

# **Talbot County Public Schools: One-to-One Laptop Initiative**

**Year 2: 2006-2007 Evaluation**

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November 2007

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## EXECUTIVE SUMMARY

The One-to-One Laptop Initiative in Talbot County Public Schools (TCPS) has shaped an innovative learning community and changed the lives of students, as they prepare to be leaders in the 21<sup>st</sup> Century. In addition to meeting the four goals of the program, the Laptop Initiative produced sweeping changes that permeated the fabric of each school to instill movement toward becoming true 21<sup>st</sup> century “technology-based high schools”.

An independent evaluation of the second year (Year 2) of the Laptop Initiative was completed by the Johns Hopkins University Center for Technology in Education (JHU CTE) and measured the impact of the laptops on ninth and tenth grade students in TCPS during the 2006-2007 school year.

Goal 1: Increase Student Achievement The data collected for the second year of the Laptop Initiative showed *significant increases in achievement by students who had used laptops in the classroom* with particularly strong increases noted for students whose teachers had two years of experience in using instructional technologies. Student performance on the statewide High School Assessment (HSA) tests and end-of-course grades in core subject areas were analyzed. Comparative analyses were made between students who had participated in the Laptop Initiative and students who had not utilized laptops.

The data indicated that students, who received instruction using the laptops, demonstrated significantly higher achievement than students taught using more conventional classroom methods. *Furthermore, students instructed by Cohort 1 teachers (with two years of experience using instructional technologies) scored higher than students taught by Cohort 2 teachers and those not participating in the Laptop Initiative.*

Goal 2: Provide Effective Use of Technology for Instruction The One-to-One Laptop Initiative is not just about the technology—it is also focused on high-quality instruction that skillfully integrates technology to improve student learning. The interaction of the teacher, the student, and the technology established *a new learning process* and thereby, *a new learning environment*. Survey responses by teachers confirmed that they had gained: (1) increased knowledge of computer-based instruction, (2) confidence to try new approaches, and (3) motivation to adapt the technology to meet the demands of the curriculum. *Teachers, experienced in using technology in the classroom, were the anchors of this Laptop Initiative and were a testament to the focused, intensive professional development process which had been undertaken.*

Goal 3: Increase Student Engagement Students who are engaged and interested in school are more likely to learn. The relationship between engagement and student performance has been substantiated by extensive research in the field of achievement motivation.

The results of the evaluation indicated that more than half of both students and teachers reported that *students were more interested during lessons that used the laptops* as compared to occasions when laptops were not used. Findings showed substantial positive changes in the percentages of students who indicated that the laptops made school more interesting, assisted with comprehension, and allowed them to complete assignments more frequently.

Goal 4: Improve Educational Access for At-Risk Students Through the use of computer-based assistive technology and the resulting classroom accommodations, *students with special needs were able to gain further independence and access to the general education curriculum*. Most teachers indicated that the Laptop Initiative was important or very important for students with disabilities, for students from lower economic background, or for students with limited English proficiency.

### **Recommendations**

1. Maintain a high level of professional development—TCPS plans to increase the amount of training to be delivered through internal resources such as curriculum specialists, staff support, and teachers.
2. Extend professional development to include instructional strategies for all subject areas so that an increasing percentage of students will perceive that the laptops are beneficial to them for all subject areas—Involvement of the curriculum specialists should help in this endeavor.
3. Provide specific assistance to at-risk students, ensuring they are optimizing the potential of laptops, web-based programs, and software to accommodate their learning challenges.
4. Enlist the active involvement of Special Education and those with expertise in assistive technologies.
5. Challenge students to become knowledgeable regarding the application of more complex programs as these programs relate to content learning. This includes the use of peripheral computer functions such as printer interfaces.
6. Increase student awareness regarding the value of using their laptops for elective classes (e.g. foreign language, drafting, music, applied arts).
7. Provide recognition to students who have posted their school work or school projects on the Internet.
8. Showcase teacher and student work through “Innovation America” or the “Maryland Educational Technology Plan for the New Millennium: 2007”.
9. Continue to encourage parental and community involvement in the Laptop Initiative.

The second year of the Laptop Initiative admirably met and exceeded each of the four goals. The evaluation findings showed strong evidence of movement toward optimal levels of technology integration with the curriculum and of technical competence on the part of faculty and staff involved with the Laptop Initiative. *There is a new culture—a global, 21<sup>st</sup> century learning community—emerging in the high schools in Talbot County.*

## **BACKGROUND INFORMATION**

In June, 2007, Talbot County Public Schools (TCPS) completed the second year of their One-to-One Laptop Initiative. The goals of the One-to-One Laptop Initiative emphasized student achievement, student learning, and student engagement in addition to a strong focus on the effective use of technology for instruction, and differentiated instruction for high-risk students. The intent of the Laptop Initiative was not to learn about computers, but to learn with computers – to integrate technology into the learning experience.

We are increasingly bombarded with technology that invades nearly every aspect of our lives. Today's students need to be competent in the use of technology to communicate, to access information and, most importantly, to become lifelong learners. While most teenagers are comfortable using technology and currently use it routinely in their daily lives, their competencies need to be expanded to prepare them to succeed in a world driven by rapid change, endless communication, and a new global economy.

In the last decade, technology has been used to train, to instruct, and to develop the skills of our military forces, health care professionals, and business leaders. It is reasonable that this technology be used in our high schools to provide students access to current information systems and knowledge resources.

The One-to-One Laptop Initiative in Talbot County (MD) can be regarded as a form of early adoption of the “Maryland Educational Technology Plan for the New Millennium: 2007.” This five year, State plan will prepare students for the 21<sup>st</sup> Century, a time and place where technology is all around us and is rapidly changing. The Plan recognizes that students need access to rich curricula and digital resources that will enable them to attain the content knowledge and skills required to prepare them for the future. The Plan is guided by a core vision:

*Through engaging classrooms that have current technology resources available to all students and educators as a part of their daily work, every child will reach his or her potential and achieve success. Not only will technology be available in whatever forms they take in the coming years, but rich, digital content will be available in a variety of formats. The individual learning styles and needs of every child will be addressed by using technology to differentiate instruction and provide accessible resources to all students.*

## **EVALUATION PERSPECTIVE**

From the initial planning stages of the One-to-One Laptop Initiative, TCPS acknowledged the need for an independent, external evaluation to measure the impact of the Laptop Initiative and to determine the degree to which the goals of the Laptop Initiative have been met. The school district contracted with the Johns Hopkins University Center for Technology in Education (JHU CTE) to conduct annual evaluations of the Laptop Initiative. The Year 2 evaluation addresses

the effect of the Laptop Initiative on ninth and tenth grade high school students and explores the instructional technologies and usage of the laptops by classroom teachers.

## METHOD

### Participants

During the 2006-2007 school year, 780 students participated in the Laptop Initiative. Table 1 displays the distribution of students relative to grade level and to the number of years they had participated in the Laptop Initiative.

**Table 1: Distribution of Student Participants in Implementation Year 2 (N=780)**

Year of Graduation (YOG)	Grade level	n=	% (N)	# Years involved in the Laptop Initiative (as of 6/2007)
2009	10 <sup>th</sup> grade	396	51%	2*
2010	9 <sup>th</sup> grade	384	49%	1

\*The graduating class of 2009 used the laptops the previous school year, as ninth graders.

At the time data were collected for the Year 2 evaluation report, the students in the graduating class of 2009 (10<sup>th</sup> graders) had experienced instruction with the laptops for two consecutive school years; whereas their teachers (Cohort 2 teachers) had utilized the laptops for instruction for one year. Cohort 1 teachers, who were involved in the Laptop Initiative during the previous school year, had two years of experience in using the laptops for instruction. Table 2 displays differentiating characteristics of the teachers in the two cohorts.

**Table 2: Distribution Of Teacher Participants in Implementation Year 2 (N=46)**

	Grade level	n=	% (N)	# Years involved in the Laptop Initiative (as of 6/2007)
Cohort 1	9 <sup>th</sup> grade	22	48%	2*
Cohort 2	10 <sup>th</sup> grade	24	52%	1

\* The teachers in Cohort 1 used the laptops in 9<sup>th</sup> grade classrooms during the previous school year.

The Laptop Initiative was originally implemented in the two high schools in Talbot County in the fall of 2005; the 2006-2007 school year was the second year that the Laptop Initiative was in operation. To clarify references to these two years, the following terms have been used in this report:

- **Year 1:**
  - first year of the Laptop Initiative (2005-2006)
  - 9<sup>th</sup> grade students (YOG=2009) used laptops
  - Cohort 1 teachers were involved in the Laptop Initiative
- **Year 2:**
  - second year of the Laptop Initiative (2006-2007)
  - 9<sup>th</sup> (YOG=2010) and 10<sup>th</sup> (YOG=2009) grade students used laptops
  - Cohort 1 and Cohort 2 teachers were involved in the Laptop Initiative

In Year 2, more than one-half of the teachers used laptops in the classroom or encountered students in their classes who were participants in the Laptop Initiative. Also, during Year 2 the

number of participants in the Laptop Initiative increased 100 percent, creating greater impact on the entire school environment and widely influencing teaching methodologies in each school.

### ***Student Demographic Data***

No significant differences were found between the participants of the two student groups with respect to the proportion of students with Individual Education Plans (IEPs) or 504 Plans, Limited English Proficiency (LEP) students, or eligibility for Free and Reduced Meals (FARM).

Likewise, there were no significant differences in student demographics for the graduating class of 2008, which was comprised of students in the eleventh grade during the 2006-07 school year. Although none of these students participated in the Laptop Initiative, their academic school performance and scores on standardized achievement tests were used as data points and compared with students in the graduating classes of 2009 and 2010.

### ***Data Collection***

Data for inclusion in the Year 2 evaluation were collected using a variety of quantitative and qualitative evaluation methods.

**Quantitative Data Collection:** Quantitative data included student end-of-year grades in core subject areas and student scores on the High School Assessment (HSA) tests, which were state standardized tests. Data analyses were conducted to compare the graduating classes of 2009 and 2010 with the school achievement and standardized test performance of students in the graduating class of 2008, which was inclusive of students who had not participated in the Laptop Initiative.

In addition to student achievement data, this report draws on perception survey findings from students in the graduating classes of 2009 and 2010, who were asked to complete a web-based survey. Teachers in Cohorts 1 and Cohort 2 were also requested to complete a survey with specific survey items that addressed the integration of technology in teaching and instruction. The response rates were 59 percent for the student survey and 72 percent for the teacher survey.

The student and teacher surveys are included in Appendices B and C. Surveys used during Year 1 (2005-06 school year) of the Laptop Initiative were the foundation for the Year 2 evaluation surveys. Several new items were added to the Year 2 survey to address new issues or to make specific inquiries (i.e., student engagement).

Year 2 student survey data included responses from current 9<sup>th</sup> and 10<sup>th</sup> grade students (graduating classes of 2010 and 2009). These data were compared with the survey responses from Year 1, which included only the graduating class of 2009. Likewise, teacher survey responses from Cohort 1 and Cohort 2 were combined for Year 2 and compared with Cohort 1 responses from Year 1.

**Qualitative Data Collection:** Qualitative data for Year 2 were gathered from:

- individual interviews with the two high school principals,
- a focus group with teachers of the Vanguard Team (subject matter experts and emerging staff developers),
- a focus group with technical support staff and building managers, and
- four group discussion sessions with students from the graduating classes of 2009 and 2010 (utilizing a stratified random sample approach).

Table 3 below displays the number of participants for each evaluation component.

**Table 3: Participants In Each Evaluation Component (Year 2) (N=542)**

<b>Evaluation Component</b>	<b>n</b>
Students from graduating years 2009 and 2010 who completed the student survey	461
Teachers from Cohort 1 and Cohort 2 who completed the teacher survey	33
Students from the random sample who participated in student discussion sessions	32
High school principals interviewed	2
Teachers (from Vanguard Team) participating in a focus group	7
Technical support staff participating in a focus group	5
Building managers participating in a focus group	2

## YEAR TWO RESULTS

The findings from the end-of-year evaluation for Year 2 of the Laptop Initiative are reported here as they relate to the four goals of the One-to-One Laptop Initiative. These goals are as follows:

1. Increase student achievement
2. Provide effective use of technology for instruction
3. Increase student engagement in the learning process
4. Improve educational access for and participation by high-risk student groups

### **Goal 1: Increase student achievement**

Unlike many laptop programs that have been unable to demonstrate increased student achievement resulting from a one-to-one laptop program, this analysis of student performance substantiated significant increases in student achievement. Examination of academic achievement included analysis of student performance on standardized achievement tests and on final course grades at the end of the 2006-2007 school year.

Student academic performance on standardized tests was examined relative to aggregate scores on the statewide HSA tests. Comparative analyses were conducted in two areas:

1. Comparison of students in the graduating classes of 2009 and 2010 with those students not participating in the Laptop Initiative (graduating class of 2008).
2. Comparison of the students in the graduating class of 2009 taught by Cohort 1 teachers with students in the graduating class of 2010 taught by Cohort 2 teachers.

The data from the three graduating classes, required to take the HSA algebra test, were analyzed. The results in Table 4, below, show that a significantly higher proportion of students in the graduating class of 2010 passed the Algebra test compared to students in the graduating classes of 2008 and 2009. Students in the graduating class of 2010 were taught by teachers in Cohort 2, who had two years of experience in using laptops for instruction (see Table 4).

**Table 4: Standardized Test Scores Reported by Graduating Class and Curriculum Area (HSA data 2007)**

Year of Graduation (YOG)	Algebra*		English**		Biology***	
	Pass	Fail	Pass	Fail	Pass	Fail
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
2010	290 (90%)	31 (10%)	n/a		n/a	
2009	250 (66%)	131 (34%)	250 (77%)	74 (23%)	234 (81%)	55 (19%)
2008	198 (55%)	161 (45%)	230 (66%)	121 (34%)	235 (70%)	103 (30%)

n = students who took the test for the first time

\* $\chi^2 = (2, N = 1061) = 103.46, p < .001$

\*\* $\chi^2 = (1, N = 675) = 11.09, p = .001$

\*\*\* $\chi^2 = (1, N = 625) = 10.82, p = .001$

Table 4 also displays HSA test scores for English and biology. Because these tests were intended for tenth graders, only students in the graduating classes of 2008 and 2009 were eligible to take these tests. Students in the graduating class of 2009 had used laptops during the past two

years, whereas students in the graduating class of 2008 had not participated in the Laptop Initiative. Analysis of HSA test results indicated that:

- A significantly greater number of students who used laptops (the graduating class of 2009) passed the English test as compared to students in the graduating class of 2008, who did not use laptops in the classroom.
- A significantly greater number of students who used laptops (the graduating class of 2009) passed the biology test as compared to students in the graduating class of 2008, who did not use laptops in the classroom.

In addition to state standardized tests, student academic performance in school was examined relative to the average final grades of each graduating class in core subject areas. The three graduating classes were compared regarding their achievement in ninth grade core subjects. Average final grades in English, math, science, and social studies were compared and analyzed by graduating class. Results and complete details are shown in Table 5.

- Students in the graduating year of 2010 attained significantly higher final course grades in ninth grade math as compared with those of students in graduating classes 2008 and 2009.
- Students in the graduating year of 2010 attained significantly higher final course grades in ninth grade science as compared with those of students in graduating classes 2008 and 2009.
- No significant differences were found between students in the graduating classes of 2008, 2009, and 2010 for final course grades in ninth grade English and social studies.

**Table 5:** School Achievement Data (Average End of Year Course Grades) Reported By Graduating Class and Curriculum Area (Year 2)

Year of Graduation (YOG)	Average end of year grades			
	English	Math*	Science**	Social Studies
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
2010	76.6 (13.8)	78.7 (12.7)	78.4 (13.9)	81.8 (15.2)
2009	78.9 (13.1)	74.0 (15.7)	75.7 (14.9)	81.9 (12.0)
2008	77.1 (15.6)	74.7 (16.7)	75.8 (16.4)	82.2 (13.9)
Overall mean and standard deviation	77.5 (14.2)	75.8 (15.2)	76.6 (15.2)	81.9 (13.8)

\* $F(2, 1076) = 9.94, p < .001$

\*\* $F(2, 1017) = 3.35, p < .05$

In summary, these results indicated that students participating in the Laptop Initiative (who used laptops and received instruction from teachers using technology in the classroom) had significantly higher end-of-year course grades relative to the overall mean in math and science than students taught by teachers using more traditional/conventional classroom methods. Furthermore, students who were instructed by teachers with two years of experience (Cohort 1) in using instructional technologies scored higher than all others.

These data were not disaggregated by subgroup populations. All analyses included students with disabilities, students with limited English proficiency, and students eligible for FARM. In other words, the aggregate HSA test scores and average final course grades in core subject areas, which were utilized in the above analyses, included the test scores and final course grades of *all* students.

## ***Goal 2: Provide effective use of technology for instruction***

Reflecting on the demonstrated growth in student achievement that had been realized by students who used laptops in the classroom, it should be noted that laptop learning was a new concept to most Talbot County teachers as well as to students at the beginning of the Laptop Initiative.-- Teaching with laptops was a revolutionary way to teach (and to reach) high school students.

High school students actively learn from teachers and instructional lessons during the school day *in* the classroom. When using technologies to instruct, teachers continue to be cognizant of curriculum goals; however, the role of teachers in reaching these goals is somewhat transformed. In their new role, teachers orchestrate, guide, and lend perspective to student learning. Information is not simply transferred or dispensed; the interaction of the teacher, the student and the technology brings a new authenticity to learning and new ways of thinking.

Based on the Concerns-Based Adoption Model (CBAM), the teacher survey requested teachers to describe their perceived development with respect to the learning and integration of instructional technologies in the classroom (Hall, George, & Rutherford, 1998). CBAM is a well-researched model that defines how individuals progress through the stages of a developmental learning process to embrace an innovation. The process begins with a basic awareness level at Stage 1, when the learner is focused on themselves and their individual concerns, and progresses through stages of increasing mastery. At the higher stages, the learner is concerned with the application of the innovation and its impact on others.

Teacher responses to the survey provided a clear indication that all teachers involved in the Laptop Initiative had developed more expertise and greater confidence in using instructional technologies and had progressed beyond the initial stages of the adoption model. At the end of Year 2, nearly one half of the teachers (49 percent) rated their adoption of technology in the classroom at the highest level based on the Stages of Adoption of Technology (Christensen & Knezek, 1999). Nearly 80 percent of the teachers surveyed, at the end of Year 2, indicated that they were at the top two levels on this measure of the acceptance and adoption of technology in the classroom. The Stages of Adoption of Technology rankings by teachers are shown in Table 6, which also compares teacher responses from Year 1 and Year 2.

**Table 6: Stages of Adoption Of Technology\* As Reported By Teachers (teacher survey)**

Year 2 (%) N=33	Year 1 (%) N=19	Stages of Concern		
0	0	<b>Stage 1</b>	Awareness	I am aware that technology exists but I have not used it—perhaps I'm even avoiding it. I am anxious about the prospect of using computers.
0	0	<b>Stage 2</b>	Learning the process	I am currently trying to learn the basics. I am sometimes frustrated using computers. I lack confidence when using computers.
6	0	<b>Stage 3</b>	Understanding and application of the process	I am beginning to understand the process of using technology and can think of specific tasks in which it might be useful.
15	28	<b>Stage 4</b>	Familiarity and confidence	I am gaining a sense of confidence in using the computer for specific tasks. I am starting to feel comfortable using the computer.
30	44	<b>Stage 5</b>	Adaptation to other contexts	I think about the computer as a tool to help me and am no longer concerned about it as technology. I can use it in many applications and as an instructional aid.
49	28	<b>Stage 6</b>	Creative application to new contexts	I can apply what I know about technology in the classroom. I am able to use it as an instructional tool and integrate it into the curriculum.

\*Christensen & Knezek, 1999

The findings suggested that the majority of teachers had grown beyond the learning, understanding, and familiarity stages to stages involving the adaptation of technologies to new applications and to creative, new contexts.

Similarly, 91 percent of teachers responded positively when asked whether the Laptop Initiative had heightened their interest in using new technologies for instruction. Table 7 details this finding along with findings regarding other teacher perceptions. There was strong agreement among teachers that the laptops had made an impact in the following areas:

- teaching ability,
- differentiation of the curriculum to meet student needs,
- access to diverse teaching materials and resources, and
- provisioning of instructional materials to meet state and county standards.

The table also provides year-to-year comparison of teacher perceptions from Year 1 (Cohort 1) and Year 2 (Cohort 1 and Cohort 2).

**Table 7: Year To Year Comparisons of Percentage Of Teachers In Agreement Regarding The Impact Of The Laptop Initiative On Teaching (teacher survey)**

Survey Item	Year 2 (%) N=33	Year 1 (%) N=19
Teaching benefits from laptop use	72	72
Better differentiation of the curriculum to meet student needs	73	61
Access to more current information	91	83
Less classroom disruption when students are using laptops	36	56
Better able to access diverse teaching materials and resources	88	94
Increased expectations for student work	58	61
Better able to meet curriculum goals	58	53
Instructional materials better meet state and county standards	73	67
Ability to explore topics in greater depth with students	67	78
Use of laptops in the Laptop Initiative has heightened my interest in using new technologies*	91	n/a

\*new survey item added in Year 2

From its inception, the Laptop Initiative encompassed a strong professional development component designed to seamlessly infuse technology into instruction and to optimize learning opportunities for students. Efforts were continually in place to enhance and update professional development to reflect new instructional technologies, teaching strategies, and programs. During the two years of the Laptop Initiative, the professional development process had been intensive, multi-faceted, and well paced with training on teacher collaboration, peer observation, and coaching.

During Year 2 teachers in Cohort 1 and Cohort 2 spent seven full days in skill training sessions; these sessions were distributed throughout the year and were supplemented by monthly after school support meetings. Teachers kept journals and logs to record their successes and their ideas. The journals and logs also became a mechanism to share knowledge gains with other teachers, curriculum specialists, and the leadership team.

The findings, regarding the expanded abilities of teachers to effectively apply technology in the classroom, validated the positive impact of the district’s professional development plan. Teacher responses suggested not only the acquisition of higher-level instructional skills but also the motivation to progress beyond a basic skill level. Teacher expertise and skill in using instructional technologies are precursors to student achievement in a technology-based learning environment. And, sound teacher training and well-designed professional development are critical prerequisites for the acquisition of specialized teaching skills required for a successful one-to-one laptop environment.

During the course of the Laptop Initiative, a technically savvy group of Cohort 1 teachers emerged, the Vanguard Team, which was instrumental in providing leadership for professional development efforts. These teachers, working closely with the professional development specialist, presented instruction to their peers regarding the use of laptops in the classroom. This group also met regularly with the staff development specialist to discuss current issues facing teachers, to engage in problem solving, and to provide a positive, supportive environment for all teachers participating in the Laptop Initiative.

Interviews were conducted with the principals at both participating high schools in Talbot county regarding to the perceived effects of the Laptop Initiative in their schools. Increased collaboration among teachers was a consistent theme. One of the principals interviewed commented, “I see a tremendous amount of collaborative work using laptops – more so than previously.” The other principal said, “One of the greatest outcomes of the Laptop Initiative is the collaboration among teachers. Teachers had been ‘departmentalized’. Now we have math teachers working with English teachers on teaching strategies --- an interdisciplinary approach.”

In addition, teachers stated, during focus group sessions, that colleagues who were not involved in the Laptop Initiative sought expertise from Cohort 1 and Cohort 2 teachers regarding the use of instructional software to enrich instruction and to deliver more engaging learning experiences. This feedback provides evidence that *all* teachers were becoming aware of the positive effects of technology integration in the classroom.

Beginning in Year 2, Laptop Initiative teachers utilized a new approach to facilitate communication with students. Study Wiz, a software program, allowed teachers to post assignments and provided students a means to submit homework with greater reliability. Study Wiz offered efficient, dependable, and secure communication between students and teachers. This program was reported to have been very successful and well received by both students and teachers. Using Study Wiz, students were able to access detailed information about class assignments and to submit completed assignments with the assurance that these would be delivered. In addition, Study Wiz allowed instructors to create a chat room for all students in the class to participate in an “online” discussion about a particular topic—this functionality increased student engagement in classroom discussions.

The student survey asked students to indicate the subject area for which “the laptop has been most beneficial to learning.” With the exception of math, which remained relatively unchanged from the previous year, increases in the benefits realized from the laptops were reported for all core subjects. At the end of Year 2, more than one-half of all students (58 percent) reported that they perceived that the greatest benefit in using laptops was realized in language arts/English. Table 8 displays these findings.

**Table 8:** Year-To-Year Comparison Of Percentage Of Students’ Reporting Of The Classes Where Laptops Were Most Beneficial To Learning (student survey)

Subject Area	Year 2 (%) N=461	Year 1 (%) N=316
Language Arts/English	58	32
Social Studies/History	45	39
Math	47	46
Science	59	43

Discussion sessions were conducted with students (to augment the student surveys) to gain insight into their perceptions of the benefits of the Laptop Initiative. Students related various experiences in using the laptops to learn new information. Students made comments such as: “Criterion (a software application used in writing instruction) is awesome. It makes writing easier and gives immediate feedback, while teachers take longer to do this. . . It helps me get ideas on how to restructure my work.” The acquisition of higher level thinking skills and the

transfer of knowledge to new situations were mirrored in the statement: “The laptops help us apply learning.”

### **Goal 3: Increase student engagement in the learning process**

Maximizing student attention, interest, and participation in the learning process is a critical first step in increasing student achievement. Students who are engaged are more likely to learn. Research has consistently demonstrated a strong relationship between engagement and student performance (Finn, 1989, 1993; Finn & Rock, 1997).

In the role of “facilitator” as opposed to “knowledge provider”, the teacher attempts to make the learning situation meaningful to the life of the student. This instructional paradigm allows students to construct knowledge as opposed to receive it, thereby increasing student engagement and ultimately student achievement. Information is not simply transferred or dispensed; the interaction of the teacher, the student, and technology brings an authenticity to learning experiences and promotes new ways of thinking (Lombardi, 2007).

Engagement is defined as “the attention, interest, investment, and effort students expend in the work of learning” (Marks, 2000). Specific survey items and questions were developed for the Year 2 evaluation to measure engagement. Survey items specifically inquired whether students:

- tried harder in school since having the laptops,
- completed more assignments since having the laptops,
- paid more attention in class since having the laptops, and
- were generally more interested in their classroom work.

Most students responded that they perceived little or no change in their level of effort (i.e., trying harder); however, nearly one half of teachers perceived that students did exert more effort when using the laptops. More than one third of students (36 percent) indicated that the laptops made a positive difference in the number of class assignments completed. In response to a similar survey item, the same percentage of teachers (36 percent) agreed that students completed more assignments using the laptops. These findings from the student and teacher surveys are shown below in Table 9.

**Table 9: Percentage of Students and Teachers in Agreement Regarding Student Engagement (teacher and student surveys-Year 2)**

Survey item	Students (%)	Teachers (%)
	N=461	N=33
Students exert more effort having laptops	16	46
Students are more attentive with laptops	14	46
Students complete more assignments when using laptops	36	36
Students are more interested having laptops	57	54

Some students (14 percent) responded that they pay more attention in class now as compared to before having a laptop. However, teachers appeared to have a different view of student attention in that nearly one-half of teachers (46 percent) indicated that student attention was improved when laptops were used. Important and revealing findings were that:

- 57 percent of students reported that using the laptops made classes more interesting, and
- 54 percent of teachers reported that students appear to be more interested in class when using laptops.

Predictably, if students are more interested in class, they are more likely to be engaged and involved; therefore, they are more likely to be receptive to learning. During student discussion sessions, students agreed that instruction was more interesting, provided more variety, allowed for independent learning, and facilitated the completion of assignments.

Perceptions regarding student engagement were also captured during the teacher focus group. It was noted that the interactive approach used by instructional software “really involves students”. Another teacher noted that he was able to assign more independent work because students are more focused and interested.

High school principals reported that students “are really engaged and not just going through the motions... Students are going beyond what is assigned and finding more about a topic than what was assigned.” The principal went on to say that “we had students who are just ‘hanging on’, and I’ve seen them become more interested once laptops were introduced.”

Responses to the student survey suggested strong gains in the area in student engagement as compared with Year 1. The comparisons between findings from Year 1 and Year 2 of the Laptop Initiative are shown in Table 10.

**Table 10:** Year To Year Comparison of the Percentage of Students in Agreement Regarding Student Engagement (student survey)

Survey item	Year 2 (%)	Year 1 (%)	% change from Year 1
	N=461	N=316	
I get my work done more quickly now that I have my laptop	65	40	63
I am better able to understand my school work when we use the laptops	54	32	69
I am more interested in school when we use the laptops.	57	27	111
Having a laptop helps me to be better organized	66	43	53

The increase in student interest and engagement were reflected the following remarks from the student discussion sessions:

- “With Geometry Sketch Pad, you can draw figures and create angles. It helps to understand the relationship between angles.”
- “In world history, we used online tutorials that allow you to go into more detail about a topic.”
- “I used my laptop to do research about the watershed. I was able to find pictures and create my project.”
- “I was able to see atoms!”

Another indicator of student interest and engagement was the increasing rate at which students reported that they had posted their original work on the internet. According to student survey responses, more than 30 percent of students had posted their work on the internet. In interviews, teachers surmised that the posting of student work on the internet resulted in students receiving valuable feedback and reinforcement from audiences other their instructors and classmates.

A high percentage of students (74 percent) reported using Study Wiz, a new tool introduced in Year 2, to access, deliver, and submit class assignments. Study Wiz also has a discussion board function, which 36 percent of students reported they used frequently. This function allowed for increased student engagement as it provided a means for students to participate in classroom discussions via their keyboard. This proved to be beneficial to students, who were reserved and reticent, allowing them to freely express their ideas and participate without fear of criticism by other students. In addition, Study Wiz allowed teachers to review student participation with respect to frequency of response and quality of content that occurred during a specific classroom discussions related to an academic topic.

### **Goal 4: Improve educational access for and participation by high-risk students-groups**

As displayed in Table 7, almost three-quarters of teachers (73 percent), who completed in the survey, agreed that the Laptop Initiative allowed them to better differentiate the curriculum and provide access to diverse teaching materials to accommodate students with special needs.

In addition, teachers were asked to indicate the level of importance that they felt the Laptop Initiative had relative to students at risk. Key findings (shown in Table 11) indicate that:

- All teachers (100 percent) felt that the Laptop Initiative was important or very important for students with disabilities.
- More than 90 percent of teachers indicated that the Laptop Initiative was important or very important for students from lower economic backgrounds and with limited English proficiency.
- 72 percent of teachers reported that the Laptop Initiative was important or very important to students at risk of falling behind due to poor academic performance.

**Table 11: Percentage Of Teachers Who Indicated The Relative Importance Of The Laptop Initiative for Specific Groups Of Students (teacher survey) (N=33)**

<b>Student group</b>	<b>Very Important (%)</b>	<b>Important (%)</b>	<b>Not Very Important (%)</b>
Students at risk of dropping out	19	44	37
Students at risk of falling behind due to poor academic performance	9	63	28
Students at risk of being suspended or expelled	6	31	63
Students at risk for poor attendance	9	22	69
Student with disabilities	62	38	0
Students from lower economic backgrounds	60	34	6
Students with limited English proficiency	50	41	9

Both of the principals endorsed the Laptop Initiative as providing critical support and differentiated instruction to students with disabilities. Sentiments shared by the principals included remarks that the laptops have increased self confidence for students with disabilities, "... for a student with disabilities, the U.S. History textbook is intimidating...using the laptops helps them grasp concepts that they haven't been able to grasp otherwise." The Laptop Initiative allows students with disabilities to experience a feeling of "equality", even if unique software programs are on their computer (such as Kurzweil), it is not apparent to other students.

One principal commented specifically about the benefit of the Laptop Initiative for students with dysgraphia. For these students the mere act of writing with a pencil and paper is laborious and has often served to stifle their production of written work. "In the past we have not been able to reach them and keep their interest."

Similar comments regarding high-risk students were made in focus groups with teachers and technical support staff. It was noted that little difference was apparent between student

subgroups relative to their technical competency; remarks suggested that technical competencies of students tended to serve as a “leveler” in the classroom making individual differences among students transparent. Teachers reported that students at risk or with special needs “fit in with others and use the laptops the same as their peers.” Teachers also noted that the laptops made the learning experience more private for students needing accommodations. As a result, students with disabilities tended to be more willing to use special programs, such as those available through Kurzweil Educational Systems.

# **CONTRIBUTING FACTORS TO THE SUCCESS OF THE LAPTOP INITIATIVE**

## ***High-quality Professional Development***

Prior to the launch of the Laptop Initiative, the leadership team at TCPS developed an intense training plan consisting of a lengthy series of high-quality professional development sessions and follow-up meetings. Orchestrated by the professional staff development specialist, this included training by the Apple Corporation and various software vendors. In addition to a knowledge exchange regarding the use of technology and instructional software programs, professional development provided support to teachers by encouraging experimentation, practice, and reflection regarding this new way of incorporating technology into instruction.

Professional development sessions were held throughout the school year to present instructional strategies and to consider challenges that teachers experienced. During the first two years of the Laptop Initiative, the professional development process had been intensive, multi-faceted, and well paced. Managed by the professional development specialist, sessions were continually modified to enhance teacher expertise as reflected in the instructional technologies and teaching strategies. Adding to the complexity of planning, the development sessions also addressed the multiple skill levels of teachers.

As well as planning the tactical delivery of the professional development program, the professional development specialist also assumed a strategic role by expanding the reach of the program so that increasing numbers of teachers could participate in the training sessions. In addition, the specialist planned for the inclusion of other key faculty members, such as curriculum specialists, and for the accountability for professional development to be increasingly assumed by the administration of each high school.

Because of efforts by the professional development specialist, TCPS will include all teachers in professional development training for the 2007-08 school year to realize the goal of having the entire high school faculty trained in the integration of technology in the classroom.

## ***Responsive Technical Support Staff and Building Management***

Providing adequate resources and ongoing technical assistance is integral to a project such as the One-to-One Laptop Initiative. In support of the Laptop Initiative, infrastructure and technical support functions were carefully planned to ensure optimal network management and to eliminate down time due to equipment malfunctions. A technical support staff was assigned, on a dedicated basis, to each high school with the primary function of managing hardware and software repair issues relative to the Laptop Initiative.

The mission of the technical support staff was to provide rapid turnaround of repairs and to ensure each student in the Laptop Initiative had a fully functioning laptop computer. The technical support staff was accountable for ensuring that laptop loaners were available for students to use in the event their laptop needed repair. In addition, installation and testing of new software and software updates were among their recurring responsibilities.

Critical administrative (non-technical) functions in support of the Laptop Initiative were assigned to the building manager at each high school, removing potentially distracting tasks from the teachers and technical support staff. These functions included: initial laptop distribution, collection of take-home fees, enforcing the acceptable use contract, equipment warranty issues, and collection of laptops at the end of the school year. Also, the school manager at each high school was the primary contact with parents regarding laptop issues. This thoughtful allocation of administrative responsibilities and resources allowed teachers to teach and the technical support team to concentrate exclusively on keeping the laptops in good working condition.

Instances of laptop misuse and damage were reported to be minor. This is potentially due to an annual multimedia presentation developed by technical support staff and school managers. The presentation reviewed issues relating to general laptop usage, avoidance of damage to laptops, advisements for backing up data, and other information that could be helpful to students.

### ***Community Support***

The budget approved by Talbot County Council did not include public funding for the Laptop Initiative for school year 2007-08. Due to strong community support, private resources provided funding for laptops for the graduating class of 2011 for 2007-08; the funding also ensured that the graduating classes of 2009 and 2010 would continue to have laptops available. A record number of parents attended public hearings to voice their unwavering support for the Laptop Initiative. In addition, numerous parents wrote letters to the editor (in the Star Democrat) in support of the Laptop Initiative, when the continuation of the Laptop Initiative was threatened.

Within the school community, 100 percent of teachers indicated that they were enthusiastic about the Laptop Initiative, were comfortable with their role within the Laptop Initiative, and were supportive of the Laptop Initiative.

## CONCLUSIONS

The One-to-One Laptop Initiative in Talbot County has demonstrated marked growth and development since its implementation in the fall of 2005. The Year 2 evaluation shows strong evidence of the Laptop Initiative's movement toward optimal levels of technology integration with the curriculum and of growing technical competence of the teachers involved with the Laptop Initiative. These factors have led to significant gains in student achievement as measured by state assessments and by end-of-year course grades.

The goals of the Laptop Initiative were met and exceeded during Year 2, transforming the teaching and learning environments to propel each school toward becoming true 21<sup>st</sup> century "technology-based high schools". The Laptop Initiative continues to shape a new learning community that is changing the way students learn and is preparing them for the leadership role they will assume in the world of the new millennium.

Contributing to the success of the One-to-One Laptop Initiative were the following:

- Well-equipped and highly-trained teachers, unconditionally committed to the success of the Laptop Initiative.
- Effective leadership and collaboration among administrators, teachers, and support staff to convey a strong overall sense of ownership.
- A comprehensive and intensive professional development program, providing rigorous training and transfer of knowledge regarding the use of technology in the classroom.
- An effective staff development specialist, serving as liaison between strategic focus and tactical day to day activities, in support of the Laptop Initiative.
- A skilled team of teachers, the Vanguard Team, fostering a supportive, student-centered, environment for teachers to learn new instructional strategies and to practice technology integration.
- A dedicated technical support staff realizing the mission of ensuring that all students have a laptop in working order and that hardware and software are operating effectively.
- Vigorous enthusiasm by students, school personnel, parents, and the community.

Primary among these forces was the ongoing professional development that generated the advancement of teacher skills and a heightened comfort level in using laptops as an important instructional tool. Professional development has moved far beyond formal professional development sessions to encompass day-to-day collaboration by teachers to share instructional strategies. In addition, the development and training opportunities available to teachers within the Laptop Initiative seem to have stimulated the interest of teachers outside of the Laptop Initiative relative to the use of instructional technologies in their classrooms.

## ***Pivotal Findings***

- Significant improvement was found on state-mandated standardized tests (Maryland High School Assessment) by students involved in the Laptop Initiative, as compared to students who had not used laptops in the classroom.
- Significant improvement was evidenced in end-of-year grades in core subject areas by students in the Laptop Initiative who were taught by teachers having two years of experience in technology based instruction.
- Professional development, and resulting teacher competencies and experiences in using laptops for instruction, appeared to be catalysts for producing student achievement gains.
- Teachers noted that the Laptop Initiative benefited their teaching, promoted a heightened interest in using new technologies, and allowed them to better meet state and county standards.
- All teachers (100 percent) reported that they are enthusiastic about the Laptop Initiative.
- There was a greater than 100 percent increase from Year 1 to Year 2 in the percentage of students who reported that they were more interested in school than in previous years.
- 54 percent of students reported that they are better able to understand their school work when laptops are used in the classroom. (This is a 69 percent increase in the percentage of students who reported a similar impact in Year 1.)
- 65 percent of students stated that the laptops help them complete their work more quickly. (This is a 63 percent increase in the percentage of students who reported a similar impact in Year 1.)
- All teachers (100 percent) indicated that the Laptop Initiative was important for students with disabilities.
- With respect to other “at risk” student populations, more than 90 percent of teachers reported that the Laptop Initiative was important for students with limited English proficiency or from lower socio-economic backgrounds.

## RECOMMENDATIONS

1. Maintain a high level of professional development. TCPS plans to increase the amount of training to be delivered through internal resources utilizing curriculum specialists, staff support, and teachers.
2. Extend professional development to include instructional strategies for all subject areas so that an increasing percentage of students will perceive that the laptops are beneficial to them for all subject areas. Involvement of the curriculum specialists should help in this endeavor.
3. Provide specific assistance to at-risk students, ensuring they are optimizing the potential of laptops, web-based programs, and software to accommodate their learning challenges.
4. Enlist the active involvement of Special Education and those with expertise in assistive technologies.
5. Challenge students to become knowledgeable regarding the application of more complex programs as these programs relate to content learning. This includes the use of peripheral computer functions such as printer interfaces.
6. Increase student awareness regarding the value of using their laptops for elective classes (e.g. foreign language, drafting, music, applied arts).
7. Provide recognition to students who have posted their school work or school projects on the internet.
8. Showcase teacher and student work through “Innovation America” or the “Maryland Educational Technology Plan for the New Millennium: 2007”.
9. Continue to encourage parental and community involvement in the Laptop Initiative.

A global, digital school community seems to be emerging in the high schools in Talbot County. Year 2 of the Laptop Initiative brought about increased technical knowledge, teacher commitment, and staff enthusiasm.

In Year 3, the Laptop Initiative will experience an expanded “footprint” reaching all teachers at all high school grade levels—a critical step for continued programmatic success and increased student achievement. *There is a new culture—a global, 21<sup>st</sup> century learning community—emerging in the high schools in Talbot County.*

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## Appendix A: Student Survey

### ***Talbot County One-to-One Laptop Initiative: Student Survey Spring 2007***

This survey is part of the Talbot County One-to-One Initiative. We are interested in your participation and it is very important that your opinions are included in this project. Please answer the following questions. All responses will remain confidential. Questions adapted from MLTI, TAGLIT, and IITTL publications.

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1) For purposes of tracking, please enter the last 4 digits of your home phone number. No individual identifying information will be released.

2) In what grade are you currently enrolled?

9th Grade      10th Grade

3) How much do you use a laptop **at school to do school work** during a typical week?

Do not use a laptop

1 - 4 hours per week

5 - 10 hours per week

More than 10 hours per week

4) In which classes has the laptop been most beneficial to your learning? (select all that apply)

Language Arts/English

Math

Science

Social Studies, History

Foreign Language

Art, Music

None

Other (please specify)

If you selected other, please specify:

5) How often do **YOU USE YOUR LAPTOP** to do the following:

	Seldom	Weekly	Daily
a. Writing/editing first drafts of papers			
b. Working with spreadsheets/databases			
c. Taking notes			
d. Organizing information			
e. Researching information using the Internet or other software			
f. Taking quizzes/tests			
g. Working on long term assignments or projects			
h. Listening to audio books			
i. Creating presentations and other multimedia projects			
j. Working on short-term assignments			
k. Sending/receiving email			
l. Working on assignments in small groups			
m. Creating tables or graphs			

6) How often do **YOU USE YOUR LAPTOP IN SCHOOL** for each class listed?

	Seldom	Weekly	Daily	I do not take this class
a. English	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Social Studies/History	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Art/Music	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Math	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Technology/Computer Education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Foreign Language	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Physical Education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Other (please specify in 'Additional comments' below)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments:

7) Think about the effort (how hard you try) you have put forth in school over the years, and compare that to the effort you have put forth in school since you received your laptop. Select the statement that best describes your **effort** in school with the laptop.

- a. I do not try as hard as I did before having a laptop in school.
- b. There is no change in how hard I try since having a laptop in school.
- c. I try harder than before having a laptop in school.

8) Think about class assignments you have put completed for school over the years, and compare that to the class assignments you have completed since you received your laptop. Select the statement that best describes your **completion of assignments** with the laptop.

- a. I have completed less assignments with the laptop.
- b. There is no change in my completion of assignments since having a laptop in school.

c. I have completed more assignments than before having a laptop in school.

9) Think about your attention in class over the years, and compare that to your attention in class since you received your laptop. Select the statement that best describes your **attention in class** with the laptop.

- a. I pay better attention in class with the laptop.
- b. There is no change in my attention in class since having a laptop in school.
- c. I pay less attention in class than before having a laptop in school.

10) Think about times you have been bored in class over the years, and compare that to your level of boredom in class since you received your laptop. Select the statement that best describes your **level of boredom** in class with the laptop.

- a. I am less bored in class with the laptop.
- b. There is no change in my level of boredom in class since having a laptop in school.
- c. I more bored in class than before having a laptop in school.

11) To what extent do you agree with each of the following statements about **YOUR LAPTOP USE**.

	Strongly Agree	Agree	Disagree	Strongly Disagree
a. Having a laptop helps me to be better organized.				
b. I get my work done more quickly now that I have my laptop.				
c. I am better able to understand my school work when we use the laptops.				
d. I am more interested in school when we use the laptops.				
e. This Initiative will help me in the future for college.				
f. This Initiative will help me in the future for work.				

12) What were the top 3 software programs you found helpful that were available on your laptop?

1)

2)

3)

13) Have you posted any of your school work or school projects on the Internet?

Yes

No

14) If you responded yes to the above question, how often have you posted school work or projects on the Internet?

15) Have you used your laptop to create something that you posted on the web?

Yes

No

16) How would you rate your overall skill in using computers? (select one)

Novice: I can turn the computer on, but I don't really know how to use many programs.

Beginner: I am able to use some basic functions such as word processing and the Internet.

Intermediate: I am able to use some of the programs, but I don't have lot of experience with them.

Advanced: I am able to use many of the programs and have had a great deal of experience with them.

Expert: I am able to teach others how to use some programs and I am able to fix minor problems with my computer when they happen.

Techie: I am able to troubleshoot for teachers and students regularly, I know several program languages, and have built websites.

17) Please include any other comments you wish to make at this time.

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Thank you for your participation in this project.

## Appendix B: Teacher Survey

### ***Talbot County One-to-One Laptop Initiative: Teacher Survey, Spring 2007***

Thank you for taking the time to complete this survey. We know that your time is valuable, but we need your feedback on the One-to-One Initiative to determine the benefits of the Initiative. All responses will be confidential and released to the school district only in an aggregate format. Questions adapted from MLTI, TAGLIT, and IITTL publications.

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**1) For purposes of tracking, please enter the last 4 digits of your home phone number. No individual identifying information will be released.**

**2) Related to the Laptop Initiative, what grade(s) do you teach?**

9th grade    10th grade    Both 9th and 10th grade(s)

**3) How long have you been participating in the Laptop Initiative?**

This is my first year.

This is my second year.

I have never used the laptops in my classes.

**4) How frequently do YOU perform the following tasks USING YOUR LAPTOP?**

	Never or Seldom	Weekly	Daily
a. Conduct research for lesson plans or curriculum design.			
b. Develop instructional materials or presentations.			
c. Produce homework assignments.			
d. Assess student work.			
e. Manage student information.			
f. Communicate with students.			
g. Communicate with colleagues.			
h. Using presentation software for instructional purposes.			
i. Creating and/or maintaining website(s) for instructional purposes.			
j. Communicate with parents.			
k. Communicate with Curriculum Specialists			
l. Communicate with administrators			

**5) How often do most STUDENTS in your classroom USE THEIR LAPTOPS to do the following?**

	Never or Seldom	Weekly	Daily
a. Writing/editing first drafts of papers			
b. Working with spreadsheets/databases			
c. Taking notes on the computer			
d. Managing/analyzing information			
e. Working on long term assignments			
f. Researching information using the Internet			
g. Taking tests/quizzes			
h. Doing drills to increase their competency (educational drill software, online quizzes, FunBrain, etc...)			
i. Creating culminating projects to show what they have learned (web pages, multimedia projects, videos, etc...)			
j. Working on short-term assignments			
k. Working in groups to complete tasks			
l. Completing homework			
m. Creating graphs, tables, and/or charts			

**6) Please indicate how much you agree or disagree with each of the following statements about TEACHERS AND TEACHING**

	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
a. I feel my teaching benefits from laptop use.						
b. I am better able to differentiate my curriculum to fit student needs as a result of having the laptops.						
c. Having a laptop has helped me to access more up-to-date information for my students.						
d. When students are using laptops in class there is less classroom disruption.						
e. I am enthusiastic about the Laptop Initiative.						
f. I am better able to access diverse teaching materials and resources for my students when using the laptop.						
g. Having laptops in the classroom has increased my expectations for students' work.						
h. I am better able to meet curriculum goals because students are using laptops.						
i. Use of the laptops helps me to create instructional materials which better meet the state and county standards.						

j. I am able to explore topics in greater depth with my students when students use the laptops.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
k. The laptops make it easier for me to help students meet county benchmarks.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
l. The laptops help students to complete their class work.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
m. I have easier access to the curriculum with the Laptop Initiative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**7) As compared to instruction before the Laptop Initiative, how would you estimate that each of the following dimensions of student engagement has changed since the Laptop Initiative began? For this section, please estimate your perception of student engagement since the Laptop Initiative was implemented.**

	Less	No Change	More
a. Student EFFORT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Student ATTENTION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Student INVESTMENT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Student INTEREST in school	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Student BOREDOM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Student COMPLETION of ASSIGNMENTS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Student PARTICIPATION in class	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h. Student class ATTENDANCE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**8) Please indicate the level of IMPORTANCE the Laptop Initiative has had for the following groups of students.**

	Not Very Important	Important	Very Important
a. Students at risk of dropping out of school.			
b. Students at risk of falling behind due to poor academic performance.			
c. Students at risk of being suspended or expelled.			
d. Students at risk of poor attendance.			
e. Students with disabilities.			
f. Students from lower economic backgrounds.			
g. Students with limited English proficiency (LEP).			

**9) Please rate your Agreement/Disagreement with the following statements:**

	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
a. I am comfortable with my role in the Laptop Initiative.						
b. This Initiative will create more work for me as a teacher.						
d. I am concerned about my ability to manage all that the Initiative requires.						
e. I support this Initiative.						

**10) Overall, how important do you think this Initiative is?**

Extremely Important

Very Important

Important

Not Very Important

Not Important At All

Additional comments:

**11) Finally, we would like to know your feelings about the adoption of technology in your classroom. Please read the descriptions of each of the six stages below, and select the stage that best describes your present level with respect to the adoption of technology in the classroom. Please enter the number of that stage in the space below.**

Stage 1: AWARENESS

I am aware that technology exists but have not used it-perhaps I am even avoiding it. I am anxious about the prospect of using computers.

Stage 2: LEARNING THE PROCESS

I am currently trying to learn the basics. I am sometimes frustrated using computers. I lack confidence when using computers.

Stage 3: UNDERSTANDING THE APPLICATION OF THE PROCESS

I am beginning to understand the process of using technology and can think of specific tasks in which it might be useful.

Stage 4: FAMILIARITY AND CONFIDENCE

I am gaining a sense of confidence in using the computer for specific tasks. I am starting to feel comfortable using the computer.

Stage 5: ADAPTATION TO OTHER CONTEXTS

I think about the computer as a tool to help me and am no longer concerned about it as technology. I can use it in many applications and as an instructional aid.

Stage 6: CREATIVE APPLICATION TO NEW CONTEXTS

I can apply what I know about technology in the classroom. I am able to use it as an instructional tool and integrate it into the curriculum.

**Please enter the number of the stage that best describes where you are in the adoption of technology.**

Stage

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Thank you for taking the time to complete this survey. Your responses will be held in strict confidence and released only in an aggregate form.