

## **iAm Laptop Evaluation: Final Report**

### **EXECUTIVE SUMMARY**

The goals of the South Carolina iAm Laptop initiative were threefold: enhance educational opportunities, increase workforce competitiveness, and engage ninth grade students to take ownership and responsibility for their future. Laptops were to be distributed to all ninth grade students in the six pilot schools, and they were to keep them throughout high school. The intent of the legislation was that each new cohort of ninth graders would receive a laptop until the school was immersed within four years.

In order to evaluate the implementation and outcomes of the Laptop program, the evaluators were selected from outside the Department of Education. The evaluation of the program was conducted from Fall 2007 through December 2009, utilizing a mixed methods approach that included quantitative and qualitative components.

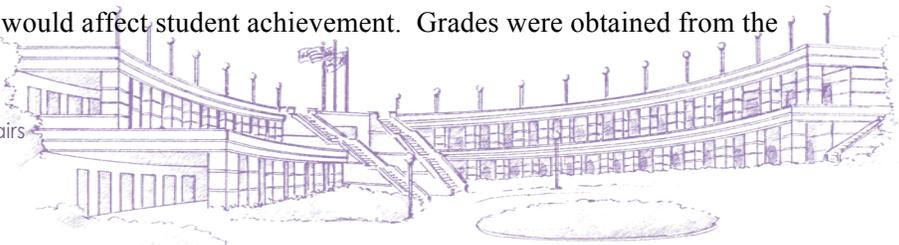
*Schools & Computers.* Dell won the contract to provide the computers, and a comprehensive insurance package was provided because of anticipated repair costs. Each school ordered enough for their incoming ninth graders, as well as for most school teachers and administrators. Cumulatively, the purchase numbers and distributions are listed in Table 1. By the end of the program, 2503 computers had been purchased. Repair costs were significantly below anticipated costs, amounting to less than three computers per year.

It is important to note that the distribution schedule varied by school. Computers were also taken back up by the middle of April in several schools, which meant that students typically had their computers for less than six months out of the year.

**Table 1. Laptop Schools and Distribution Information**

School	# Computers	Fall Distribution			Teacher Training		
		2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<b>Bethune Bowman</b>	190	Feb. 08	Nov.	Oct.	Yes	Yes	No
<b>CA Johnson</b>	401	Jan. 08	Nov.	NONE	Yes	Some	No
<b>Creek Bridge</b>	180	Jan. 08	August	August	Yes	Yes	No
<b>Lakewood</b>	712	Jan. 08	Nov.	Nov.	Yes	Some	No
<b>Midland Valley</b>	781	Jan. 08	Sept.	Sept.	Yes	Yes	No
<b>Scott's Branch</b>	239	Jan. 08	Nov.	Sept.	Yes	Yes	No

*Student Achievement.* One of the goals of the iAm Laptop program was to determine how daily use of a computer, both at school and at home, would affect student achievement. Grades were obtained from the



six pilot schools and from the six match schools for each nine weeks for two years. Analysis included building groups and categories of courses to facilitate comparing subject areas across schools. This enabled, for the first time in SC, comparing course grades across schools. The evaluators focused attention on the four core areas of English, Math, Science, and Social Studies. Results indicate little significant change in student achievement, and the lack of consistent use within classrooms makes causal links inappropriate.

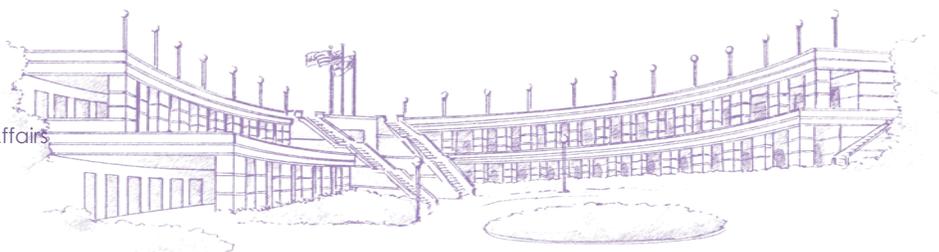
*Student & Parent Surveys.* Students were asked to take web-based surveys to ascertain their comfort level with different types of technology, and its change over time. Similarly, parents participated in structured focus groups to discuss their own use of technology and feelings about the iAm Laptop initiative. Overall, students felt very positive about having the laptops and consistently commented that they were not regularly used in their classes. Parents had similar comments about their endorsement of the program. Some parents did not sign consent forms allowing their children to obtain a laptop or take one home because they were told they would be held accountable for replacement costs. Schools had insurance that would cover almost any damage or replacement.

*Teacher & Administrator Surveys & Focus Groups.* The evaluators regularly met with teachers and administrators at all six pilot schools. Meetings ranged from formal structured interviews to casual discussions during site visits. Five surveys were conducted for teacher responses. The intent of the initial survey was to gain baseline data on teachers' ability to use technology and the last survey was to measure changes in those perceptions.

- Of the 53 teachers in the initial project (2007-08), the return rate was 70 percent for the first survey, 60 percent on the second survey.
- Third and fourth surveys were conducted in the 2008-09 school year with 36 percent response and 47 percent in surveys respectively, out of 121 teacher participants.
- Over the period of the evaluation, response rates decreased significantly that indicated decreasing interest in the project's goals as well as less computer usage in the classroom.
- There were no teacher responses to the last survey in the 2009-10 academic year.

Initial survey results indicated most teachers (37 responding) ranked themselves as proficient or expert using technology. On the second survey, designed to measure usage, the 44 teachers who responded indicated the greatest usage in subject area was in math courses with 28 percent of respondents indicating use of technology in the classroom at least two days per week.

*Technology & District Costs.* It was important that the evaluation consider District Technology Plans, as well as cost of technology, in order to analyze and discover improvements that could be made. Each school approached the plan consistent with state requirements of five core technology focus dimensions. The majority of the plans were well developed and organized to meet the benchmarks/goals set in the plan. These areas provided detail on the delivery of technology, the mechanics/deployment of the process and professional training. All plans met the state requirements. The state plan does not include any consideration related to integrating technology into daily instruction. In addition, there is no capability to track use of instructional technology related to a school or district possessing a robust network.



*Conclusions & Recommendations.* Based on the 30-month evaluation, the evaluators have several recommendations to make about subsequent attempts to fully integrate technology into SC schools.

- Integration of technology and instruction works best when distribution is school wide, immersing an entire school at one time.
  - After freshmen year, most classes are multi-grade (especially in small districts), which means that isolating grade by grade is very difficult.
  - Immersion reinforces to teachers that change to technology is permanent.
  - Teachers will default to non-tech lesson plan if forced to plan more than one.
- Teachers should be required to adopt/master and integrate instruction with technology
- Teachers must sign off on grant proposals

Teachers did not take advantage of the online training offered by Dell or utilized the web site created by the evaluators. If teachers had been involved in the grant process, perhaps they would have been more active in the program's implementation.

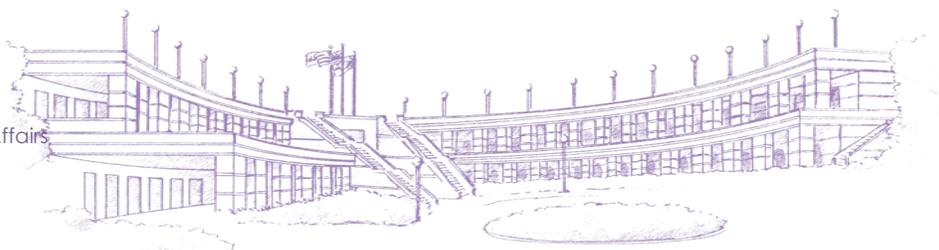
One strong recommendation that can be implemented without any state costs is the creation of two additional codes in the districts' student systems. Creating variables such as group and category to organize course areas (English, Math, Science) and sub-areas (Honors, AP, Remedial) will enable cross-district comparison of grades. At this time, there is no method for comparing grades in a subject area across multiple schools. Statistical analysis of course achievement relative to standardized test performance would be a powerful evaluation tool for all districts.

It is also recommended that the current financial accountability report (Insite) be modified to facilitate a comprehensive analysis of technology costs. The state could benefit from improved pricing if districts were willing to collaborate on infrastructure, hardware, and software purchases.

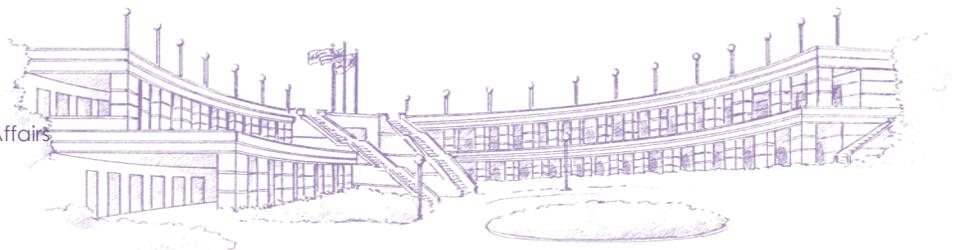
Like this project, it is proposed that all future education technology initiatives need to be evaluated by a third party for an accurate assessment of best practices. In addition, it is recommended that there be accountability for schools that do not fulfill the requirements set forth in the original requests.

We would like to express their appreciation to the technology directors at the schools who provided much assistance throughout the evaluation. Without them, this would not have been possible. Additional thanks are due to several of the principals who allowed the evaluators open access to their schools and encouraged their teachers to work with us.

The evaluators for the iAm Laptop initiative are Camilla Hertwig and Catherine Watt, Ph.D. of the Strom Thurmond Institute of Government and Public Affairs. Questions may be addressed to them at 864-656-4700.



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## I. THE INTENT OF THE LEGISLATION

During the legislative session of 2007, the General Assembly appropriated \$5 million through Proviso 1A.70 and appropriations for the Education Improvement Act (EIA). The South Carolina General Assembly has provided \$5,000,000 to state agencies involved in the state's K-12 Technology Initiative (K12TI) for the "iAm" Statewide Student Laptop Program (ISSLP).

The goal of the ISSLP is to enhance the educational opportunities, increase workforce competitiveness, and engage ninth grade students to take ownership and responsibility for their future and the future of South Carolina. Grant funds will be used to lease or purchase

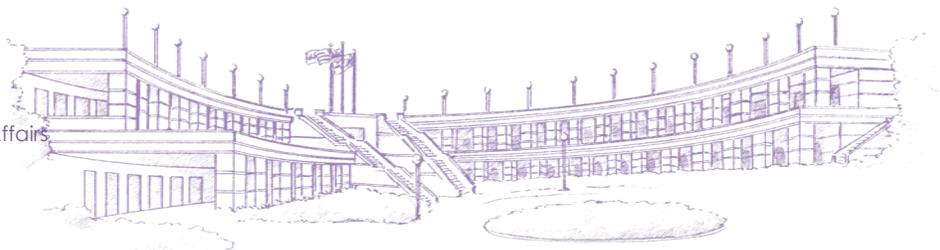
- laptops for ninth grade students,
- additional equipment and infrastructure to support the implementation of the SSLP,
- professional staff and faculty training, and
- service and maintenance for the program.

The program is designed to measure impact on retention rates and student achievement.

According to Proviso 1A.70, for FY 2007-08 the first 50 percent of "iAm" grant awards must be for public schools serving ninth grade that scored unsatisfactory or below average on the most recent EAA school report card *and* that have free and reduced lunch student counts that exceed the statewide average of 52 percent *and* that have the technological capacity necessary to implement the program fully.

The General Assembly also requires grantees' participation in mandatory third-party independent evaluation of the ISSLP's efficacy. The evaluation must include the program's impact on retention rates and student achievement. A copy of the evaluation report shall be provided to the President Pro Tempore of the Senate, the Speaker of the House of Representatives, the Chairman of the Senate Finance Committee, and the Chairman of the House Ways and Means Committee.

The schools interested in participating submitted proposals through the South Carolina K-12 Committee, which is comprised of members representing the Department of Education, Department of State Information Technology, private industry, and selected other state agencies. Districts submitted the proposals and included appropriate levels of cost sharing. The following schools were selected, with information gathered from the 2007 State Report Cards:



School Name	2007 Enrollment	Poverty Index	2006-Average teacher salary	2006 Student-teacher ratio	2005 Student-teacher ratio	2006 Dollars per student	2006 Parents attending conferences
Bethune-Bowman Middle High	409	94.80	\$41,412	17.1	18.4	\$9,743	99.7
C A Johnson Preparatory Academy	548	91.27	\$40,468	21.1	18.7	\$8,893	99.7
Creek Bridge High	422	95.80	\$37,208	36.7	14.3	\$8,255	99
Lakewood High	1267	78.41	\$37,219	31.7	32	\$5,125	58.6
Midland Valley High	1228	61.29	\$45,257	28.4	29	\$5,894	54
Scotts Branch High	380	93.85	\$41,368	29.6	27.1	\$7,477	74.3

As part of the proposal process, schools indicated their own achievement goals for the program. Schools were notified in September 2007 that they had received the grants. By November 2007, the evaluation schema was in place and the schools had been informed of the process for the evaluation.



## II. DESIGN OF THE EVALUATION

The evaluation of the iAm Laptop program is intended to provide both an assessment of progress made in the pilot schools and an opportunity to propose future policies that could improve future endeavors.

In order to fully understand the impact of the laptop program with students, participating schools, and families, a mixed methods approach was designed that would consider more than the quantitative achievement or financial data. Components of the evaluation included:

Study	Contribution	Primary Tool
<b>Comparison of Grades / Achievement</b>	Compare End-of-Course pass rates and student grades between participants and matches	Descriptive statistical / cross-tab
<b>Student Communication</b>	Ask students what they liked and what can enhance program implementation	Surveys & focus groups
<b>Parent Communication</b>	Ask parents / families how they benefited from the program and what can enhance program implementation	Scaled & open-ended survey
<b>Teacher Communication</b>	Describe integrating technology into lesson plans changes how a teacher teaches and how students learn	Surveys, lesson plans, focus groups
<b>Technology Plan Evaluation</b>	Gather school & district technology plans to evaluate worth and what improvements can be made	Content analysis
<b>Cost Study</b>	Identify major costs (per pupil and per teacher) and compare with non-participating schools	Analytical accounting

The evaluation design utilized a matched pairs format, with each of the six participating schools matched with a school similar in size, poverty level, and report card performance. Designing the evaluation in this way would allow for comparisons between the schools without laptops and those participating *with* the laptops. Letters were sent to the district superintendents requesting permission for inclusion in the study and articulating the data required over the two-year period. The participants and their matches are listed below:



<b>Participant</b>	<b>District</b>	<b>Match school</b>	<b>Match District</b>
<b>Bethune Bowman</b>	Orangeburg 5	Green Sea Floyds	Horry
<b>CA Johnson</b>	Richland 1	Baptist Hill High	Charleston
<b>Creek Bridge</b>	Marion 7	McCormick High	McCormick
<b>Lakewood</b>	Sumter 2	Loris High	Horry
<b>Midland Valley</b>	Aiken	Strom Thurmond	Edgefield
<b>Scott's Branch</b>	Clarendon 1	Denmark-Olar	Bamberg 2

Over the duration of the evaluation, match schools sent their nine-weeks grades for the corresponding classes. However, as the program progressed but was not expanded, their participation became limited.

The evaluators constructed a web page that was available for the laptop teachers to use; they were asked to share one lesson plan per week as well as communicate with each other and ask questions. It was thought that the site could serve as a clearinghouse for sharing lesson plans that integrated technology and made planning easier on the teachers. Unfortunately, no teacher took advantage of the site and adherence to the request to upload lesson plans was followed sporadically.

Site visits became a regular part of the evaluation plan. Time spent on the campuses, both scheduled and impromptu, provided a great deal of information about integration of the laptops into the school's culture. This allowed substantial time to talk with students informally, to visit classrooms, and to gain some perspective on the school's strengths and weaknesses.

The cost study aspect of the study could not be completed as anticipated. There was no available information that considered technology costs per student in an individual school or per teacher in an individual school. As noted in the Technology Cost section, the available information was only available at the district level.

As data was gathered over the first year, an interim report was presented to the SC K-12 Committee where the evaluators requested modifications in the laptop deployment based on the lack of use in certain schools. It was thought that changes could facilitate other schools furthering the use of the laptops. The evaluators believed that altering placement of the laptops could afford full immersion in three of the schools. Regular communication with the Project Manager included discussions about varying levels of participation from the pilot schools as well as suggestions to improve use and monitoring.



### III. LAPTOP DISTRIBUTION & SETUP

Once the General Assembly passed the bill, it took approximately four months to complete the process of awarding the grants to the schools and awarding the computer contracts. The Dell contract covered substantial damage insurance, and participating teachers were given free access to all Dell online training, support, and teacher lesson plans. Dell trainers went to each school for at least one to two days of in-person training on the laptops and their use.

Computers were disseminated to the schools, but each district was allowed to conduct the setup and distribution as it wished. One challenge was the insistence by all districts that they be allowed to re-configure each laptop. This causes significant delays, particularly in two schools. While the purchase was completed by October 2007, the laptops were not given to the students until January 2008 (in one case February).

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The evaluators wished to determine a baseline use of the computers, questioning how often the teachers intended to use the computers. In the initial discussions with teachers at each of the schools, the evaluators were surprised to learn that approximately half of the teachers were unaware of the laptop initiative, that they were expected to participate, and that the evaluation was required. Once this was revealed, it was easier to understand the reluctance of some teachers to participate in the evaluation. They had not agreed to become “laptop teachers” and did not have much interest in integrating the new technology into their daily lesson plans.

It was thought that year two implementation (2008-09) would be concurrent with the start of the school year. However, only one school had the laptops distributed to students within the first week of school; all of those students had been allowed to take them home over the summer. Finally, for year three (2009-10) there was no new money for another grade’s immersion and,



therefore, schools began to prepare for the time when they would no longer be held to the program's expectations.

As stated earlier, it was paramount that the evaluation considers the effect of regular integration of technology into daily classroom instruction. However, several schools had irregular distribution and early return practices that made changes in grade performance difficult to correlate with laptop use.



#### IV. STUDENT ACHIEVEMENT

One of the primary intentions of the legislation was to increase student achievement by affording students unlimited use of technology. Grades from schools were received for almost all of the nine-week periods, semesters, and end-of-year grades.

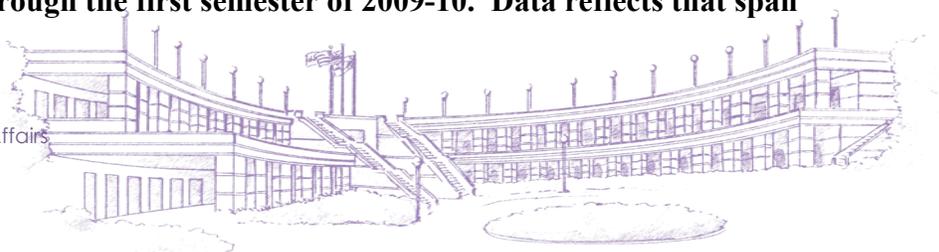
There is currently no method in the SC student database system to compare course grades across schools or across districts. The former SASI system, now Power School, does not include a “group” or “category” variable that allows for analysis of subject areas. Therefore, the evaluators gathered individual course titles and grades for each student and then compiled a database around core subject areas. For example, all courses with “English” or “Eng” were grouped into the “English” group. Subsequently, these same courses were placed into categories such as “AP,” “Honors,” or “Remedial” based on their text titles. The same process was followed with all courses, and the final database consists of more than 1000 courses. The evaluators advocate abandoning allowing each school to input their courses using a free text field. Districts should receive guidelines on course naming; current freedoms mean that courses titled “English I” and “Eng I” do not relate in a database. Of the core curriculum areas, English was the cleanest to develop; however, math, science, and social studies proved much more challenging to classify.

Later analyses that evaluate if laptop students graduated at higher rates or were retained at lower rates should include use of this database. It would be useful to analyze if students in AP courses do, in fact, perform at higher levels on standardized tests. Inclusion of “group” and “category” variables in each district’s student system could yield powerful research on K-12 performance. Of particular interest would be the enrollment, graduation, and post-secondary enrollment patterns of those in career and technology education courses.

Graphs were created that focused on the core areas of English, Math, Science, and Social Studies. To minimize confusion in the graphs, only semester and year grades are included.

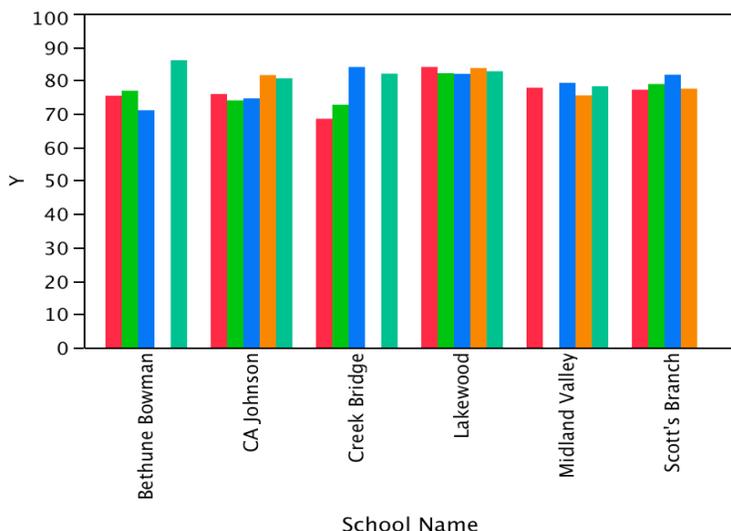
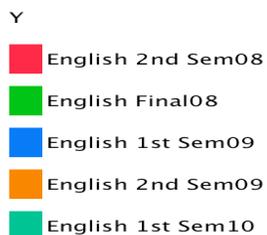
#### NOTES:

- 1. There are missing grades for some terms for some schools. Every effort was made to communicate with the schools and receive all grades.**
- 2. The original 9<sup>th</sup> grade cohort first received in January of 2008, and they are followed through first semester 2009-10. Data reflects that span of time.**
- 3. Similarly, the second 9<sup>th</sup> grade cohort first received their laptops in the fall of 2008, and they are followed through the first semester of 2009-10. Data reflects that span of time.**



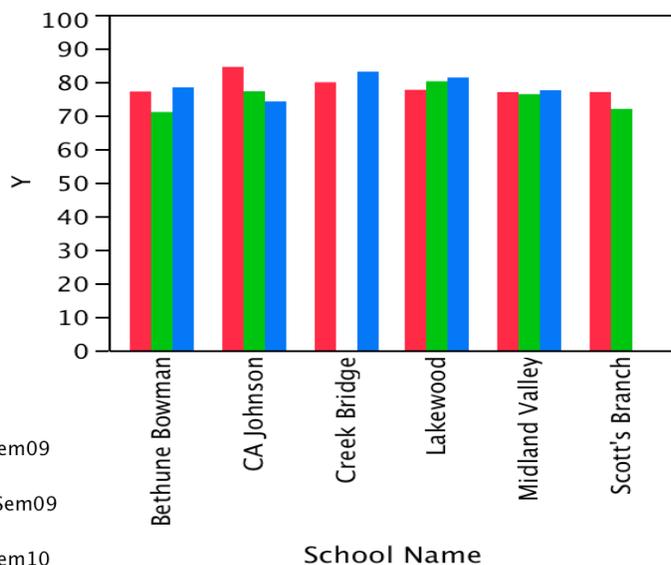
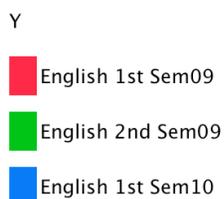
### English Grades, original 9<sup>th</sup> Grade Cohort:

- Bethune Bowman and Creek Bridge had significant changes in average grades between the second semester of 2007-08 and the first semester of 2009-10.
- No other change in average grade could be considered significant.
- Average over the evaluation period was 78.3



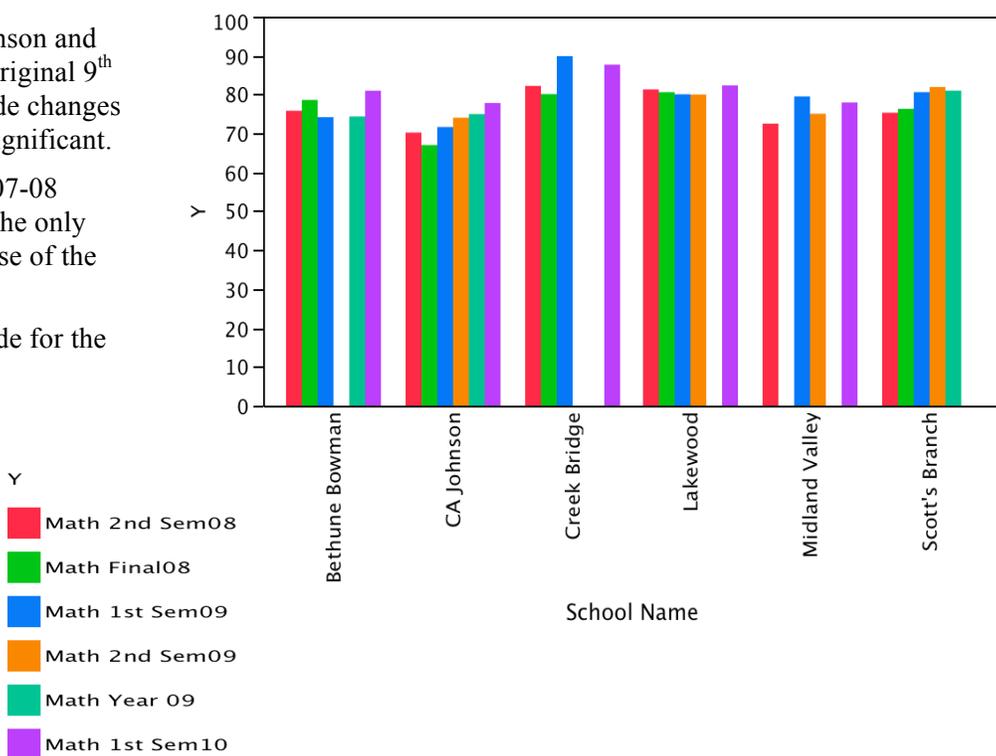
### English Grades, second 9<sup>th</sup> Grade Cohort:

- There was no significant improvement in grade performance over the evaluation period.
- The average English grade over the evaluation period was 76.8.
- It is interesting to note that this second set of “laptop students” performed less well.



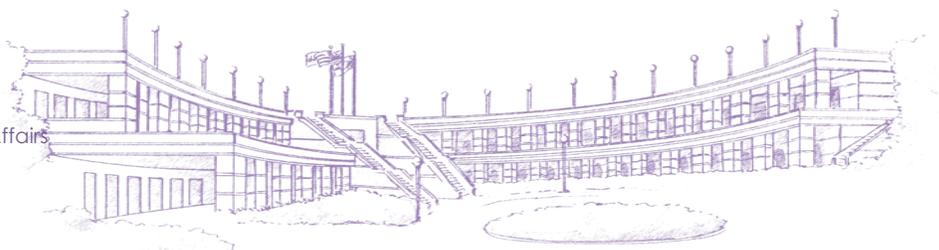
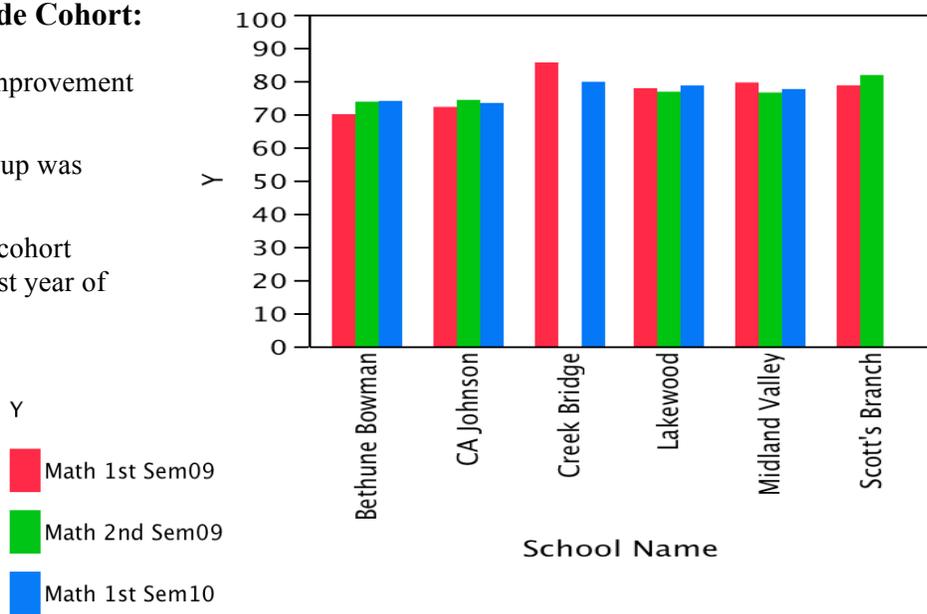
### Math Grades, original 9<sup>th</sup> Grade Cohort:

- Two schools, CA Johnson and Creek Bridge, in the original 9<sup>th</sup> grade cohort, saw grade changes that were somewhat significant.
- For CA Johnson, the 07-08 second semester was the only time that substantial use of the laptops was observed.
- The average math grade for the six schools was 78.2.



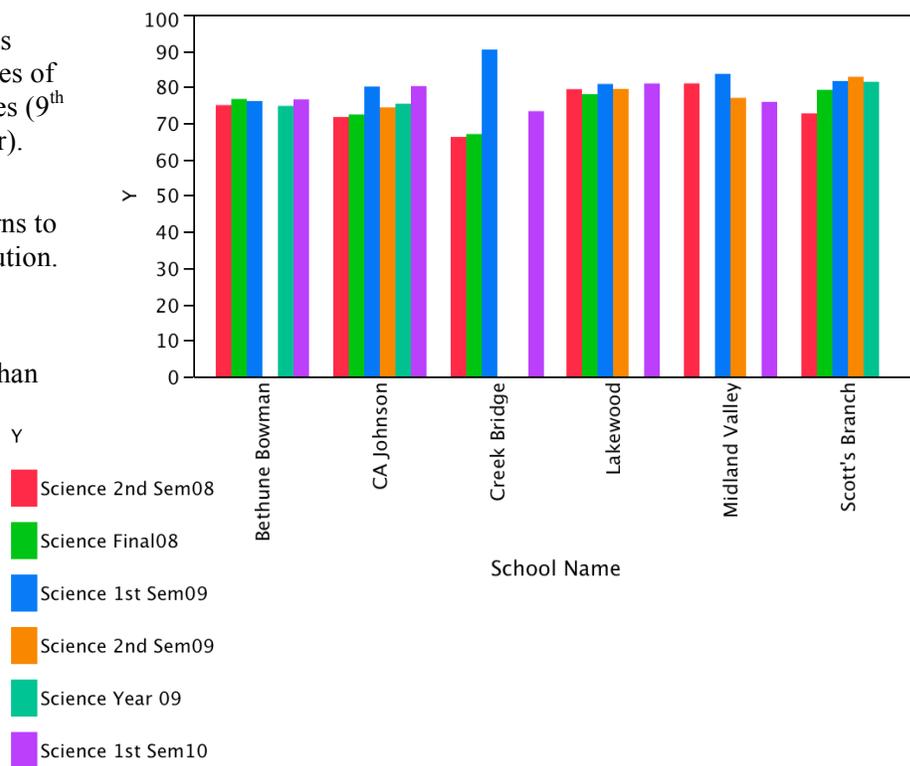
### Math Grades, second 9<sup>th</sup> Grade Cohort:

- No school saw a significant improvement in math performance.
- The average grade for this group was 76.5.
- As with English, second year cohort grades were lower than the first year of laptop implementation.



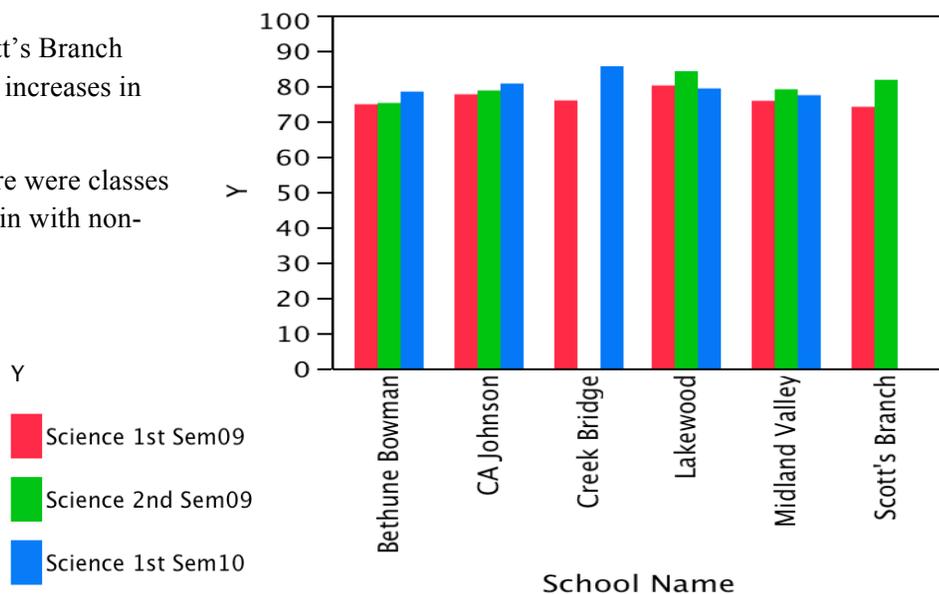
### Science Grades, original 9<sup>th</sup> Grade Cohort:

- Evaluation of science grades was complicated by the different types of courses offered that mixed grades (9<sup>th</sup> graders and 10<sup>th</sup> graders together).
- The spike in grades from Creek Bridge was significant, but returns to the average, leveling the distribution.
- Further research was needed to determine if individual courses utilized the laptops more often than other science courses.



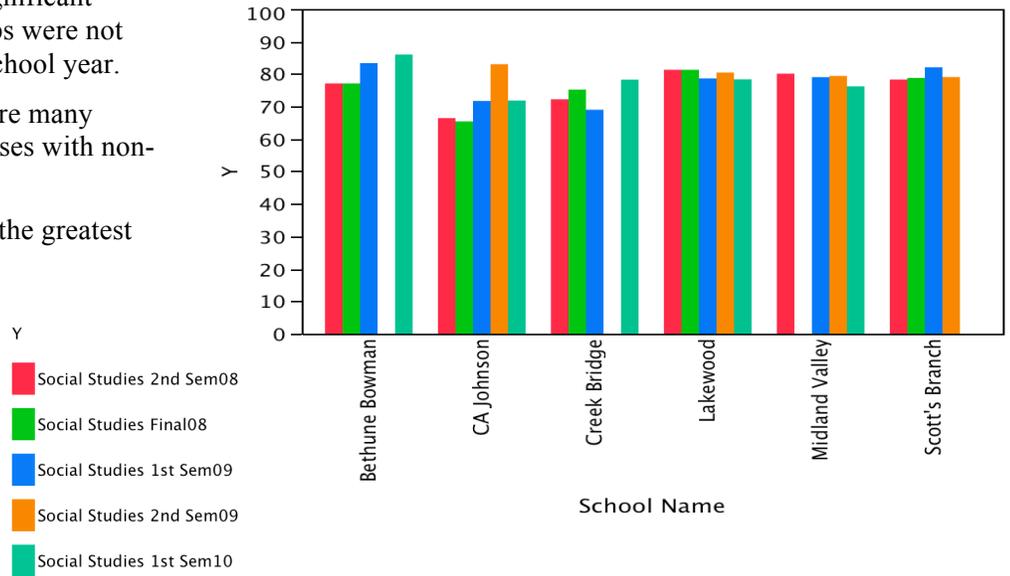
### Science Grades, second 9<sup>th</sup> Grade Cohort:

- Both Creek Bridge and Scott's Branch were beginning to see some increases in achievement.
- As with the first cohort, there were classes where students were mixed in with non-laptop students.



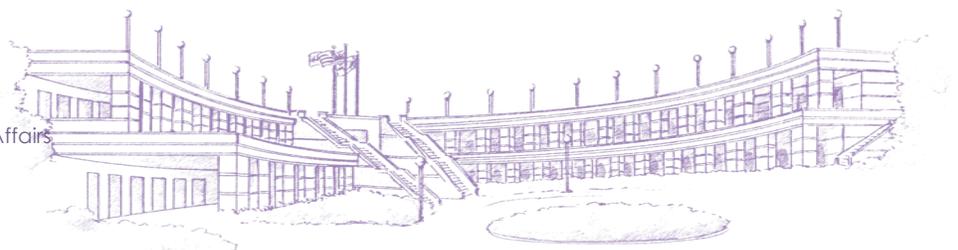
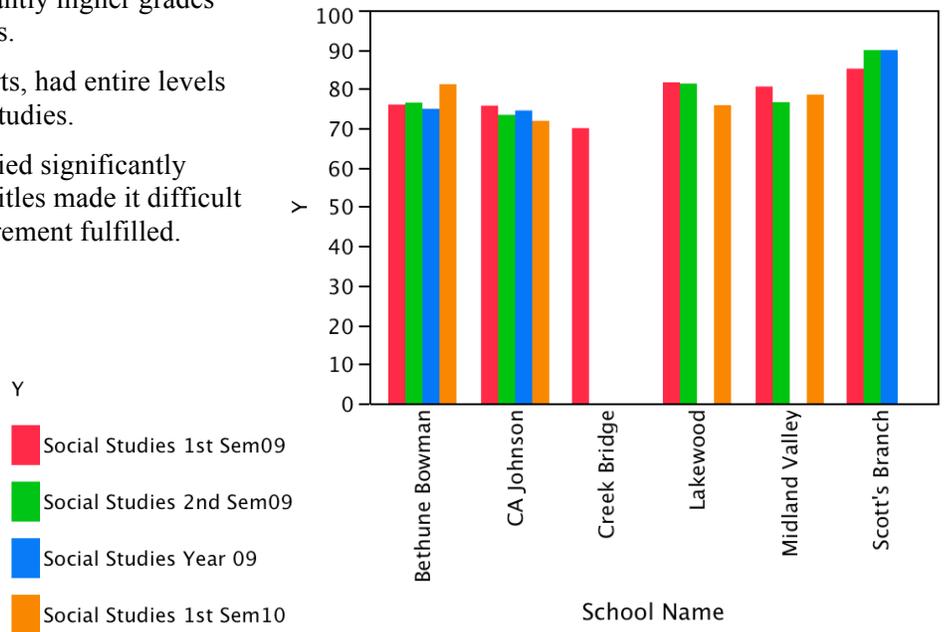
**Social Studies Grades, original 9<sup>th</sup> Grade Cohort:**

- Bethune Bowman saw significant increases, although laptops were not distributed in the 09-10 school year.
- As with science, there were many students who were in classes with non-laptop students.
- CA Johnson experienced the greatest variance in grades.



**Social Studies Grades, second 9<sup>th</sup> Grade Cohort:**

- Scott's Branch had significantly higher grades than almost all other schools.
- Creek Bridge, in both cohorts, had entire levels with students not in social studies.
- Social Studies offerings varied significantly across schools, and course titles made it difficult to determine the state requirement fulfilled.



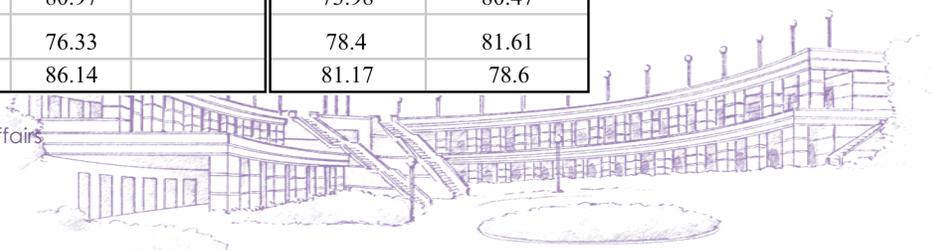
## Participant Schools with Match Schools – Academic Performance

The intent of creating matched pairs of participant with non-participant schools was to evaluate achievement against a similar school. The participant schools varied too much in their poverty rates, their state report card grades, as well as their size.

The match schools were approached by the evaluators with the idea that their schools could be considered for later addition into the program based on the model created by the General Assembly of the types of schools to participate in the program. Permission was given to receive student grades, although the schools declined to participate in surveys and focus groups. As the study progressed and funding was not increased, some of the schools declined to send grades.

### BETHUNE BOWMAN MIDDLE HIGH SCHOOL

	INITIAL COHORT		SECOND COHORT	
	Bethune Bowman	Green Sea Floyds	Bethune Bowman	Green Sea Floyds
English 2nd Semester 07-08	75.4	77.9		
Math 2nd Semester 07-08	75.8	78.3		
Science 2nd Semester 07-08	75	80		
Social Studies 2nd Semester 07-08	77.1	89.5		
English Year 07-08	76.9	78.5		
Math Year 07-08	78.6	76.5		
Science Year 07-08	76.7	78.4		
Social Studies Year 07-08	77.1	86		
English 1st Semester 08-09	71.04	80.53	77.12	81.62
Math 1st Semester 08-09	74.16	80.33	69.97	80.23
Science 1st Semester 08-09	76.12	81.17	74.82	81.39
Social Studies 1st Semester 08-09	83.36	81.56	76	89.23
English 2nd Semester 08-09	73/2		71.01	
Math 2nd Semester 08-09	74.8		73.75	
Science 2nd Semester 08-09	75.7		75.18	
Social Studies 2nd Semester 08-09	80.12		76.5	
English Year 08-09	71.49		69.59	
Math Year 08-09	74.34		72.15	
Science Year 08-09	74.78		75.28	
Social Studies Year 08-09	77.37		74.94	
English 1st Semester 09-10	86.25		78.34	77.8
Math 1st Semester 09-10	80.97		73.98	80.47
Science 1st Semester 09-10	76.33		78.4	81.61
Social Studies 1st Semester 09-10	86.14		81.17	78.6



## CA JOHNSON PREPARATORY HIGH SCHOOL

	INITIAL COHORT		SECOND COHORT	
	CA Johnson	Baptist Hill High	CA Johnson	Baptist Hill High
English 2nd Semester 07-08	75.9	75.9		
Math 2nd Semester 07-08	70.2	70.6		
Science 2nd Semester 07-08	71.7	71.9		
Social Studies 2nd Semester 07-08	66.4	74		
English Year 07-08	74	74		
Math Year 07-08	67	70.6		
Science Year 07-08	72.4	69.7		
Social Studies Year 07-08	65.4	76.7		
English 1st Semester 08-09	74.61	75.82	84.74	73.33
Math 1st Semester 08-09	71.64	76.13	72.15	71.82
Science 1st Semester 08-09	80.13	79.87	77.63	67
Social Studies 1st Semester 08-09	71.71	74.61	75.73	78.3
English 2nd Semester 08-09	81.57		77.18	
Math 2nd Semester 08-09	74.03		74.28	
Science 2nd Semester 08-09	74.36		78.72	
Social Studies 2nd Semester 08-09	83.02		73.38	
English Year 08-09	81.22		77.19	
Math Year 08-09	74.97		73.88	
Science Year 08-09	75.39		80.07	
Social Studies Year 08-09	83.39		74.5	
English 1st Semester 09-10	80.61		74.15	
Math 1st Semester 09-10	77.8		73.36	
Science 1st Semester 09-10	80.25		80.69	
Social Studies 1st Semester 09-10	71.83		71.86	



## CREEK BRIDGE HIGH SCHOOL

	INITIAL COHORT		SECOND COHORT	
	Creek Bridge	McCormick High	Creek Bridge	McCormick High
English 2nd Semester 07-08	68.5	77.25		
Math 2nd Semester 07-08	82.2	81		
Science 2nd Semester 07-08	66.2	83.5		
Social Studies 2nd Semester 07-08	72.2	82.5		
English Year 07-08	72.7	77.9		
Math Year 07-08	80.1	81.3		
Science Year 07-08	67	78.2		
Social Studies Year 07-08	75.2	86.8		
English 1st Semester 08-09	84	78.14	79.87	83.45
Math 1st Semester 08-09	90.31	72.15	85.68	81.5
Science 1st Semester 08-09	90.63	81.63	75.89	83.45
Social Studies 1st Semester 08-09	69	86.16	70	82.5
English 2nd Semester 08-09	74.33		77.3	
Math 2nd Semester 08-09	83.64		82.41	
Science 2nd Semester 08-09	86.35		76.84	
Social Studies 2nd Semester 08-09	71.25		77.95	
English Year 08-09	84		79.23	
Math Year 08-09	90.33		86.7	
Science Year 08-09	90.63		75.89	
Social Studies Year 08-09	74			
English 1st Semester 09-10	82		83.03	
Math 1st Semester 09-10	87.65		79.73	
Science 1st Semester 09-10	73.32		85.6	
Social Studies 1st Semester 09-10	78.26			



**LAKEWOOD HIGH SCHOOL**

	INITIAL COHORT		SECOND COHORT	
	Lakewood	Loris High	Lakewood	Loris High
English 2nd Semester 07-08	84	79.7		
Math 2nd Semester 07-08	81.3	77.6		
Science 2nd Semester 07-08	79.4	85		
Social Studies 2nd Semester 07-08	81.3	80.7		
English Year 07-08	82.1	78.3		
Math Year 07-08	80.6	77.3		
Science Year 07-08	78	82.3		
Social Studies Year 07-08	81.3	79.7		
English 1st Semester 08-09	81.95	77.43	77.62	79.61
Math 1st Semester 08-09	80.06	78.33	77.8	77.36
Science 1st Semester 08-09	80.85	82.45	80.13	83.9
Social Studies 1st Semester 08-09	78.65	81.36	81.66	82.85
English 2nd Semester 08-09	83.69		80.17	
Math 2nd Semester 08-09	79.98		76.76	
Science 2nd Semester 08-09	79.46		84.14	
Social Studies 2nd Semester 08-09	80.45		81.34	
English Year 08-09	81.2		78.8	
Math Year 08-09	80.1		77.4	
Science Year 08-09	80.2		82.1	
Social Studies Year 08-09	79.5		81.5	
English 1st Semester 09-10	82.72		81.31	
Math 1st Semester 09-10	82.32		78.62	
Science 1st Semester 09-10	80.98		79.3	
Social Studies 1st Semester 09-10	78.37		75.84	



## MIDLAND VALLEY HIGH SCHOOL

	INITIAL COHORT		SECOND COHORT	
	Midland Valley	Strom Thurmond	Midland Valley	Strom Thurmond
English 2nd Semester 07-08	77.8			
Math 2nd Semester 07-08	72.5			
Science 2nd Semester 07-08	81			
Social Studies 2nd Semester 07-08	80.1			
English Year 07-08				
Math Year 07-08				
Science Year 07-08				
Social Studies Year 07-08				
English 1st Semester 08-09	79.26	85.13	76.94	85.13
Math 1st Semester 08-09	79.5	76.03	79.53	80.34
Science 1st Semester 08-09	83.64	81.67	75.77	79.32
Social Studies 1st Semester 08-09	79.04	82.29	80.59	81.26
English 2nd Semester 08-09	75.49		76.33	
Math 2nd Semester 08-09	75.04		76.51	
Science 2nd Semester 08-09	77		79.05	
Social Studies 2nd Semester 08-09	79.41		76.61	
English Year 08-09	78.2			
Math Year 08-09	77.2			
Science Year 08-09	80.2			
Social Studies Year 08-09	79.2			
English 1st Semester 09-10	78.21		77.49	
Math 1st Semester 09-10	77.94		77.55	
Science 1st Semester 09-10	75.89		77.39	
Social Studies 1st Semester 09-10	76.21		78.53	



## SCOTT'S BRANCH HIGH SCHOOL

	INITIAL COHORT		SECOND COHORT	
	Scott's Branch	Denmark-Olar	Scott's Branch	Denmark-Olar
English 2nd Semester 07-08	77.2	77.14		
Math 2nd Semester 07-08	75.3	78.97		
Science 2nd Semester 07-08	72.7	85.94		
Social Studies 2nd Semester 07-08	78.3	73		
English Year 07-08	78.9	75.49		
Math Year 07-08	76.3	79.35		
Science Year 07-08	79.2	83.35		
Social Studies Year 07-08	78.8	70		
English 1st Semester 08-09	81.69		76.96	82.1
Math 1st Semester 08-09	80.6		78.66	77.6
Science 1st Semester 08-09	81.65		74.08	77.46
Social Studies 1st Semester 08-09	82.07		85.14	73.15
English 2nd Semester 08-09	77.5		71.92	
Math 2nd Semester 08-09	81.92		81.78	
Science 2nd Semester 08-09	82.82		81.74	
Social Studies 2nd Semester 08-09	79.07		90.28	
English Year 08-09	78.3		78.31	
Math Year 08-09	80.99		81.91	
Science Year 08-09	81.44		79.19	
Social Studies Year 08-09	78.92		90.05	
English 1st Semester 09-10				
Math 1st Semester 09-10				
Science 1st Semester 09-10				
Social Studies 1st Semester 09-10				



## V. SCHOOLS, TEACHERS & ADMINISTRATORS

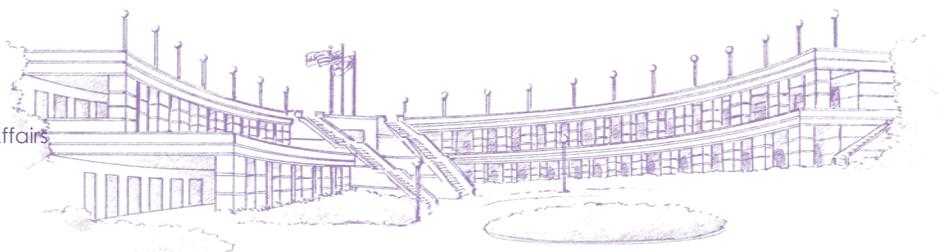
Site visits to classrooms were unannounced to obtain a true picture of the lessons taught using technology. The results varied, in year one schools that were serious about the deployment taught more lessons using the technology and resources available to them.

However, an additional area that caused problems in instructional delivery the first year of the project were crashed networks in most of the schools. The wireless networks crashed frequently because of the overload of users on laptops. Districts worked to deploy additional hardware to ease the problem in year two but the failure of the networks in some schools created teacher discomfort/non reliable network and fear of having to adopt another lesson plan if the network went down. With most teachers this led to fewer instructional plans using the network.

In years two, deployment of the laptops varied over a period of four months. Through site visits we were able to observe teachers and students. Teachers used the technology primarily for research and some group projects. Most teachers used basic programs like Power Point presentations, writing papers/projects, allowing students to email homework and using the internet. In Year Two, the evaluators requested uploading lesson plans with and without internet connection because of the issue of “crashed” networks at some of the schools and because many teachers considered that technology lessons required use of the internet.

There were some exceptions. One creative use was foreign language lessons and testing; students’ laptops had voice activation capability. Student could pronounce words, read and comprehend the language using the laptop. The hope was that the technology would spur teachers on to more challenging learning and rigor using the technology. As teachers were challenged by mixed grade levels within classes and discovered that new laptops would not be distributed in 2009, teachers were less likely to respond to usage and surveys.

Consistently throughout the evaluation period and across schools, Microsoft Word and the internet were the primary resources used by the teachers. Most tasks were at the basic level of taking notes, writing papers, and looking up sites on the internet. On the third survey of the with 44 respondents., 72% anticipated using the technology more than twice a week and 63 % were very to satisfied with their training. On the fourth survey, with 57 teachers response, only 19% of respondents stated all students had a laptop and 60% of the respondents were using them one to three times a week. From the data collected, with a smaller percentage of teachers participating in the surveys, the respondents did not provide information that verified to the evaluators teachers were teaching rigorous lessons that stimulated high quality problem solving, analytic inquiry and exploration.



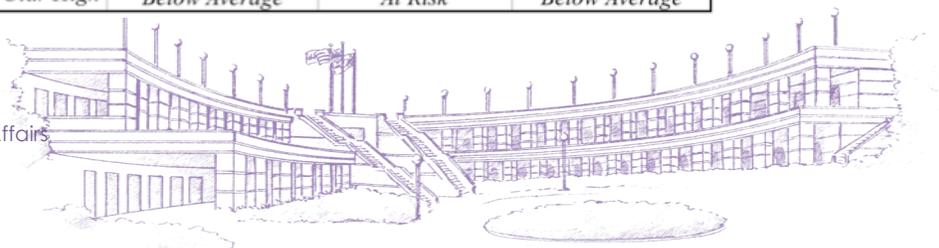
The evaluators recognized that state report card overall scores are not perfect indicators of what occurs in classrooms. However, the consistent method of grading does allow for limited assessment.

School Name	2007 Report Card Rating	2008 Report Card Rating	2009 Report Card Rating
Creek Bridge High	Below Average	Good	Average
Bethune-Bowman Middle High	Excellent	Excellent	Excellent
Scotts Branch High	Below Average	Good	Good
C A Johnson Preparatory Academy	At Risk	Below Average	At Risk
Lakewood High	Below Average	Average	Good
Midland Valley High	Below Average	Average	Average

There was little relationship between report card rating and integrated use of the laptops. Over time, one can see that there has been some positive change for selected schools. Four of the schools stayed the same or improved their rating; two did not. There was very limited change in administrations over the evaluation period, but there was some teacher turnover.

The match schools were lined up with their partners for similar comparisons.

School Name	2007 Report Card Rating	2008 Report Card Rating	2009 Report Card Rating
Bethune-Bowman Middle High	Excellent	Excellent	Excellent
<i>Green Sea Floyds High</i>	<i>Excellent</i>	<i>Good</i>	<i>Average</i>
C A Johnson Preparatory Academy	At Risk	Below Average	At Risk
<i>Baptist Hill High</i>	<i>Average</i>	<i>Average</i>	<i>Below Average</i>
Creek Bridge High	Below Average	Good	Average
<i>McCormick High</i>	<i>Average</i>	<i>Good</i>	<i>Excellent</i>
Lakewood High	Below Average	Average	Good
<i>Loris High</i>	<i>Average</i>	<i>Good</i>	<i>Average</i>
Midland Valley High	Below Average	Average	Average
<i>Strom Thurmond High</i>	<i>Average</i>	<i>Good</i>	<i>Below Average</i>
Scotts Branch High	Below Average	Good	Good
<i>Denmark-Olar High</i>	<i>Below Average</i>	<i>At Risk</i>	<i>Below Average</i>

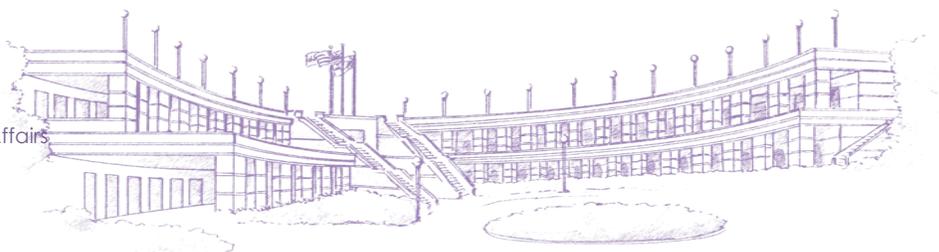
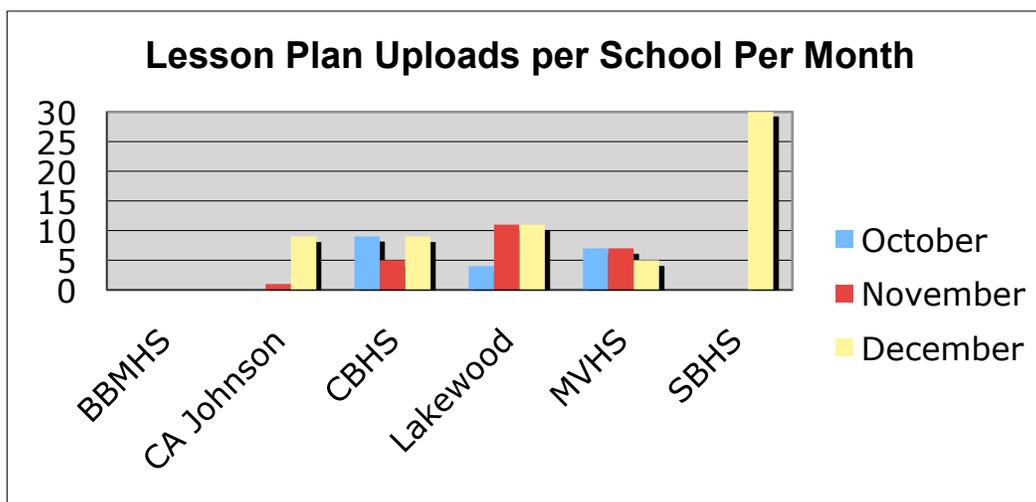


- The relationship appears to be that the participants and their matches moved in similar directions, regardless of having the laptops.
- Scott's Branch made the most substantial improvement, moving from Below Average to Good.

## Lesson Plan Uploads

For the 2008-09 schools year, the evaluators added another component to their work. The evaluators wanted to learn more about how the teachers were integrating technology into their daily lesson plans. Because South Carolina teachers are required to teach to state standards, and most school principals review lesson plans, it was thought that this would be a way to link student achievement (grades) with their classroom experiences. The Laptop web page allowed faculty member to upload lesson plans quickly and easily, and the evaluators did not require them to change what they submitted to their principals. They were asked to upload four lesson plans a month, with the request that they allow other laptop teachers to see their plans and download them from the web site.

The results from this endeavor were disappointing for both quantity and quality. Only about 10 percent of teachers loaded their lesson plans regularly. When the evaluators planned for the Year One report, teachers started loading lesson plans at a very high rate, but a check of quality and information within yielded disappointing results.



It is easy to see that if each school had at least eight teachers participating (two grades, four core areas), then there should have been greater participation. Only when the technology directors were alerted to the pending Year One presentation did participation increase.

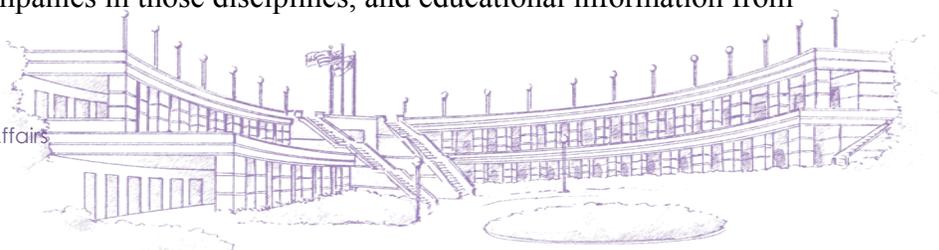
School	October w/ internet		October w/o internet		Nov. w/ internet		Nov w/o Internet		December w/Internet		Dec w/o Internet	
	1-2	3-4	1-2	3-4	1-2	3-4	1-2	3-4	1-2	3-4	1-2	3-4
Bethune												
Bowman	2	1	0	0	0	2	5	1	1	1	3	1
CA Johnson	0	0	0	0	0	0	0	0	0	0	0	0
Creek Bridge	1	0	0	2	0	0	0	0	4	4	6	6
Lakewood	0	2	0	2	5	0	4	0	2	0	5	0
Midland Valley	6	10	6	9	11	6	8	5	15	6	18	6
Scott's Branch	3	4	0	2	0	0	0	0	1	1	1	1

Additionally, teachers were asked to respond by email to two questions each week. They were asked to report how many lessons they conducted using the laptops -- with the internet and without the internet. Responses to this request were sight more proportional to the population of teachers, and the evaluators believe that the teachers were being honest in their assessments.

There was interest in how Midland Valley reported, and the evaluators later realized that teachers could be counting each period, rather than a day's worth of lessons. However, discussions with the teachers showed that more than only the core teachers were reporting, making school to school comparisons challenging.

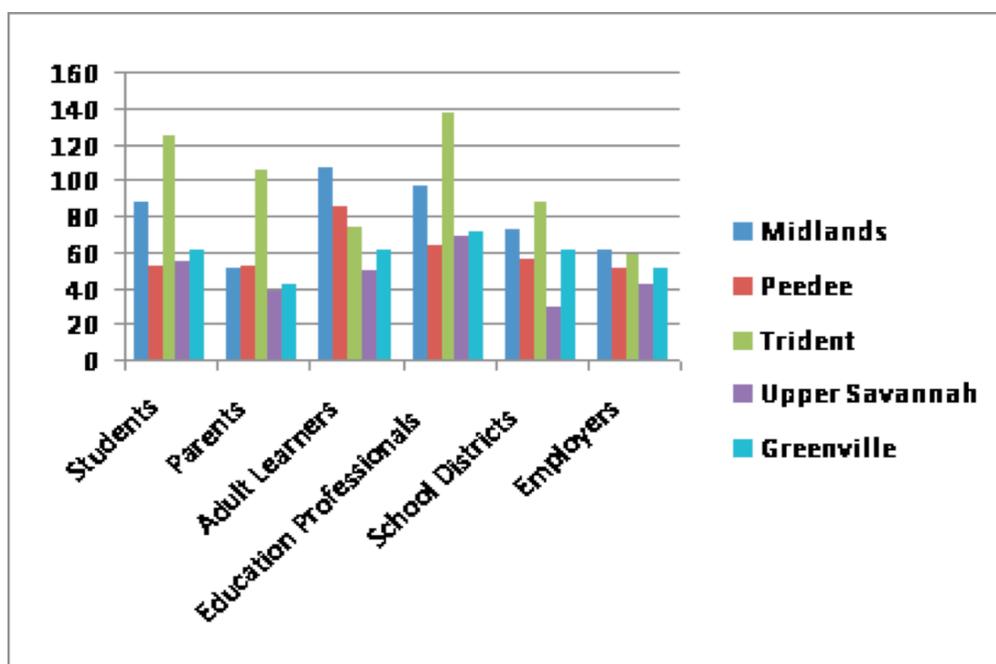
## Personal Pathways

One of the legislative intents was to “engage ninth grade students to take ownership and responsibility for their future.” To facilitate students’ interests in their careers and, in conjunction with current SC EEDA legislation, the evaluators provided information to the participant schools on the new “Personal Pathways” initiative. The evaluators had specifically requested use of this site in order to acquaint them with new state initiatives. The new sites, set up by region across South Carolina, were intended to provide multiple resources on career paths, including salary comparisons, companies in those disciplines, and educational information from colleges and universities.



As a strategy, the evaluators shared the Personal Pathways information with the participating schools, including placing a direct link to the iAm Laptop site on the Pathways sites. Students were asked to look up information about their selected career paths, including average starting salaries and education requirements. These students were asked to report this information back on one of the student surveys administered at the end of the 2007-08 school year. It was also requested that their parents partner with the students on this task. Of the 303 responses, 81 percent said that they involved their parents in their research. The responses represent approximately 30 percent of the students in the laptop initiative at the time.

Data from the Year 1 (2007-08) responses suggests very little interaction with the Personal Pathways sites.

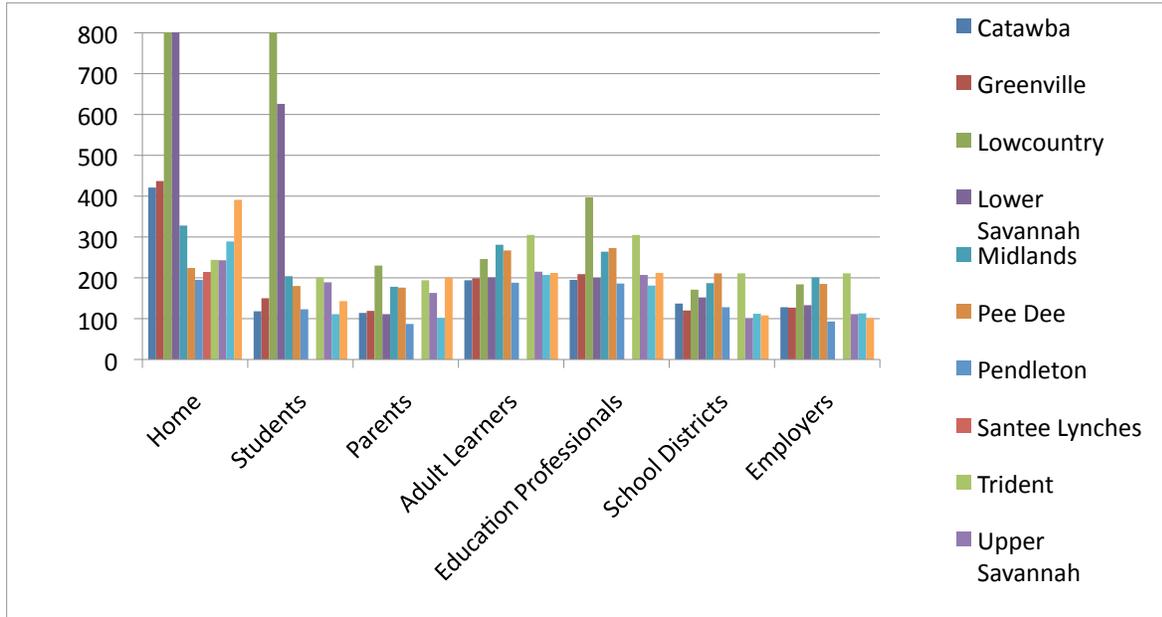


Teachers provided several reasons for the low usage rates. Schools had already become accustomed to using other sites dedicated to education and career planning. Also, it is important to note that in May 2008 there were still regions where the Personal Pathways sites were not yet active but were supposed to have been active at that time. Actually, only two of the RECS were active where participating schools were located.

Data from the same time period for 2009 did show increases across the regions:



**Individual Personal Pathways site hits for May 2009**



The May 2009 snapshot represents a significant increase in usage from the 2008 data of the same month. The above chart suggests that the highest participation rates were in two areas where two of the laptop schools were – Aiken with Midland Valley and Orangeburg with Bethune-Bowman, both of whom are in the Lower Savannah REC. The Pee Dee REC showed improved usage from the previous data also.

Usage continues to improve, based on data from the Personal Pathways site management.



## VI. DISTRICT TECHNOLOGY PLANS & BUDGETS

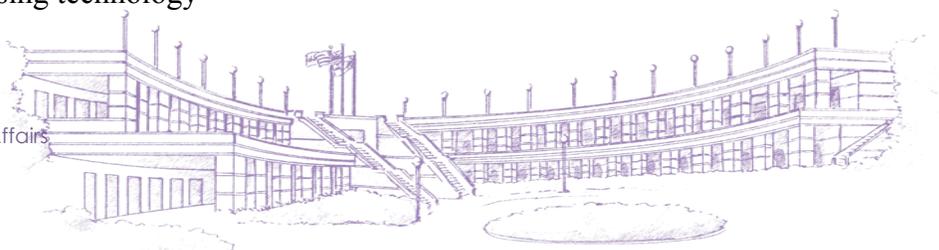
An important consideration of the evaluation was determining the changes of district budgets over time relative to spending on technology. Data was gathered initially from the SC Department of Education's Insite annual reports.

The District Technology Plans, as well as cost of technology, were in the design of the evaluation to review, analyze and discover improvements that could be made. The evaluation team reviewed all the district technology plans of the "iAm Laptop Schools" and the paired schools. The paired schools, even though they participated in delivering grade data for comparisons, did not feel that they had the time or resources to retrieve the data and in some cases it was not retrievable because of the way the items are categorized in the system. Total Technology revenue/expenditure still may not include Title 1 or professional development funds.

Each school approached the plan consistent with state requirements of five core technology focus dimensions and the goals in these areas. The majority of the plans were well developed and organized to meet the benchmarks/goals set in the plan. However the common thread that all focused on information requirements by the SC Department of Education format and few additions. Areas included district needs assessment, learners and their environment, professional capacity, instructional capacity, community connections support capacity and the required appendices. Sections provided detail on the delivery of technology, the mechanics/deployment of the process and professional training. All plans met the state requirements. However, Aiken County School District had developed a very detailed expenditure report on the infrastructure/hardware, software, technology maintenance and support. It gave all sources of technology revenue and expenditures. Our evaluation team adapted their revenue and expenditure model to obtain a better understanding of the sources of revenue for technology in districts and expenditures. (See Appendix 1, Technology Budgets) An additional area that caused problems in instructional delivery the first year of the project were crashed networks in most of the schools. The wireless networks crashed frequently because of the overload of users on laptops. District worked to deploy additional hardware to ease the problem in year two but the failure of the networks in some schools created teacher discomfort/non reliable network and fear of having to adopt another lesson plan if the network went down. With most teachers this lead to fewer instructional plans using the network.

From the review of the technology plans the following are recommendations that could improve/measure outcomes of the technology plans.

1. Set goals not only on learner's environment and instructional capacity but on instructional integration using technology



2. Tract teachers statistics on adoption and mastery of the integration of instruction with technology
3. Report on wireless network in classrooms – set goals-chart delivery (robust). As technology moves toward more wireless hand-held device systems, a reliable network delivery will be increasingly important to instructions.

**Cost:**

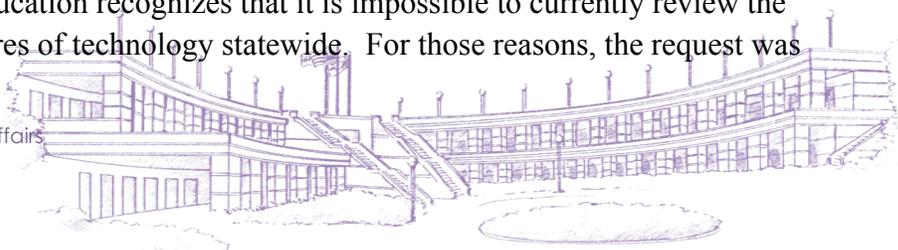
The Technology Budget Chart that the evaluation adopted was sent to all schools participating in the project. The paired schools, even though they participated in delivering grade data for comparisons, did not feel that they had the time or resources to retrieve the data and in some cases it was not retrievable because of the way the items are categorized in the system. Total Technology revenue/expenditure data is not currently segmented from other items in the categories that schools receive or report use of their funding. The only segmented item is under instruction, classroom material, pupil use of technology and software, in the In\$ite model (school financial reporting model at the SC Department of Education). Also if the “cross walk” is used to match account numbers, some of the technology numbers are not used in all school data. In In\$ite data, the following are the total expenditures of all districts and the per pupil cost for each of the following years. As stated, this is not an all inclusive expenditure list.

	<b>Total SC Technology/pupil use of Technology Reported</b>	<b>Per Pupil</b>
2006	\$60,712,200	\$ 87
2007	73,539,277	\$ 105
2008	84,537,573	\$ 120

**NOTE:** (SC Department of Education-Financial Report, In\$ite)

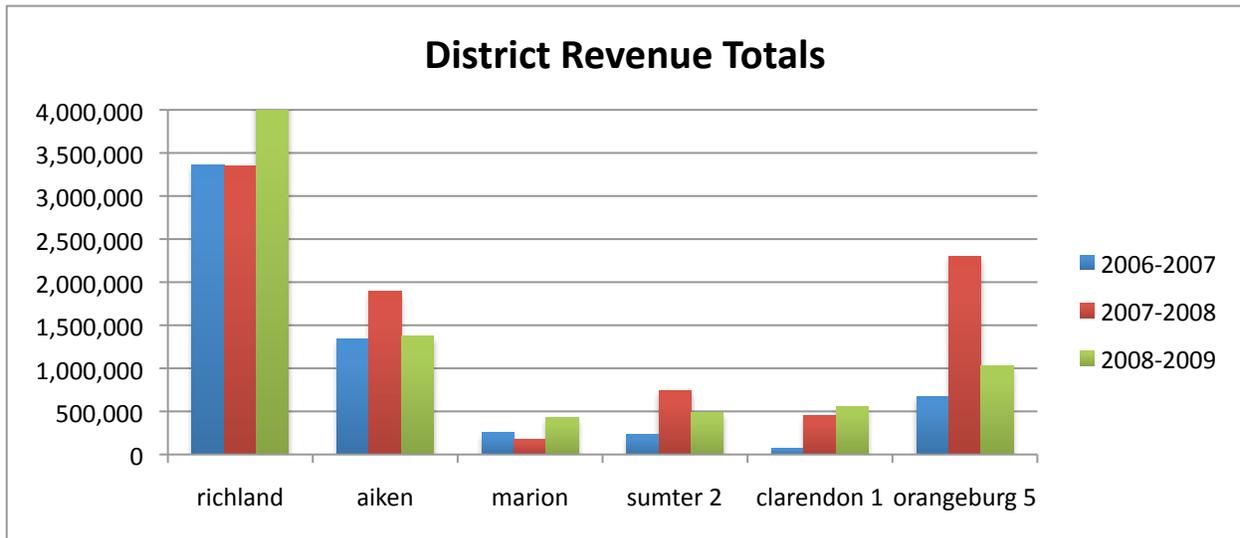
In this one area of instructional classroom material, pupil use of technology, the cost is trending up per pupil as are total expenditures and, therefore, additional data is needed to ensure that the dollar expenditures and benefits are maximized. School district budget shortfalls make it less likely that funds from other revenue categories will be available to meet the demand districts have for learner use and operations. However, districts through technology will be able to offer to continue to offer a variety of courses virtually and more self-directed learning with a lower cost after the initial investment.

Often technology revenues are in non-state grants or state grants that categorize them as equipment. Some technology is found in capital funds and a variety of other fund sources. The South Carolina Department of Education recognizes that it is impossible to currently review the accurate total revenues/expenditures of technology statewide. For those reasons, the request was

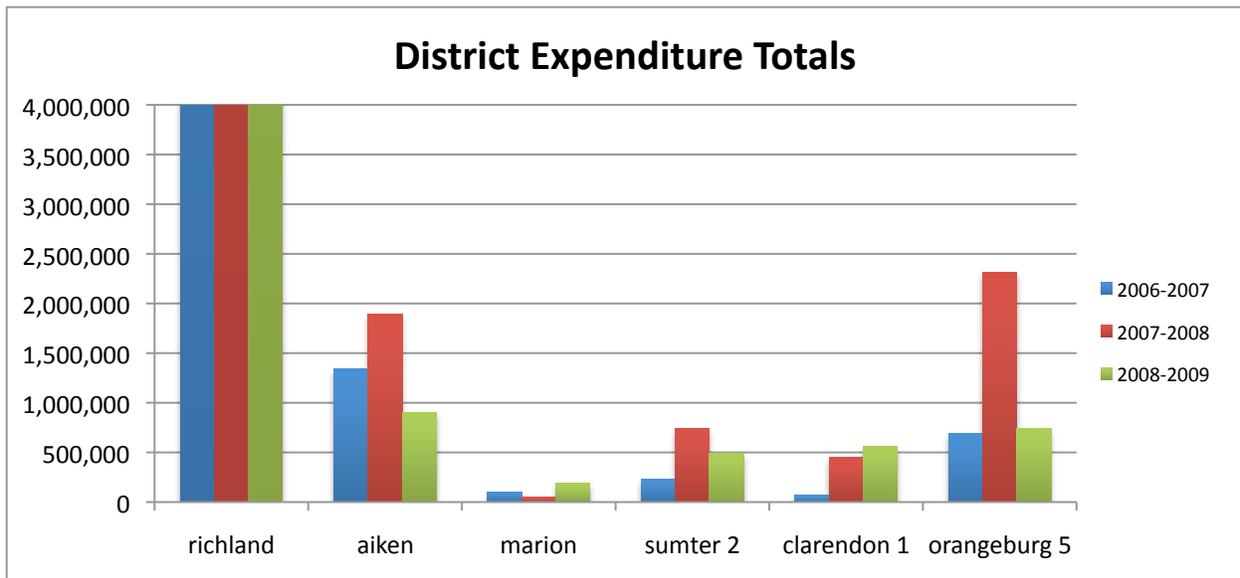


made to the laptop schools to retrieve technology data using the Aiken format to receive better data on the true revenues and expenditures. The following charts provide a snap shot of the cost of technology in the laptop schools

**NOTE:** The following two charts range from \$0 to \$4 million; some district revenues and expenditures exceed those amounts.



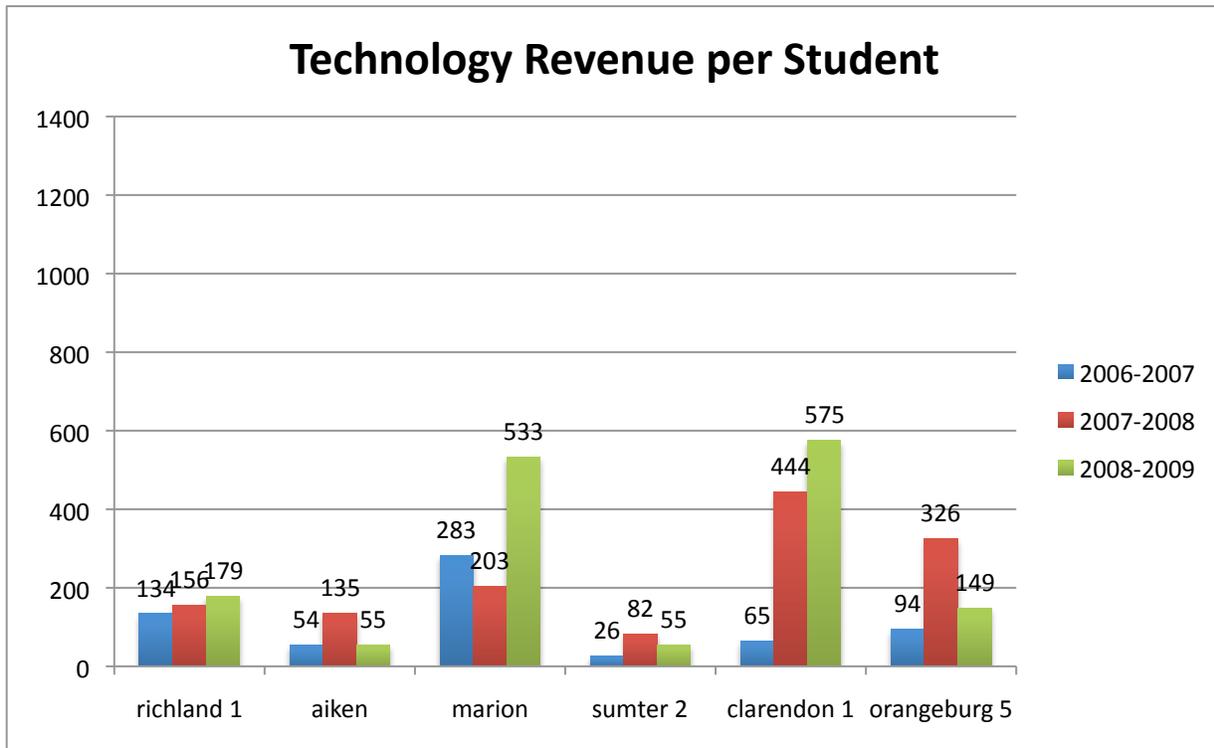
When placed next to the expenditure totals, some districts clearly are using other sources of revenue to fund their technology.



**NOTE:** Richland One totals: \$27.6m, \$32.9m and \$36.1m for respective years.

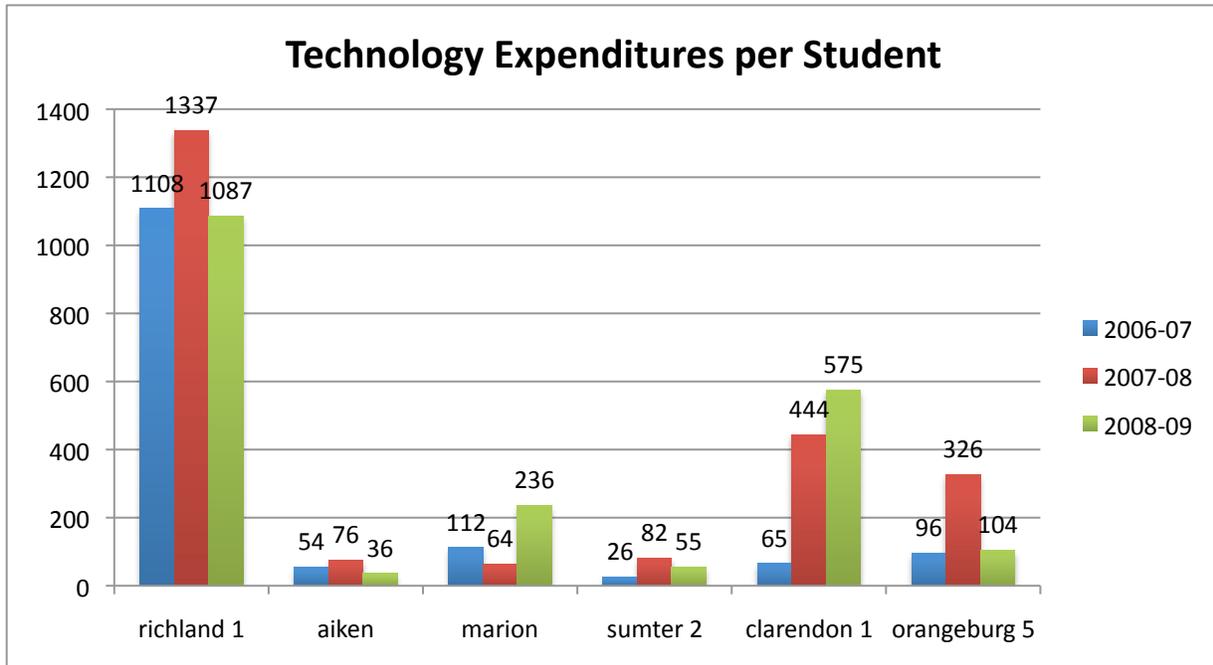


Totals, however, do not tell the entire story because it is important to consider expenses per student.



Expenditures per student also show significant changes over time that could be due to changes in grant dollars. When 2008-09 expenditures are considered, decreases can be considered because of both tighter grant awards and budget cuts.





Perhaps the greatest challenge in evaluating dollars across districts was the lack of consistent reporting methodologies. The traditional Department of Education InSite categories do not adequately capture technology spending. The evaluators utilized a detailed report created by Aiken County Schools to ask participating districts how their costs were broken out each year. There seemed to be little consistency across districts, particularly in the areas of hardware and infrastructure spending. Total revenue/expense dollars vary greatly by the size the district and the external grants received by a district.

The data indicates that to provide technology on scale to students in districts the cost exceeds the state per pupil expenditures for most districts reviewed (four of the six) and much of the cost is unfunded in technology revenues. Also most districts need external sources of revenue to meet the demand of robust deployment of networks, hardware and software, maintenance, etc. The comparison of the InSite data to the data obtained in districts in the laptop initiative indicates great variances. A complete and full understanding is needed of technology revenues/expenditures as a prominent part of educational environment and instruction. Future educational resources and delivery systems of integrated instruction must be immersed to produce a student that can function and be successful in a career and higher education.

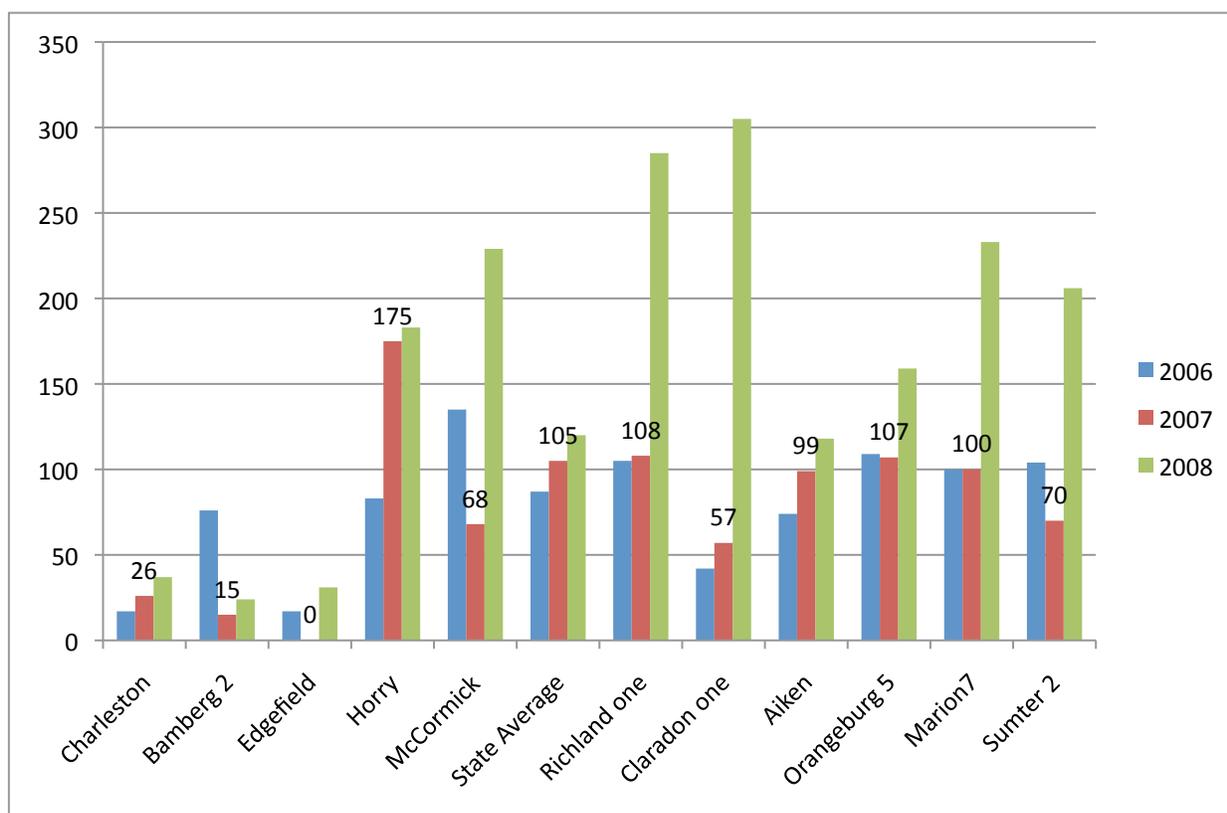


## INSITE DATA COMPARISONS

### LAPTOP AND PAIRED SCHOOLS

The values in the chart below are for the 2007 fiscal year and serve as a point of reference.

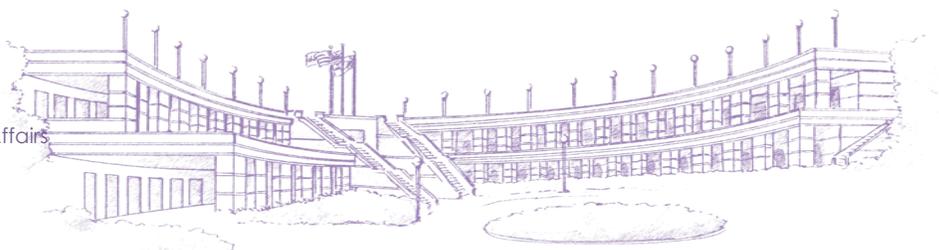
#### Expenditures over Time, InSite Data



For 2008 five laptop school districts spent above the state average, three spent about twice the state average. Aiken inSite data shows \$2 per pupil below state average. Three of the paired districts spent one third of the state average, and two are 60-90 percent above the state average.

These spending patterns represent a shift from past years. In 2007, all laptop schools except one are near the state average. Clarendon One, spends approximately half the state average. The paired schools were well below the state average except Horry, which was above the state average.

In 2006 five of the six laptop schools were near the state average. Clarendon One was at about 50 percent the state average. Two of the paired school districts, Charleston and Edgefield, are below



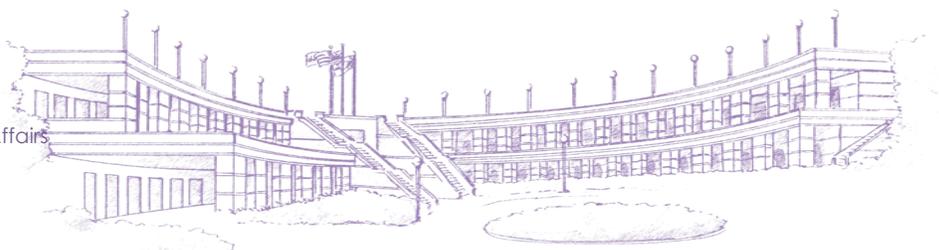
the state average by more than half. Bamberg Two is 13 percent below the state mean. Horry is near the average and McCormick is above the state average.

Infusions of technology with grant funds and other external funds were most likely the cause of the flux in per pupil expenditures. However, it is difficult to make comparisons without uniform and complete data sources.

One of the interesting comparisons was when the evaluators considered technology changes that occurred at the match schools. Two of the schools had no new technology during the evaluation period, and both of those schools stated that it had been several years since they had new technology.

School	New Technology	Computers on Campus	Student Count
<b>Baptist Hill</b>	25 DT / smart boards	222 DT/LT	456
<b>Denmark-Olar</b>	none	150 DT / 20 LT	296
<b>Green Sea Floyds</b>	60 LT / 30 DT / 11 smart boards	500 DT / LT	650
<b>Loris</b>	60 DT / 40 LT	400 DT	900
<b>McCormick</b>	8 smart boards	120 DT	260
<b>Strom Thurmond</b>	none	225 DT	900

The point of this question was that in charting the participants' predominant technology influx, the match schools change in technology was insignificant.



## VII. CONCLUSIONS

It was disappointing that over the 30-month evaluation period there were not more significant results. However, the schools that used the laptops for 30 months, who had the longest usage and the greatest consistency of laptop use, did obtain incremental improvement. Considering that the match schools experienced very little technology change during the evaluation period, the overall conclusion was that the participant schools did not perform significantly better. They did not maximize the use of technology for instructional purposes.

Based on the 30-month evaluation, the evaluators have several recommendations to make about subsequent attempts to fully integrate technology into SC schools.

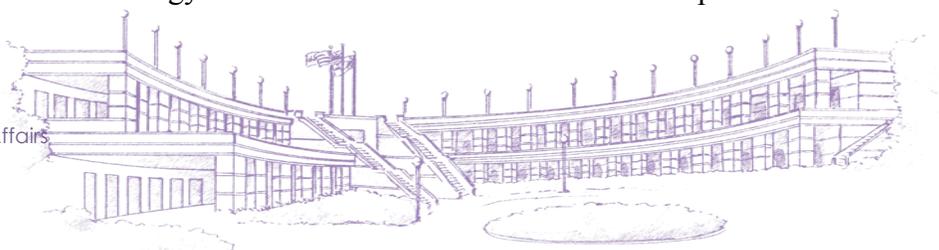
### *Classroom Integration.*

- Integration of technology and instruction works best when distribution is school wide, immersing an entire school at one time.
  - After freshmen year, most classes are multi-grade (especially in small districts), which means that isolating grade by grade is very difficult.
  - Immersion reinforces to teachers that change to technology is permanent.
  - Teachers will default to non-tech lesson plan if forced to plan more than one.
- Teachers should be required to adopt/master and integrate instruction with technology.
- Teachers must sign off on grant proposals.

*Teacher Professional Development.* Teachers did not take advantage of the online training offered by Dell or utilized the web site created by the evaluators. If teachers had been involved in the grant process, perhaps they would have been more active in the program's implementation. The evaluators believe that it is not the teachers' understanding of computer mechanics but their ability to develop rigorous lessons that stimulate synthesis of knowledge and problem solving.

*Statewide Improvements.* For a more effective evaluation of school data, one strong recommendation that can be implemented without any state costs is the creation of two additional codes in the districts' student systems. Creating variables such as group and category to organize course areas (English, Math, Science) and sub-areas (Honors, AP, Remedial) will enable cross-district comparison of grades. At this time, there is no method for comparing grades in a subject area across multiple schools. Statistical analysis of course achievement relative to standardized test performance would be a powerful evaluation tool for all districts.

It is also recommended that the current financial accountability report (InSite) be modified to facilitate a comprehensive analysis of technology costs. The state could benefit from improved



pricing if districts were willing to collaborate on infrastructure, hardware, and software purchases.

Like this project, it is proposed that all future education technology initiatives need to be evaluated by a third party for an accurate assessment of best practices. In addition, it is recommended that there be accountability for schools that do not fulfill the requirements set forth in the original requests.

The evaluators for the iAm Laptop initiative are Camilla Hertwig and Catherine Watt, Ph.D. of the Strom Thurmond Institute of Government and Public Affairs. Questions may be addressed to them at 864-656-4700.

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