into a spreadsheet and highlights the lowest scored questions. This allows my team and I to identify what questions students are getting wrong. We can then adjust our teaching accordingly. (Teacher Interview, Spring 2014)*

3. Better organization and preparedness is another benefit cited by teachers.

*I'm more organized. I have last semesters assignments, worksheets, exams, all in one place. Easy for reuse. This will make my prep easier next year also. (Teacher Interview, Spring 2014)*

*Notes, forms, and other things are sent out to us. I have everything I need for our grade-level meetings. We share things, use the calendar. Yes, I'm prepared. Everything is all in one place. (Teacher Interview, Spring 2014)*

4. Teachers feel strongly about the benefits of computers for students who may have special needs.



As teachers used the computers during the school year, their views of the benefits for special education students increased. This can be attributed to the large number of teachers who see computers as a way to made accommodations and modifications in the classroom.

Comments included:

*Technology has provided a means for all of my students, including those with disabilities and my ELL students, to be able to show me what they've learned in various formats. It has allowed me to make learning more engaging, exciting, and fun. Having the computers has opened up a world of possibilities for my students (Teacher Interview, Spring 2014).*

*Students who have difficulty writing legibly are able to type out their reports. This has been great for my students who have fine motor difficulty (Teacher Interview, Spring 2014)*

Teachers also believe computers enable them to target individual learning styles so that students can advance at their own pace and levels.

*For iReady, they are able to downshift, if the students is having difficulty with a particular lesson, say for example main idea and they are having difficulty, if they are not getting it as the computer is providing assessment, they can downshift, they can do a repeat lesson of a different kind. for intervention. (Teacher Interview, Spring 2014)*

*In addition, in kid biz, some of my students were reading on 7th and 8th grade level. Their kid biz reflects that. I do not need to go looking for hard copy literature for these readers. I can provide them the same lesson talking about, for example, agriculture and the same story, it's just fed to them at their level. That is the beauty. You are differentiating. (Teacher Interview, Spring 2014)*

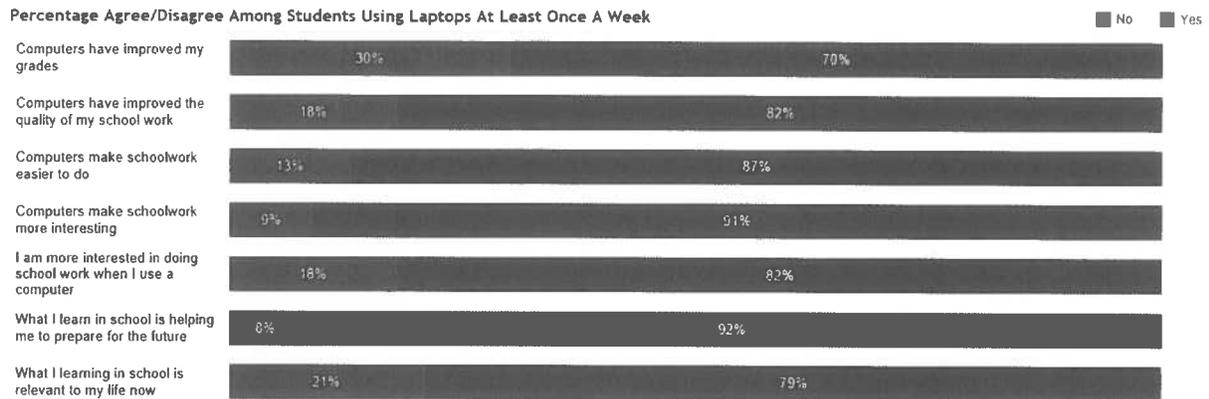
Interviews with teachers suggest the benefits for gifted and talented (GT) students as well.

*Computers give GT students more opportunity to excel. They can get as creative as they want - fewer boundaries (Teacher Interview, Spring 2014)*

*Just give them an assignment and they can go crazy on it - no limits (Teacher Interview, Spring 2014)*

### What are Students' Attitudes and Perceptions?

Students who use computers in the classroom are overwhelmingly positive about the benefits. They are excited about computer learning, and it is evident in their quotes that they clearly prefer the computer learning process to traditional teaching methods (i.e., textbooks, etc.)



The impact of computers on students was grouped into eight themes: 1) Increased motivation, 2) provides new and different ways for students to learn, 3) promotes responsibility, 4) perception of a higher quality product, 5) a better organized student, 6) collaboration: teacher-to-student and student-to-student, 7) creates perception of a more even playing field between schools, and 8) enhances teaching under the new digital curriculum.

#### 1) Increased motivation

*easier and more fun. Instead of writing a long piece with your pencil and your hand is sore, you can type it out instead and your hands won't be as sore as your hand while writing with your hand and pencil. Also, in real life when I try to get a job that includes computers probably it's gonna be easier because I got a lot of practice when I was in school. That is why I like to use the computer in school. (Students Survey, Spring 2014)*

*makes me more interested in school. For example, we had to find more about Hawaii and I liked reading and looking on the computers than books because it is more fun. (Students Survey, Spring 2014)*

Teachers and parents agree, noting that students are more excited and more engaged.

*Students are much more excited about learning (Teacher Survey, Spring 2014)*

*great looking finished products, students excited to write and create, students love presenting with keynote instead of writing papers (Teacher Survey, Spring 2014)*

*I find the students are more motivated to do the work since it is on a computer. I also enjoy using the Gizmos (Explore Learning) and find that is so much easier since each child always has his or her computer with him or her. (Teacher Survey, Spring 2014)*

*I have seen increased student engagement in classwork because their computer allows them to have a "voice" at the same time as everyone else. Less students are distracted or off task. Google docs has allowed students to work more collaboratively in and out of the classroom setting (Teacher Survey, Spring 2014)*

*My child talks about it at home all the time. (Parent Survey, Spring 2014)*

*My child is more enthusiastic than ever before. (Parent Survey, Spring 2014)*

## 2) Provides new and different ways for students to learn

*makes my work easier and I learn in a different way (Students Survey, Spring 2014)*

*helps me learn better about subjects like,reading,writing,and spelling (Students Survey, Spring 2014)*

*helps me learn things a lot better than having to learn from a person. For me, when I started long division I had to work for 2 weeks just to improve. So I thought that I could start using a computer to help me. That is my reason why I like to use a school computer. (Students Survey, Spring 2014)*

*when I'm on the computer my mind is off of everything but the activity that I'm doing. Another reason that I like using the computer in school because it helps me focus and it's more interesting. It is interesting because you can see pictures of people and their expression and on paper you can see pictures but, not in color. Paper school work is boring. It also makes your hand hurt when your like writing a summary or a paper on paper work. On a computer your mind and fingers are working and your hand doesn't hurt at all (Students Survey, Spring 2014)*

*more fun doing work on the computers. like taking notes i don't even need a pencil. We do a lot of projects on the computer and its really easy and fun! I really think the 1:1 program improved my grades because it makes me think " oh yay I can do my homework on my own computer instead of waiting for someone to get off the class computer". I really like using the computers in school because it's cool having your own. I do SO much work with it everyday! There is never a day i DON'T use the computers! Overall I LOVE the computers because it helps me in school, grades, projects and overall helps me be successful to be effective and ethical user of technology in today's world where everything is online (Students Survey, Spring 2014)*

## 3) Promotes responsibility

*makes me understand the responsibility to take care of my own computer (Students Survey, Spring 2014)*

*I feel I am more responsible now. I need to be able to take care of my computer. We've learned how to be responsible, and I can do it now* (Student Interview, Spring 2014)

*feels like I'm more responsible when i have an expensive object with me that i have to care for.* (Students Survey, Spring 2014)

*very useful , and very fun to use . Also gives us a chance to show our responsibility in using these laptops* (Students Survey, Spring 2014)

*I like using a computer in school because it boosted my responsibility level. Because now i'm careful about how or where i put my bag/ computer case.* (Students Survey, Spring 2014)

#### 4) Creates perceptions of a higher quality product

*I like to use the computer because i can do a lot of my work faster and neater.* (Students Survey, Spring 2014)

*I do better work like doing a group presentation when we all work together and we can communicate a improve each other better even when we're far away* (Students Survey, Spring 2014)

Many comments related to writing. Comments suggested that students are able to work quicker and more efficiently.

*helps me do my essays faster* (Students Survey, Spring 2014)

*easier and more fun. Instead of writing a long piece with your pencil and your hand is sore, you can type it out instead and your hands won't be as sore as your hand while writing with your hand and pencil. Also, in real life when I try to get a job that includes computers probably it's gonna be easier because I got a lot of practice when I was in school. That is why I like to use the computer in school.* (Students Survey, Spring 2014)

*I like using computers in school because its more easier like we don't have to write out our paw we can just type it because when we write its going to take longer than typing it out and when you write it is going to take about 15 or even 20 minutes and when we type it takes only about 5 to 10 minutes* (Students Survey, Spring 2014)

*better than writing it down on a post it when i could be writing on a computer so much faster. also, when we write something, you can change then print. and also the color* (Students Survey, Spring 2014)

*made homework easier because we can leave comments on each others work and help each other out for a better grade, finish assignments faster and take notes better by typing instead of writing then having to erase a lot, but instead we can just copy, paste, highlight and delete or command z. The computers helps us organize papers because we can choose the type of format we want, and just by writing the papers and in the correct style my teachers give us a higher grade! Also we can choose to have our notes in a bulleted list or we have the option to make a presentation. But most of all it helps us to communicate with each other better and easier because we don't have to read messy handwriting we can understand the other font when we read someone else's writing (Students Survey, Spring 2014)*

*way easier to take notes. For example, when I write or take notes of another persons' presentations, it usually takes me at least a minute to write a paragraph. Knowing that I am a fast typer, its half as fast, if not, faster than writing (Students Survey, Spring 2014)*

*makes doing assignments WAY MORE FUN! For example, I can create a blog, slide show, movie trailer, manage projects and much more. I like using a computer also because it makes the homework easier and somehow it improved my grades. It made homework easier because we can leave comments on each others work and help each other out for a better grade, finish assignments faster and take notes better by typing instead of writing then having to erase a lot, but instead we can just copy, paste, highlight and delete or command z. Te computers helps us organize papers because we can choose the type of format we want, and just by writing the papers and in the correct style my teachers give us a higher grade! Also we can choose to have our notes in a bulleted list or we have the option to make a presentation. But most of all it helps us to communicate with each other better and easier because we don't have to read messy handwriting we can understand the other font when we read someone else's writing.*

##### 5) Better organized

*I can even organize things on my desktop so it won't get cluttered unlike a normal desktop. I also like to explore icons, even though some of them are boring. I can type faster than how I write. With the computer, I can have almost unlimited space within it. I get a variety of choices on what I can do, like I could go on to Safari or Google Chrome. (Students Survey, Spring 2014).*

*So I have all these folders, see them there. Each is a different color. But the great thing is that i don't lose my work. It's all right there, in each folder. (Students Interview, Spring 2014).*

Teachers agree

*My students are better organized. All of their assignments are on Google Drive. It's so easy for them to review for an assessment because everything is in one place: all comments, all*

corrections, all critiques, all mistakes. In the past, they might miss something if it were not recorded. Now everything is recorded. (Teacher Interview, Spring 2014).

## 6) Enhanced collaboration: teacher-to-student and student-to-student

### Teacher-to-student:

*The thing that is proving most useful is Google docs because our teachers use it to collaborate. Everything is written and shared in a timely manner. Nothing is lost because it is on the Google Drive. When we go into the classroom, our teachers are making google docs and sharing it with the students. The students learn how to make copies of the Google docs and they start entering information. (Teacher Interview, Spring 2014)*

### Student-to- student:

Surveys suggest that teachers believe that computers improve classroom collaboration between traditional and high achieving students. These beliefs increase substantially during the school year.



*The parents concerns were that when the students get their digital device that they would be glued to the device and not collaborate with anybody, but they is not what we see. It is what everybody else has told us when we were getting trained. In order to use the devices, the students still need to collaborate, you know, before they start working on the computers they collaborate. So that is what we see when we go into the classroom. There are 3-4 kids around the computer with all their laptops out. They're talking, they're typing. They're talking, they're typing. So it's really cool that they are all working together to get smarter using the devices. (Teacher Interview, Spring 2014)*

*They are working together. It's great. The best part is that when they meet in their groups and they explain their thought processes in the comments section. This helps them really understand better. (Teacher Interview, Spring 2014)*

## Enhanced quality of public education

There is a perception by principals, teachers and parents that computers enhance the quality of public education in Hawaii.

1. Principals, teachers and parents is that computers give students access to learning opportunities that they may not have had before.

*the students in this community [name removed] are at a disadvantage because they don't have access to the things that people in this - 30 minutes away - in the [name removed] complex have access to. Students over here don't really know how to type, they don't know where the home keys are. So just providing them with the laptop itself is helping them improve their situation. Because, in this community, we know that it's like the circle of welfare, or the circle of, being in the social system. So if we give access to these types of things it can broaden their understanding of things and help them to get more enlightenment. (Teacher Interview, Spring 2014)*

*levels the playing field. If our kids go to Kamehameha, they are going with students who have had computers for years and years. If they have computers, they are not going to think they are dumb or that Kamehameha is too hard for me. It gives them a goal to reach. We can finally prepare them to be equal with their peers. (Teacher Interview, Spring 2014)*

*Everyone has access to technology even if they are not able to afford it. This makes it fair for ALL students. (Parent Survey, Spring 2014)*

*Providing technology to ALL students in a particular grade levels the playing field for learning opportunities. (Parent Survey, Spring 2014)*

*I know that children of today must learn how to use this if they want to get ahead in the world. (Parent Survey, Spring 2014)*

*I feel we are just beginning to move in the direction that will make a difference in our children's future. (Parent Survey, Spring 2014)*

*It's about time the school bring technology to the school. cause everything now a days deals with computers. (Parent Survey, Spring 2014)*

*Great investment in students' education and learning. (Parent Survey, Spring 2014)*

68% of parents surveyed believe that the Access to Learning program has changed their own perceptions of their child's school. Many parents stated that they feel that computing elevates the public schools, putting schools on par with their private counterparts. Comments such as the following were very common.

*The 1:1 laptop program has improved education opportunities for students. The school has caught up with private schools. (Parent Survey, Spring 2014)*

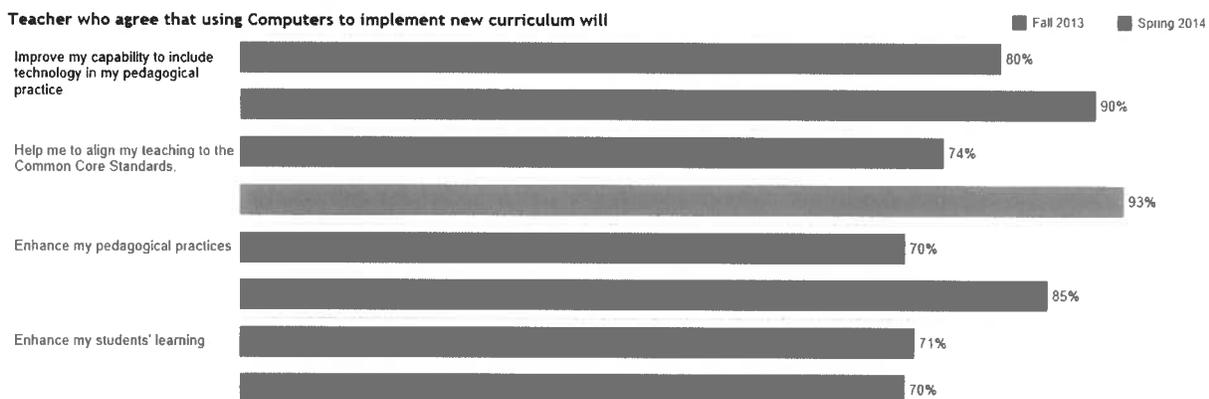
*More appreciative of school, comparable with the private schools. (Parent Survey, Spring 2014)*

*In the past I thought only private schools had these benefits. I'm thinking public education has gone into the 21<sup>st</sup> century learning. (Parent Survey, Spring 2014)*

*Although I feel the kids are receiving a good education at [school name here], it is impressive that the school is providing a technology opportunity for each student with such a good product. (Parent Survey, Spring 2014)*

## 2. Improved teaching using digital curriculum

Teachers agree that using computers will enhance their instruction. After utilizing the devices during the school year and receiving professional development, teachers agreed even more strongly, as is shown in the graph below.



Comments by teachers suggest that the computer is a tool that has the potential to transform teaching and learning.

*I have found ways to enhance my teaching using technology ... its not just adding an extra layer to the curriculum, it actually is embedded into how we do things and makes for a better learning environment. (Teacher Survey, Spring 2014)*

*I have found that having 1-1 devices for my students has been extremely beneficial to my students. It opens up many more opportunities for learning. (Teacher Survey, Spring 2014)*

*Student writing has improved, student creativity is enhanced, student participation has increased, publishing to an audience changes everything. (Teacher Survey, Spring 2014)*

*I think that the computer can be an effective tool but that it is not the only tool that is effective.*  
(Teacher Survey, Spring 2014)

Parents agree as to the benefits of computers in the schools.

It seems that computers are beginning to have an impact on parent's involvement in their children's education. 23% of parents believe that the 1:1 program has gotten them more involved in their child's school and/or schoolwork. 21% of parents believe that the 1:1 program has changed their own understanding of technology. Parents also believe that computers provide students with the skills to complete with globally.

*I know that children of today must learn how to use this if they want to get ahead in the world.*  
(Parent Survey, Spring 2014)

*I feel we are just beginning to move in the direction that will make a difference in our children's future.* (Parent Survey, Spring 2014)

*It's about time the school brang technology to the school. cause everything now a days Deals with computers.* (Parent Survey, Spring 2014)

*Great investment in students' education and learning.* (Parent Survey, Spring 2014)

Comments suggest that parents believe that computers offer an opportunity to gain insight into the happenings in the classroom.

*expanded communication via computer so that parents can view assignments, progress, test scores, etc.* (Parent Survey, Spring 2014)

*More communication, more updates on what the kids are doing.* (Parent Survey, Spring 2014)

*Parents more informed about what kids are working on* (Parent Survey, Spring 2014)

Parents also believe that computers present an opportunity for parents to learn about technology

*There are many things my son is learning that I am still trying to understand, I am learning with my son at the same time.* (Parent Survey, Spring 2014)

*We are learning together.* (Parent Survey, Spring 2014)

### What are the perceptions of professional development?

Evaluations collected as part of professional development course and interviews with teachers suggest that teachers were generally satisfied with professional development offered by the DOE and by outside vendors.

There were numerous suggestions on ways to improve future professional development: 1) time for exploration and practice, 2) opportunities to watch other teachers use computers, 3) customized professional development sessions, 4) practical learning, 5) collaboration with colleagues and 6) access to library of resources.

#### **1. Time for exploration and practice**

Principals and teachers recognize the need for more time allocated to professional development activities. This was the most common request.

*...Professional development was rushed. I need more time. A full year would have been good, and then I could have spent the summer becoming familiar with the computer, different websites, and planning lessons. (Teacher Interview, Fall 2013)*

*...Simply playing around with it and teaching myself how to use features, blogging, Google Docs. (Teacher Survey, Spring 2014)*

*...What I am not comfortable with is flowing in and out of the computer, trouble-shooting, creating great assignments and lessons as well as google drive/docs etc. Learning new things especially the computer is difficult for me and will take me more time and practice. (Teacher Survey, Spring 2014)*

Technology Coordinators made similar comments

*Training for teachers. This year we were given so much in such a short time. Its hard to become successful unless given the time to practice and explore, and then implement. (Technology Coordinator Survey, Spring 2014)*

#### **2. Opportunities to watch other teachers use computers**

Teacher repeatedly requested opportunities to see the implementation of software and hardware.

*There are many web sites and postings that provide many insights into successful adoption of a 1:1 program. While our training was largely geared towards logistics, procedures, policies, it would have been beneficial to study and learn from others who have been successful. The collaboration with our school districts outside of our state of Hawaii would have been good. (Teacher Survey, Spring 2014)*

*I know there were teachers who went to the University school. They saw good math lessons. I want to go, I want to see. This is how I would learn best.* (Teacher Interview, Spring 2014)

*I'd like to be able to watch videos of teachers who are using computers in the classroom.* (Teacher Interview, Spring 2014)

### **3. Customized professional development sessions**

Repeated requests in both interviews and surveys were made to tailor professional development to meet the individual needs of teachers according to skill level and content area expertise.

*...Customized PD throughout the year with follow-up training support from the state project team* (Principal Reflection, Fall 2013)

*...I've looked for my own avenues. The PD offered by the DOE was not helpful for me. I already know how to use Google Apps. I've been talking with friends on the mainland, taking part in online forums, and searching the Internet.* (Teacher Interview, Fall 2013)

*...[professional development] needs to be differentiated. For more experienced users, there was too much downtime. More experienced users wanted faster pace, less experience users wanted slower pace.* (Teacher Interview, Fall 2013)

*And I hope that the training takes into account the different levels of competency of the teachers so that teachers can receive training that will be helpful and not overwhelming.* (Teacher Survey, Fall 2013)

*I'm a beginner. Those professional development sessions went too fast for me. I wish there was PD for beginners. I learned maybe one or two things.* (Teacher Interview, Spring 2014)

### **4. Practical learning**

*Aid teachers in designing integrated units that they can integrate with technology.* (Teacher Survey, Spring 2014)

*I'd like to learn how to integrate computer technology into my teaching of science, because I teach science.* (Teacher Interview, Spring 2014)

*...I hope that training on "HOW" to integrate technology into the curriculum is given the top priority in this program.* (Teacher Survey, Fall 2013)

*...I teach math. I want to know what applications, what teaching strategies are best for teaching math. I want to see how computers are being implemented for math at other schools.* (Teacher Interview, Spring 2014)

*No instruction on students working independently on computers was shown for this program. No examples of doing a complete lesson with a varied level of students in a classroom was presented. Teachers are learning independently as they teach lessons about the program and this causes inconsistency of how the program is suppose to be taught. (Teacher Survey, Fall 2013)*

## **5. Collaboration with colleagues**

*...My fellow teachers, more knowledgeable than I am with computers, help (Teacher Survey, 2014)*

*...We work together as a team here at [school name retracted]. If I need help, I just ask. We've gotten lots of support. I think everyone wants this project to succeed (Teacher Interview, Spring 2014)*

*I would like to be able to meet and talk with teacher from other schools, other states who are using computers (Teacher Interview, Spring 2014)*

*...wanting to use the computer with my students, 1-1 computers makes resources accessible, at fingertips...so i want to be better able to use it...so i've asked other teachers what they have done and have implemented just a minute portion of what i'm sure the computer is capable of doing. (Teacher Survey, Spring 2014)*

## **6. Access to a library of resources**

*...I am not only using the computer for email or word processing. I am using it to instruct for teaching and helping students access programs to help with their learning. When problems arise, I need to trouble-shoot on the spot which is very stressful at times but necessary to do and a learning curve for me. (Teacher Survey, Spring 2014)*

*...It was difficult cramming all of the training into one semester. It didn't give teachers a chance to try it out before they moved on to the next training. (Principal Survey, Fall 2013)*

Along with these requests, teachers want more opportunities for professional development.

*...I think if I had more professional development this would be phenomenal. I think right now, my limited knowledge of all the available educational programs is what's holding the class back. I only utilize the programs such as a3000, brainpop, class dojo, ixl, and reading wonders but I know there are sooooo many more other programs available that I could do if I knew how. (Teacher Survey, Fall 2013)*

*...Professional development will allow me to see how one-to-one devices can be best utilized for student achievement. As I learn more about programs or sites that I can use for instruction, the more I can help students navigate their devices and to utilize them to address their needs. (Teacher Survey, Fall 2013)*

*...My team and I want more professional development. We want to see the programs that are out there. We want to see what teachers at other school are doing. (Teacher Interview, Spring 2014)*

As they wait for more sessions, teachers are searching out their own learning opportunities.

*...[I'm watching] webinars, looking for interactive websites which contain content that would help supplement/support student learning on specific common core standards, watching Youtube or Teaching Channel videos for professional development, and Safari Montage, BrainPop, and Discovery for multimedia supplements for curriculum. (Teacher Survey, Spring 2014)*

*... Proactively researching on how to improve my computer skills (Teacher Survey, Spring 2014)*

*...[I want] Exposure to new applications and uses (Teacher Survey, Spring 2014)*

#### What obstacles have schools and teachers encountered using a computer in the classroom?

Based interviews and responses to survey questions, there are obstacles to be addressed in order to effectively implement 1:1 computing. They are 1) lack of a customized/localized implementation program by school, 2) insufficient time given to teachers for the planning and implementation process, 3) commitment of resources, 4) availability of resources for special populations, 5) need to monitor student usage, 6) theft and damage, 7) involving stakeholders, and 8) levels of integration

#### **1. Lack of a customized/localized implementation program by school.**

There is a need to recognize the vast differences that exist between each of schools in Hawaii, and to tailor programs to the specific needs of each school. These differences are important as they impact the decisions made at the schools related to rollout of the 1:1 program. They suggest that no single implementation approach will work. Rollout will be unique for each school and, thus, should not be standardized. This was recognized by both teachers and principals:

*... different schools should have been allowed to implement the programs differently to see what worked and what didn't. (Teacher Survey, Spring 2014)*

*...[Implementation] time lines should be different. You are not going to replicate the process. (Teacher Interview, Fall 2013)*

*...Implementation and outcomes of the program are going to vary across the different school settings. (Principal Interview, Fall 2013)*

Timing of distribution of computers to students. For example, two schools distributed computers to students in fall 2013, and others took a more measured approach to device distribution.

Allowing students to take computers home. Some schools are considering allowing students to take computers home, other schools have decided that computers will not go home with students, and yet other schools are exploring plans to allow students to take computers home at a later time.

*...Our community out here is unique. We face very different challenges than other schools. The idea of sending computers home is something that may not work. We have families with 3 kids in [name removed] high school, and 4 kids in [name removed] elementary school. That's 7 computers in one home and turns a home into a target. (Administrator Interview, Fall 2013)*

Level and type of professional development. Some schools need more professional development, and some schools need less. Some schools need more advanced professional development, and some schools need professional development to be more basic. Some schools can rely on their own faculty to provide professional development.

Issues with transient students. Some schools need more computers and more software licenses based on the number of transient students.

Issues with the bell schedule. The bell schedule causes more complexity for some schools. However, schools are finding innovative strategies for addressing this challenge. In one instance, the school changed the bell schedule in order to provide students with passing time to check the devices back in at their homeroom (to accommodate device going with the student through the school day).

## **2. Insufficient time given to teachers for the planning and implementation process.**

This was the teachers' and principals' number one complaint: that they were not given enough time to plan for the initiative. Most teachers wanted more time to prepare before students receive computers. Time as an obstacle is most dramatic for those less proficient teachers who are not comfortable with computers or for those who are not familiar with the Apple operating system. The following comments reflect numerous statements by teachers:

*Beginning the school year with Computers and with Computer-trained Teachers should show the gains expected. (Teacher Survey, Spring 2014)*

*...It's difficult and problematic to begin a new program mid year. I wish that we had more time to plan for implementation. Feel overwhelmed because we have great things planned and now have to plan again with new reading program on devices. Not against it... just wanted more time to plan! (Teacher Survey, Fall 2013)*

*Teachers need time to collaborate and plan re use of the technology. School time should be carved out for teachers to do so to maximize the use of this very expensive!!! technology. (Teacher Survey, Spring 2014)*

*...Classroom teachers have not had time to be effectively trained much less have time to practice with, explore and effectively utilize the tools given us. We were already more than 30 instructional days into the school year before my students and I had access to the devices. Evaluating the program at this time is therefore, in my opinion, premature. (Teacher Survey, Fall 2013)*

When asked if teachers would prefer this initiative had not been rolled out – if the pilot was giving them additional burden - teachers repeatedly stated that they would still feel overwhelmed by the amount of work not directly related to teaching students. According to teachers and principals, it's not this specific initiative but it is all the initiatives.

*...It's like giving students five words every week - they learn the words. You increase the number of words to twenty each week - how many words are they truly retaining? There are too many initiatives added to the plate and nothing is being taken off. (Teacher Interview, Fall 2013)*

*...It's like this, when you get all your work done, there is just more to do the next day. So you get a computer and can be more efficient, yes, I get my work done quicker. But then there is just more work to do. It just never ends. (Teacher Interview, Fall 2013)*

*With the roll out of the EES system and other mandates there was not enough meeting days (Wednesdays meetings) to schedule solid professional development. The modules/sessions may need to be broken down into smaller time frames to fit an hour meeting time or substitute funds may need to be sent to the school to do full day trainings. Many teachers are not willing to go beyond their normal work hours that are set in their contract (Principal Survey, Spring 2014).*

The need for more time stems from the amount of learning involved, the vast number of initiatives rolling out in schools across the state, and the need for a clear message. Classroom teachers, especially those who are beginning computer users, are faced with an enormous learning curve. Not only must they learn how to use a computer, but they must now also learn to integrate computers into the classroom. This is most problematic for less proficient users. For example, comments from these teachers are fairly typical of comments from many others less proficient users:

*...I am a beginner/novice user of the technology and equipment in the classroom so I may not know how to use the equipment to further enhance my lessons. (Teacher Survey, Fall 2013)*

*...In addition, the state (in terms of public education) has been a PC state for so long that more professional development with Macs should have been provided before allowing students to use them. One day of professional development is not enough for someone who has never used a Mac. It's like giving car keys to a toddler and saying "now you can compete in a Nascar race." (Teacher Survey, Fall 2013)*

*...this is an amazing shift in how we teach and how students will learn. A shift in thinking of this magnitude is not something that takes place overnight. We need time to digest this new way of doing things, we need time to think about how we will teach differently, we need to plan and prepare. Where is the time?* (Teacher Interview, Fall 2013)

An administrator made similar comments, noting a major concern as,

*Paradigm shift for teachers in regards to using technology for instruction, collaboration, and communication (teacher to teacher; teacher to student; student to student; teacher to parent; school to community).* (Administrator Reflection, Fall 2013)

This issue of feeling overwhelmed, unprepared, and anxious seems to stem from an inability to properly plan for the 1:1 initiative. Many teachers, school level staff and administrators repeatedly note that a clear and coherent message from the Department of Education has been lacking as part of this project. They were unsure of the objectives.

*...Teacher's don't know what to teach or how they are expected to use computers. This should have been communicated in a better way.* (Teacher Survey, Fall 2013)

*..I am wondering if the students will be getting any kid-friendly training, or teachers will get training on how and what to teach kids, what programs will be appropriate, what we should look, etc.* (Teacher Survey, Fall 2013)

Some Principals agree that better planning should have taken place.

*...better planned upfront with all parties involved. Calendar of events and a research-based timeline (regarding pilots) [should have been] established.* (Principal Survey, Fall 2013)

*...1. Pre-planned coordinated schedule 2. Longer lead time to schedule training 3. Allow more time to accomplish tasks* (Principal Survey, Fall 2013)

Communication also involves setting of clear expectations. Based on discussions with schools that have existing one-to-one programs, many mistakes will be made. There will be glitches, problems with receiving devices, and problems with a new curriculum. This needed to be communicated to principals, teachers, and technology coordinators.

### **3. Commitment of resources**

Many teacher expressed concerns about the future of the pilot project and whether sufficient resources would be made available to ensure success.

*It's a shame the media is so involved in this pilot as it goes on. Everyone is a critic but doesn't realize that implementing this is a process, not a drop and go and everything is supposed to work perfectly! It seems the curriculum is not 100% ready to handle the system (Wonders seems to be giving many people troubles), and inconsistent funding is just a trademark of how the system*

*works -- if you implement the first year, and then decide to yank funding the second year, of course there are going to be challenges to being successful!* (Teacher Survey, Spring 2014)

*...How long is the commitment of resources available so this can be implemented and sustained for following school years?* (Teacher Survey, Fall 2013)

Specific concerns related to the need for additional personnel, equipment, and professional development.

*I would like to have a dedicated technology consultant on campus that can handle non-educational tasks and is competent in the areas of networking, imaging, trouble-shooting.* (Principal Survey, Spring 2014)

*...Will we be able to hire additional personnel to manage the devices?* (Teacher Survey, Fall 2013)

*...5% overage of devices not enough for a high transient complex area, and more equipment needed (ear buds, hard cover cases for protection, etc.* (Teacher Survey, Fall 2013)

*... I wish there was more support on the teacher side in PD to become more effective at managing and being creative with all of the devices.* (Teacher Survey, Spring 2014)

*If we had more training, and more time to learn how to implement resources it would have been way more successful* (Teacher Survey, Spring 2014)

Principals agree that more funding is needed. This includes additional funding for professional development, training, additional personnel, educational programs, and equipment such as headphones and cases.

Principals suggested

*...The next level of support needs to come at the budget level. Whether through legislation or administrative rule their needs to be a way to change fiscal requirements so that WSF monies can be saved and used in a three or four year cycle to allow for multi-year leasing of hardware. I believe attention to this matter will allow for statewide implementation. There will still need to be some legislative help but we won't have to rely on total funding.* (Principal Survey, Fall 2013)

*More professional development streamlined to the needs of the school. Teachers that have limited knowledge with technology are struggling to implement successfully. These teachers need more assistance with just the basics* (Principal Survey, Spring 2014)

*Funds for subs or stipends to provide more professional development to teachers.* (Principal Survey, Spring 2014)

Technology Coordinators express similar concerns noting

*...management of devices, and tech issues. For smaller schools it is a greater challenge since the tech coordinator is also the integrated specialist. Also, media specialist, and troubleshooting, and teaching classes for half the day. (Technology Coordinator Survey, Spring 2014)*

*Duties have more than doubled and support has been fast pace with little time to test what was learned. (Technology Coordinator Survey, Spring 2014)*

*Extra bodies, and support are needed. (Technology Coordinator Survey, Spring 2014)*

#### **4. Availability of resources for special populations**

Teachers who instructed special populations felt that resources geared specifically toward their students were lacking. For example, teachers who worked with students with special needs did not receive training in assistive technology. Thus, they were unable to effectively utilize the devices with their students.

*The digital curriculum needs to have a visual ASL component. We needed to use a real-life Educational Interpreter, Educational Assistant or the Teacher to interpret the auditory portion of the curriculum so they were not able to access it independently. At the beginning of the year I surveyed my students' families, only two families out of ten had internet access. The other students were unable to access the various curriculum at home. (Teacher Survey, Spring 2014)*

*My students have language based disabilities and would benefit from having access to the computer based programs that are specifically designed to address those needs, that way the whole student population can participate in this project (Teacher Survey, Spring 2014)*

Those who taught courses such as Hawaiian language also had difficulty.

*I don't have programs to teach Hawaiian. I'm working on developing my own, but this takes time. (Teacher Survey, Fall 2013)*

#### **5. Need to monitor student usage**

Teachers expressed concerns about managing students when using devices.

*The only thing is making sure that the students are focused on what they are suppose to do. Without a monitoring system. I have to teach from the back of the class, so I can see all of their screens as they work. And I have to ask them to close their computers when I instruct from the front board. (Teacher Survey, Spring 2014)*

*Without a monitoring system like Hapara, keeping track of what students are viewing on their laptops at times can be difficult (Teacher Survey, Spring 2014)*

*When the internet is out, having a back-up plan is important. There are so many ways the students can use the technology inappropriately quickly and quietly. (Teacher Survey, Spring 2014)*

This was of particular concern in the upper grades. One administrator notes:

*In the 2012-13 SY, we investigated 5 incidences of the Chapter 19, Class B: Inappropriate use of the Internet violations. With the implementation of the 1:1 Program, it was anticipated that there would be a rise in the number of this incident. During this school year, as of May 20, 2014, we had 22 incidents concerning this violation. Most of them occurring after the February 2014 roll-out. Most common violations are: gaming, lost/misplaced laptop, inappropriate comments posted, and going to inappropriate online sites. (Personal communication, Spring 2014)*

31% of the parents surveyed cited accessing inappropriate material as a concern.

## **6. Theft and Damage**

According to survey results, parents think damage and theft are the highest potential concerns:

58% think damage is a concern.

47% think theft is a concern.

Concerns about the 1:1 laptop program varied according to variables such as school, grade level. Parents in some schools were more concerned with theft as compared to others. Parents of younger students were more concerned with a child ability to be responsible as compared to others.

## **7. Involving stakeholders**

Interviews suggest that stakeholders could play a more visible role should implementation of a full-scale 1:1 program take place. As one school administrator noted, “there is a continuum of responsibility in that all players need to have a role.”

Institutions of higher education could prepare teacher candidates about the use of laptop computers and Google Apps for education, thus lessening some of the professional development burden on the DOE. There is evidence that the local institutions of higher education may be willing to take on this responsibility.

A Chair of Education from a local university notes:

*...faculty are committed to preparing teachers to use cutting edge educational media and technology in the service of learning. Through required professional courses and field experiences, teacher candidates gain the knowledge and skills necessary to support pre-K-12*

*student use of new technologies. In addition to our pre-service commitments, faculty stand ready to serve the professional development needs of HIDOE teachers. We look forward to developing partnerships with the schools, thus forging the "continuum of responsibility" necessary to ensure a quality education for all. (Personal Communication, Spring 2014)*

## **8. Integration**

Present levels of integration in the classroom are low, which is to be expected at this early stage of implementation.

1. Reading lessons observed were of lower levels of integration.

Based on observations, a typical reading lesson had students using the McGraw Hill curriculum. Students were observed sitting engaged in the curriculum while the teacher met with individual students and small groups of students to practice reading. Student engagement was high, few students appeared off-task.

Few reading lessons surpassed the augmentation phase of technology integration. Those lessons that did reach higher levels of integration were at schools where technology integration had been taking place for a full year or longer.

Discussions with one administrator suggests that teachers at her school see the McGraw Hill as a means of pacing the curriculum, not to be solely relied upon during instruction.

*The digital curriculum sets the pace for how instruction is delivered. The expectation here is that teachers will augment the curriculum with their own activities to provide high quality instruction (Administrator Interview, Spring 2014)*

*We are working with our teachers to get them [students] to create. If they can create, they can think at higher levels. (Principal Interview, Spring 2014)*

2. Higher levels of integration took place in most writing lessons.

As part of writing lessons, students were observed utilizing advanced features as part of Google Docs to comment on the work of peers, conference, peer edit, add pictures and conduct research. Though these lessons were more common, there were many teachers still learning to use applications such as Google Docs.

As part of a typical writing lesson, students could be seen sitting in desks groups of four. All students have their laptop computer out with a Google Doc open. Students were reading over the

work of a peer and providing feedback. The group would then come together to discuss feedback and changes that might be made to improve a peer's overall paper.

*Yes, we get higher levels of integration when writing. It's the nature of the discipline. When students write, they create every time.* (Teacher Interview, Spring 2014)

3. Few lessons were observed in other subject-matter content areas

No lessons were observed using computers as part of math lessons. One social studies lesson was observed, one science lesson was observed. No Hawaiian studies lessons were observed. very limited use of assistive technologies.

*Teacher may be unsure what higher levels of integration look like right now. Everyone just needs time though. We just started.* (Administrator Reflection, Spring 2014)

*Teachers need more support implementing blended instruction in the classroom. Most of the teachers are using the devices for school online programs like Achieve 3000, IXL, iReady as well as implementing the Wonders Digital Curriculum. Along with ongoing PD and classroom support it is hopeful that teachers will move past the substitution of the devices and incorporate a more collaborative classroom with their students.* (Technology Coordinator Survey, Spring 2014)

*Using digital curricula effectively is more complicated than just using laptops in the classroom. It is important to offer professional development and to be deliberate in how it is used. So that teachers can implement digital curricula in the most effective ways possible* (Administrator Interview, Spring 2014)

### **DOE Response**

The Department is appreciative of the hard work of eight schools that applied and were selected to participate in the Access Learning pilot project. All parties involved – state, complex areas, schools, and communities - rallied around this effort and the results speak for themselves. While the Department provided baseline resources and tools, each school crafted a project team and implementation plan consistent with their needs. For example, some schools allowed students to take home the devices, while other schools opted to wait a school year. This allowed for the schools and the project team to learn about different types of implementation strategies.

The Department is particularly enthusiastic about the preliminary results from teachers, parents, and students, showing that:

- Students are more responsible as well as engaged and excited about their schoolwork:

- Parents believe their public schools are moving in the right direction toward preparing their students for success; and
- Teachers feel they are more effective on tasks such as lesson and assignment creation, planning for instruction, and providing feedback to students.

However, there is still room for improvement. The Department recognizes that implementation of the program in the first year was both compressed and accelerated. Moving ahead to year two of the pilot, the Department is making significant changes in response to the concerns raised by the schools, as reflected in this report's findings.

#### Customized, reasonably scheduled professional development and planning

Unlike many high profile 1:1 initiatives across the country, the Access Learning project has focused on technology as a tool to support teaching and learning, not a silver bullet. To that end, professional development efforts focused and will continue to focus on how to use the technology but also how to integrate the technology into instruction. In direct response to feedback from the pilot schools, the Department is purchasing ongoing professional development sessions, to be scheduled at each school in order to accommodate school specific needs. The professional development sessions will be implemented throughout the course of the school year, as opposed to only the Fall semester.

In addition to the professional development sessions, the Department is also planning on maintaining two positions dedicated to on-demand, customized, job-embedded support at each of the schools. For example, during Spring 2014, two of the schools scheduled full days during which the Department support staff were located on campus for teachers to schedule one to one assistance. Support staff from both the Department and the PD provider are meeting with schools now, in order to plan and prepare for school year 2014-2015.

#### Sustained commitment to resources

During the 2014 legislative session, additional funding was sought to address the issue of providing a strong professional development program for Access Learning schools. Although funding was not provided, the Department will work to reallocate internal funds to provide a baseline of professional development to the schools – principals, teachers, and technology coordinators.

There may also be the ability for the affected schools, with increased funds provided via the weighted student formula, to possibly use this as a resource to support their school initiatives. Moving forward, the Department is also committed to investigating additional funds – public and private – to sustain the exciting work happening in the Access Learning schools.

#### Theft and damage

The Department recognizes the concerns of theft and damage, as raised by parents. According to data from the schools, the pilot has a combined theft/loss rate less than .001% or six devices out

### Theft and damage

The Department recognizes the concerns of theft and damage, as raised by parents. According to data from the schools, the pilot has a combined theft/loss rate less than .001% or six devices out of the over 6,000 purchased. All of the devices purchased via this pilot project include access to theft deterrent and recovery software for at least 3 years. To complement the software purchase, the Department also initiated a partnership with the Honolulu Police Department and the Big Island Police Department. All of the schools and complex area staff participated in meetings with their relevant police department and the theft software vendor to ensure that the processes for reporting thefts and recovery were clear.

In addition, each school was given roughly a 6 percent pool of spare devices. Should more funding be appropriated, the Department would be able to provide more spare devices to the schools.

### **Conclusion**

Evaluation evidence collected over the first year of the Access to Learning pilot program indicates that teachers, technology coordinators, parents, students and principals are overwhelmingly positive about their benefits of using computers in the classroom.

Laptops are being used widely by teachers and students. Usage by teachers has increased significantly since fall and is perceived as improving job performance and teaching. Computer are seen as improving the quality of education. Teachers are satisfied with professional development offered by the Department of Education and by outside vendors but teacher input in how professional development is offered in future years is needed. Obstacles have been encountered and need to be addressed in future years to ensure the continued success of the program.

Thus, evidence indicates successful implementation of the laptop program in the eight pilot schools. Teachers have already witnessed improvements in student work and learning. And some schools have been more successful than others. Teachers, technology coordinators, parents, students and principal agree as to the transformative nature of computers in the schools.

## **A Research Brief: The Impact of Hawaii's Access Learning Program on Writing**

### **1. Teaching practices**

In the state of Hawaii, 71% of the students surveyed in grades 4-12 report using computers for writing. This includes having students use computers to plan, draft, edit and correct writing. Students use computers to share their written work and to get feedback from peers and teachers. Students use computers to gather information for expository and argumentative writing. Students use computers to publish their work. Students also use computers to access online language arts programs that focus on developing skills.

Specific applications used by students include Google Docs and Pages. Examples of how teachers are using these programs to teach writing include:

- A special education teacher has students use the research function as part of Google Docs to have students illustrate their vocabulary lists.
- A teacher creates virtual galleries of art from around the world. Students then view the galleries and write comments.
- A special education teacher is teaching her students to use the comment function in Google Docs to discuss the ethical issue of collaboration with computers.
- Conducting online discussion boards that enrich student writing through increased discussion and collaboration.
- Responding to a prompt that asks: Does technology have a positive or negative effect on children?

Observations of writing lessons and interviews with teachers and students suggest that one of the most effective practices when using computers to teach writing is making student writing "public" to peers in the classroom.

Many schools have adopted the practice of projecting students' writing samples onto a screen in the classroom to foster discussion. Comments by teachers and students note that this results in a better quality writing, longer papers, and fewer grammatical errors.

Comments from students:

*I definitely try harder because I know my writing is going to be put up ...* (Students Interview, Spring 2014)

*Everyone in the class sees my work. I* (Students Interview, Spring 2014)

*Are we going to be putting our writing work up on the computer screen in front of the other students? I don't want to because it makes me do my best work.* (Student Interview, Fall 2013)

Comments from teachers:

*Computers make information public. It can result in a more competitive classroom environment.* (Teacher Interview, Fall 2013)

*I think it makes students more confident* (Teacher Interview, Spring 2014)

## **2. Student Achievement**

Each school was asked to collect data on the impact of computers on writing at their school. End of year reports note that computers are having a strong impact on student achievement in writing.

*... computers had a positive impact on writing this year. Many students who were hindered by the writing process quickly realized that writing is not as tedious as they previously thought. The use of Google Documents is a great way for students to publish their work and easily share their work with their teachers and peers. Students received immediate feedback from the comment function in Google Documents. As a school, we plan to continue to use computers this way in our writing program next year, but increase the capacity of our students and staff. We're hoping to have all students, K-5, be using Google Docs and typing out their writing pieces and using the computer as a tool for research.* (Writing Report, Spring 2014)

*... having the 1-1 devices available to all students at [name removed] has had an impact on the student's writing this year. The computers have provided a tool for learning and gathering information as well as a tool for the sharing of learning. The world is at their fingertips and children are able to discover and explore new ideas in an instant. Students have become comfortable with the use of computers. The older students are able to brainstorm and compose drafts directly onto the computer saving them time and effort. The computer also provides the students with a neat published piece that is legible. The pre-post scores on the rubric show an average gain of 20% in all the areas of focus (organization, content, style, and grammar).* (Writing Report, Spring 2014)

*For the students, even if the computers have only been out for less than two months, we believe that computers have had an impact on writing in the following areas: Increased collaboration, increased feedback from peers and teachers, improved attitudes toward writing (motivation and engagement). In addition, we are seeing:*

### *1. More Self-Directed Learners:*

- Students don't forget their writing at home*
- Students don't lose their homework;*
- Students remember to turn in their work*

- *Students ask to do work*
- *Students demonstrate more perseverance in overcoming challenges: they problem solve until they find a solution rather than wait for someone to help them*

### 2. Improved Ethical Skills:

- *Students are learning the importance of citing a source*
- *Students are learning to critique the work of others in a responsible manner*

### 3. Improved Quality of Writing:

- *Better evidence*
- *Better elaboration*
- *More citation*
- *Better editing*

(Writing Report, Spring 2014)

### **3. Student perceptions**

*It helps me do my essays faster* (Students Survey, Spring 2014)

*It is easier and more fun. Instead of writing a long piece with your pencil and your hand is sore, you can type it out instead and your hands won't be as sore as your hand while writing with your hand and pencil. Also, in real life when I try to get a job that includes computers probably it's gonna be easier because I got alot of practice when I was in school. That is why I like to use the computer in school.* (Students Survey, Spring 2014)

*I like the computer at school because its better than writing it down on a post it when i could be writing on a computer so much faster. also, when we write something, you can change then print, and also the color* (Students Survey, Spring 2014)

*It is way easier to take notes. For example, when I write or take notes of another persons' presentations, it usually takes me at least a minute to write a paragraph. Knowing that I am a fast typer, its half as fast, if not, faster than writing* (Students Survey, Spring 2014)

*It makes doing assignments WAY MORE FUN! For example, I can create a blog, slide show, movie trailer, manga projects and much more. I like using a computer also because it makes the homework easier and somehow it improved my grades. It made homework easier because we can leave comments on each others work and help each other out for a better grade, finish assignments faster and take notes better by typing instead of writing then having to erase a lot, but instead we can just copy, paste, highlight and delete or command z. Te computers helps us organize papers because we can choose the type of format we want, and just by writing the*

*papers and in the correct style my teachers give us a higher grade! Also we can choose to have our notes in a bulleted list or we have the option to make a presentation. But out of all it helps us to communicate with each other better and easier because we don't have to read messy handwriting we can understand the other font when we read some one else's writing. (Students Survey, Spring 2014)*

#### **4. Future plans**

Having seen the benefits of using computers for writing, schools have begun planning on how best to use computers for the next school year.

*As a school we will explore new programs and applications that will help children to develop their writing skills. (Writing Report, Spring 2014)*

*Next Year, we plan to work on: file management training and practice, eliminating inappropriate copying and sharing, eliminating plagiarizing, and more quality in writing. (Writing Report, Spring 2014)*

*We will be looking at a number of new software programs including Inspiration and Kidspiration, Odyssey Writer, and Incite to Write. (Teacher Interview, Spring 2014)*

In conclusion, one-to-one computing shows promise as a tool for teaching writing in elementary and mid-level secondary classrooms. Teachers and students are optimistic but more research is needed. Officials should expect to see improvements in writing achievement over time as teachers continue to learn to use computers to teach writing and as students use devices more extensively to develop and produce writing pieces.