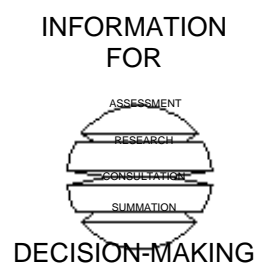


Formative Evaluation of the Technology Integration in 2004-05

MARCH 2006

MONITORING AND EVALUATION SERVICES



ALEXANDRIA CITY PUBLIC SCHOOLS

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Monte E. Dawson
Executive Director

Lydia A. D'Alois, Ph.D.
Analyst

David Rockoff
Analyst

Brian Reid, Ph.D.
Analyst

Rose Alston
Administrative Secretary

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Executive Summary

A School Board strategic goal in the FY'04 budget was that technology would be integrated into all aspects of school operations including curriculum, academic standards, and instructional delivery. During the 2003-04 school year, laptop computers were made available to grade nine students and faculty at Minnie Howard High School. During the following year 2004-05, the program was expanded to include Minnie Howard, STEP, and T.C. Williams High School, thus providing technology access to all students and teachers from ninth through twelfth grade.

Data were collected to monitor the implementation of the Technology Integration and to inform various constituencies about the progress to meet the goals of the endeavor. The major evidence in this evaluation relies primarily on responses to surveys from students, teachers, and parents - those people most directly affected by the project. Other presented data include classroom observations at the three high school sites and a review of laptop projects in other localities.

Some key findings from students were:

- in October of 2004, 15% reported that “most” or “all” of their teachers incorporated the laptop into instruction;
- in June 2005, 30% reported that “most” or “all” of their teachers incorporated the laptop into instruction - a substantial increase within the school year;
- 74% indicated in June that the laptop made it easier to type papers; and
- 72% reported in June that the computer made it easier to conduct research for school projects. Students with free/reduced meal status, were much more likely (87%) to agree with this statement than were students with full price meal status (62%).

Some key findings from teachers were:

- 72% assigned less than three hours of homework per week (confirming students' reports);
- 63% reported that the computers have made it easier for students to conduct research for school projects;
- 62% of teachers reported that their teaching had benefitted from the laptop; and
- 38% said they had received the right amount of technology training.

Some key findings from parents were:

- 56% agreed that the laptop made it easier for their child to do research;
- 61% said their child took the laptop to school every day; and
- 53% agreed that having access to a laptop made a positive difference in the way their child did school work.

Some of the commonly expressed concerns for program improvement were in the areas of filtering, overall accessibility, increased printing capacity (USB port), and email access. Some of these issues have already been addressed, while others will require more deliberation. The High School Technology Implementation Plan is a working plan that will continue to evolve.

The unequivocal success of the Technology Integration was the administration of more than 5600 online SOL tests in June 2005. Students received their results back as soon as three days after testing, in contrast to the eight or ten week delay of previous years.

Introduction

This report captures a formative perspective of the Alexandria City Public Schools' initiative to provide laptop computers to every high school student. While the report focuses on the 2004-05 school year, the year of laptop expansion to grades 10-12, the etiology can be traced back to the approval of the FY'04 budget. The espoused School Board's Strategic goal in that budget was that technology should be integrated into all aspects of school operations including curriculum, academic standards, and instructional delivery. The FY'04 budget, which provided all ninth-grade students with "an age-appropriate computing device", was the acknowledged first phase to actualize a much broader vision.

The Board's goals were to:

- prepare students to compete technically in school and work;
- address the opportunity gaps inherent in Alexandria's digital divide;
- facilitate the integration of technology into teaching, thereby expanding students' research, analysis and presentation opportunities;
- address individualized instructional needs, including advanced research as well as targeted skill and content interventions; and address both family literacy and family communication with staff.

There are many possible perspectives on the evaluation of the Technology Integration. Some might center on planning, budget, staff development, student training, or curricular integration. Other foci could include: impact on student achievement, on SOL testing, or the adequacy of students' preparation for the schools and workplaces of tomorrow.

This document will focus mainly on the lessons learned in other educational settings where laptops have been utilized and what ACPS students, staff and parents believe is occurring locally.

It is also important to remember that this time-bound evaluation perspective does not preclude or prevent the ongoing, by multiple stakeholders, formative evaluation of the Technology Integration that continues through to today. The Technology Integration in the ACPS is neither static nor moribund.

To begin the journey of exploring the Technology Integration, it is useful to reflect on what are reasonable competency expectations for students and teachers involved with the program. What should students know and be able to do with a laptop computer? The Computer Technology Standards of Learning for Virginia's Public Schools can be found at <http://www.pen.k12.va.us/VDOE/Superintendent/Sols/compteck12.pdf>

This ten-page document identifies and defines the essential knowledge and skills necessary for students to access, evaluate, use and create information using technology. Students' technological proficiency is to be developed through integrated activities in all content areas K-12. For reference, Appendix 1 contains the Technology SOLs for students in grades 9-12. A compacted view of technology standards for students follows on the next page from the Technology Foundation.

Technology Foundation Standards for All Students

The Technology Foundation Standards for students are divided into six broad categories. Standards within each category are to be introduced, reinforced, and mastered by students. Teachers can use these standards and profiles as guidelines for planning technology-based activities in which students achieve success in learning, communication, and life skills.

1 Basic operations and concepts

Students demonstrate a sound understanding of the nature and operation of technology systems.

Students are proficient in the use of technology.

2 Social, ethical, and human issues

Students understand the ethical, cultural, and societal issues related to technology.

Students practice responsible use of technology systems, information, and software.

Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

3 Technology productivity tools

Students use technology tools to enhance learning, increase productivity, and promote creativity.

Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

4 Technology communications tools

Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

5 Technology research tools

Students use technology to locate, evaluate, and collect information from a variety of sources.

Students use technology tools to process data and report results.

Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

6 Technology problem-solving and decision-making tools

Students use technology resources for solving problems and making informed decisions.

Students employ technology in the development of strategies for solving problems in the real world.

from ISTE National Educational Technology Standards for Students
http://cnets.iste.org/students/s_stands.html

The SOLs spell out the operative technological objectives for all students in Virginia public school divisions. ACPS, as part of its compliance with Virginia state certification code, has incorporated the technology standards for instructional personnel (TSIPs) into the ACPS technology plan and approved teacher education programs. The Code requires that course work in technology satisfy the State content requirements and that licensed personnel demonstrate proficiency in technology standards for licensure and renewal. In ACPS, the Technology Integration Education (TIE) program satisfies technology standards and is the means for instructional personnel to demonstrate proficiency in the required State technology standards and thus meets the requirements for licensure or renewal. These State standards may be found at <http://www.pen.k12.va.us/VDOE/Compliance/TeacherED/tech.html>

Again, in an effort to simplify, here is a list of skills from The Technological Horizons in Education Journal (T.H.E. Journal ONLINE at www.thejournal.com) that outlines the basic technology skills for educators.

20 basic technology skills that all educators should now have:

1. Word Processing Skills
2. Spreadsheets Skills
3. Database Skills
4. Electronic Presentation Skills
5. Web Navigation Skills
6. Web Site Design Skills
7. E-Mail Management Skills
8. Digital Cameras
9. Computer Network Knowledge Applicable to your School System
10. File Management & Windows Explorer Skills
11. Downloading Software From the Web (Knowledge including eBooks)
12. Installing Computer Software onto a Computer System
13. WebCT or Blackboard Teaching Skills
14. Videoconferencing skills
15. Computer-Related Storage Devices (Knowledge: disks, CDs, USB drives, zip disks, DVDs, etc.)
16. Scanner Knowledge
17. Knowledge of PDAs
18. Deep Web Knowledge
19. Educational Copyright Knowledge
20. Computer Security Knowledge

After reviewing the foregoing generic expectations of what students and teachers should be able to do with technology, it is valuable to return to one of the Board's original rationales for the Technology Integration. This compelling rationale was student-centric and acknowledged the existence of a "digital divide" locally.

A report by the Henry Kaiser Foundation entitled Children, The Digital Divide, and Federal Policy, suggested the term was first coined in the mid-1990's to describe the gap between those who had "ever" used a computer and those who had "never" used a computer. The term has since morphed to include "access" and the quality of access (some homes have high-speed, and/or wireless connections), digital opportunity, and digital inequality. Regardless of the nomenclature, the report echoes the sentiments of other advocates that meaningful access for disadvantaged students is a worthy policy goal. The report references several Federal data sets that allude to significant disparities in home internet access among children ages 3-17 based on income and race.

"For example, while half (51.7%) of all children with family incomes of \$75,000 or above have internet access at home, just 15% of those with incomes between \$20-25,000 do. And while more than a third of White and Asian children use the internet at home, just 15% of Black and Hispanic children do."

Viewed in a micro-manner, the free/reduced priced meal percentages at Minnie Howard (47%), T.C. Williams (40%), and STEP (56%) in the 2004-05 school year indicated substantial percentages of students falling into the above low-income categories. Additionally, the fact that secondary eligibility percentages have historically been "lower" than those of elementary students (54%), it is speculated that adolescent susceptibility to peer pressure is probably depressing the "real" eligibility percentages. The Kaiser report said that lower income and minority children are less likely to start using computers early in life.

Or, as put by Lucy Ward in the Guardian, "children from poorer homes are becoming victims of the digital divide because their parents lack the skills to help them use the internet as effectively as their middle-class counterparts." She goes on to reference a group of youngsters dubbed "disengaged youth" who were least likely to engage with the internet, least likely to have access at home, and least expert internet users. Not knowing how to best use the internet may have a negative impact on their education and employment opportunities. Later in this report, survey results will be broken out by various minority and economic subgroups to examine how some of these issues play out in ACPS.

Detractors of the Technology Integration could cite the inability to tie academic achievement directly the laptops. Citing the research of Glennan and Melmed (1996), Kosakowski (1998) describes three major impediments to evaluating the impact of educational technology on student achievement:

* "Most available tests do not reliably measure the outcomes being sought. The measures that are reported are usually from traditional multiple-choice tests. New measures need to be developed which would assess the higher-level skills and other effects often affected by technology."

* "Assessments of the impact of technology are really assessments of the instructional processes enabled by technology, and the outcomes are highly dependent on the quality of the implementation of the entire instructional process. Crucial elements include instructional design, content, and teaching strategies associated with both the software and the classroom environment."

* "The very dynamic nature of technology makes meaningful evaluation difficult. By the time long-term studies are completed, the technology being evaluated is often outdated."

-<http://www.ncrel.org/sdrs/areas/issues/methods/technlgy/te8lk19.htm>

Laptop changes may not be readily discernible or meaningfully measurable overnight. As stated in Lessons Learned About Providing Laptops for All Students, (p.10)

“Expect change to be gradual. Over the long term, as computers are used more routinely, changes may take place not only in instruction but also in assessment systems (e.g., online testing), instructional materials (e.g., closer ties between textbooks and digital materials, including software), management systems (including data-driven decision-making), and communications.”

<http://www.neirtec.org/laptop/LaptopLessonsRprt.pdf>

Others have opined that it may take several years for teachers to change their practices enough for changes in achievement to occur (When, What, and How: The Relationship of Evaluation, Program Design and Outcomes, p.6).

<http://www.seirtec.org/publications/datastories/whenwhathow.ds.pdf>

The Maine laptop program’s first report, based on surveys, interviews, and observations conducted around the state, presented early evidence that one-to-one laptop computing had positive impacts on teaching and student learning (MEPRI, 2003). The second report found that large majorities of teachers and students reported increases in student engagement and motivation, better interaction among teachers and students, and improvements in the quality of student work as a result of the laptop program. Teachers were more likely to report improvements for at-risk and special education students than for traditional and high-achieving students, but fewer than 10% report declines for any group of students (Silvernail and Lane, 2004).

The Anytime Anywhere study did not find significant differences between standardized test scores of laptop and non-laptop students. The researchers noted that “while students may end up being more productive, more effective writers, more able to handle complex, real-world projects, or better able to master skills that will do them well in college or on the job...these attributes do not appear on the standardized assessment measures used here.” Findings from the study’s teacher and student surveys and classroom observations suggested that full-time access to laptops stimulates analytical thinking and provides more opportunities for students to develop higher-order thinking skills.

A study conducted in a South Carolina county found that one-to-one laptop computing had a positive impact on standardized test scores, particularly for students eligible for free and reduced-price lunch (Stevenson, 1998).

– One-to-One Laptops in a High School Environment

Piscataquis Community High School Study FINAL REPORT, February 2004 (p. 6, 7)

Research continues to confirm the value of technology to improve teaching and learning (Sivin-Kachala & Bialo, 1999); however, assessing the impact of technology on learning can be difficult. Because technology is so pervasive, isolating its effects in an educational system can be a daunting task that requires sophisticated statistical analyses.

Hawkes and Cambre (2001) relate the difficulties of determining the effects of educational technology. They describe such common impact indicators as measures of stakeholder involvement, technology competency, equity, student and teacher roles, climate of learning, teacher collaboration, and school-agency collaboration. Other indicators often described included improved attendance, increased excitement and motivation, engagement in problem solving, improved self-esteem, style of student presentations, and increased student acceptance of responsibility for their own learning (Hawkes and Cambre, 2001; Sivin-Kachala & Bialo, 1999). Although standardized assessments are also reported as impact indicators, these researchers (Dede, 1998) emphasized that this may be inappropriate because standardized tests do not measure the full impact of technology.

Other areas significantly impacted by technology use are presented by Whitehead (2000), who names quantity of student writing, quality of student writing, cooperative learning, integrated learning, application of learning, integrated learning, application of learning styles, cross-age tutoring, teacher communication, parent-school communication, school-community relations, and students as global learners. Note that this list does not include standardized measures of achievement, yet student performance on such measures is on the minds of many administrators and policymakers. In their study of technology's impact on student achievement, Sivin-Kachala and Bialo (1999) found that its effectiveness "depends on a match between the goals of instruction, characteristics of the learners, the design of the software and technology integration implementation decisions made by educators" (p.2).

As referenced in an Education Week January 7, 2004 article about laptop evaluations, Larry Cuban, an educational historian, former Arlington Public Schools Superintendent, and professor at Stanford University said, "they will be unable to say whether laptops were the critical factor or was it teachers' background?" The research tool can't tease apart the many factors. So while students' improvement on standardized tests is still likely to remain a compelling metric to attempt to judge the Technology Integration, it may never be possible.

One aspect of the Technology Integration can be deemed successful without debate. The evidence speaks for itself. The administration of more than 5600 SOL tests in June 2005, with results available within three days, was a formidable accomplishment in and of its own right. The massive support effort of ITS staff, the training of T.C. Williams teachers and students by the School Test Coordinator, and the coordination and testing oversight by Monitoring and Evaluation personnel facilitated this inaugural undertaking.

As a simplistic illustration, with the daunting technical requirements kept as an aside, bear in mind that every student who was taking a SOL test had to be trained, every testing student's laptop had to be loaded with the testing software, and every administering teacher had to be trained.

Additionally, the laptops offered the first online expedited testing opportunities to those graduating seniors who lacked the requisite number of verified credits in order to graduation. So, for example, a graduating senior, who had already earned the 22 standard credits necessary to earn a standard diploma, but who had only earned five verified credits, was able to retake an end-of-course SOL test. Two or more chances to pass the test in June, with almost immediate feedback, gave ACPS students an undeniable advantage that they never had before.

In closing this introduction, perhaps the best admonitions are from a 1997 pilot effort. It suggested that schools planning to initiate or expand the laptop program need to consider:

- Establishing support at the school site and in the community
- Capitalizing on membership in a unique program
- Allowing sufficient time for integrating the new capabilities into the curriculum
- Growing the program in schools with limited technology access and experience
- Setting appropriate priorities for professional development
- Managing the amount of technology and solving technology problems
- Providing a means through which teachers can share successful lessons with others
- Providing sufficient opportunity to experiment with new instructional approaches
- Maintaining support from site and community leaders
- Establishing new and continuing assessment and evaluation strategies.

“Report of a Laptop Program Pilot: A Project for Anytime Anywhere Learning by Microsoft Corporation Notebooks for Schools by Toshiba America Information Systems” Rockman et al, 1997

Many lessons were learned in the 2003-04 school year at Minnie Howard. Those lessons ran the gamut from classroom management issues to the need to redefine role expectations. In keeping with this formative approach to evaluating the Technology Integration, a baseline survey of students in grades nine through twelve was conducted in October 2004 and reprised in spring 2005. Those two baseline surveys ascertained information about students’ computer competencies and their usage of computers. Together with teacher and parent information, they comprise the affective grist of this report.

The evaluation of the Technology Integration in the ACPS will be an ongoing effort that could take as many as five years to complete. The sweeping scope of the initiative is such that examination of the multiphase impacts cannot be done in one or two years. As example, Texas received \$1.9 million to evaluate the effectiveness of its middle school laptop computer programs. Training, both for students and staff, while obviously an implementation issue, will require a separate and distinct analysis. The development of new materials, processes, and procedures is also a reasonable expectation. The documentation will be a substantive undertaking.

The evaluation of the Technology Integration is not a stand-alone event. Rather, it is an integral part of the technology plan evaluation that is required by the State and local stakeholders. As noted in *An Educator's Guide to Evaluating the Use of Technology in Schools and Classrooms* (p. 3) in general, one important purpose of any evaluation should be continual program improvement... The purpose of evaluation should influence the design of the evaluation (US DOE/AIR, 1998). The next three sections will offer insight into other laptop programs nationally, followed by a report out and synthesis of the various surveys that have been conducted in ACPS, and a summary of the classroom observations conducted as part of this evaluation. The report will conclude with a brief Discussion section.

Comparison of ACPS with Other Laptop Programs

Over the past decade, as computer technology has taken on ever-increasing import in a changing world, it has become critical that students learn to use this technology and that teachers better utilize the potential which the technology has to offer. Thus, many school districts, including ACPS, have implemented “one-to-one computing initiatives”, in which all students and teachers in certain grades receive laptop computers for academic use.

As reported in eSchool News Online, a major study was announced on January 12, 2006 to “gather information about current and future plans for ubiquitous, “one-to-one” computing programs in U.S. schools.” The goal of the study is to survey more than three thousand school districts nationally to document the progress of one-to-one computing initiatives. Ubiquitous computing is defined in the study as “each student and teacher having one internet-connected wireless computing device for use both in the classroom and at home.” In preparation for the study, which is being conducted by the Hayes Connection and the Greaves Group, the groups released a report on the status of digital schools in 2006. Noted in the report was that the last known data on one-to-one computing initiatives was collected in the 2003-04 school year. At that time, 87% of surveyed districts had no one-to-one program. For further information see:

"America's Digital Schools" survey

<http://www.ADS2006.org>

The Hayes Connection

<http://www.hayesconnection.com>

The Greaves Group

<http://www.greavesgroup.com>

Obviously, a large number of school districts in the United States have implemented at least a pilot program to provide students with laptop computers. Programs vary widely by school size, grades covered, computer manufacturer, operating system, software, and many other parameters. This portion of the report describes some of the other one-to-one computing initiatives throughout the nation. As context or backdrop, it sets the scene for growth and improvement of ACPS’ efforts.

The first prominent one-to-one pilot laptop program, began nearly a decade ago, was a collaboration between Microsoft Corporation and Toshiba America Information Systems. Starting in the 1996-97 school year, the program was implemented in 16 public school districts and 10 private schools across the U.S., encompassing all grade levels but concentrated mostly in middle and high schools. The evaluation of the program was conducted by Rockman et al, an independent research group, and it shaped the continuance of the program. The evaluation found that enthusiasm for the program was high in the schools despite challenges and that there were noticeable changes in students’ motivation within a short time. Two of the biggest challenges found in this evaluation were parent education and finding time for teacher training.

Among the largest pioneers, whose programs continue (with modifications), are Henrico County (VA) and the States of Maine, Michigan, Texas and Florida. The State programs take an experimental design approach – not all districts or schools receive laptops, thereby enabling comparisons between laptop schools and non-laptop schools. Table 1 offers a quick summary of the characteristics of selected Technology Integration nationally. Some of these programs are further highlighted with additional explanatory narrative following the table.

TABLE 1
National Summary of the Characteristics of Selected Laptop Programs

District/ Jurisdiction	Year Implemented	Grades	# Students w/laptops	Manufacturer/ OS/Specs
ACPS	2003-04 2004-05	9 9-12	2,700	Dell D500 (Minnie Howard) HP nc4010 (TCW, STEP) XP operating system
Maine	2002-03	7-8	34,000+	Apple 12" iBook G4, 256M RAM, Airport Extreme card
Piscataquis Community High School (Guilford, ME)	2001-02 2002-03	8 9-12	285	
Texas 22 schools - (pilot)	2004-05	6-8	14,000	Varies by district
Michigan 188 schools in 95 districts	2002-03 demo 2003-04 full 4 yrs	Middle, esp.6	20,357	HP Wireless Microsoft XP, Office
Henrico County (VA)	2001	6-12	25,000	Dell Inspiron, XP, 2 USB ports (recently switched from Apple iBook)
Olde Creek Elem. (Fairfax, VA)		<i>Teachers only</i>	0	
Cobb County (GA)	scrapped*	HS	63,000	Apple* Wireless
Berkshire County (MA) 4 schools	2005-06	9-12	2,200	
Vail (AZ)	2005-06	HS	350	
Kutztown, PA		9-12	600	Apple

District/ Jurisdiction	Year Implemented	Grades	# Students w/laptops	Manufacturer/ OS/Specs
Anchorage				
Rye Country Day School	1999-2000	7-10	330	Choice of Apple or Windows Wireless Windows 98 and Mac OS 8.6 and 9 11 Mb wireless (802.11) cards

*A Superior Court judge has halted (at least for the time being) the Cobb program before it got off the ground, after a court battle over the cost of the program and because of charges that the school system did not properly tell voters a special sales tax would be used to pay for it. Additionally, the Cobb County School Board moved to terminate its contract with Apple Computer on August 14, 2005 based on an investigation that found that the school system "deceived" the public in choosing that company to supply it with thousands of laptops.

Maine

The Maine Learning Technology Initiative (MLTI) provides all 7th and 8th grade students and teachers in Maine public schools with Apple iBook laptop computers. This project began in the 2002-03 school year and involves 34,000 students in more than 240 schools. In the Fall of 2002, 17,000 students in grade 7, along with their teachers, received laptops. The following year, 34,000 students in grades 7 and 8, along with their teachers, received laptops.

The impetus for the program was a desire by then-Governor Angus King to prepare Maine's students for a future in which technological savvy would be paramount to career success.

Several periodic evaluations of the Maine Learning Technology Initiative have been conducted by the Center for Education Policy, Applied Research, & Evaluation, at the University of Southern Maine. The evaluations were conducted primarily through surveys and interviews of students, teachers, and parents. Although evaluations show the program to be largely successful, several negatives were seen.

Since student computers are not equipped with a floppy drive, students have no way to back up work other than e-mailing it to themselves. Students who do not have e-mail access at home cannot do so and can only work while at school, although a plan is in place to provide free home internet access to students receiving free or reduced-price meals.

To evaluate the program, surveys were administered to students, teachers, principals. Multiple evidence collection methods included: on-line and paper surveys, site visits, classroom observation, and document analysis (School policies and procedures, school website documents, memos, lesson plans, student work, local school evaluation data, and content meeting evaluations).

“Participants in the MLTI program were surveyed one to three times over a period of 15 months, depending upon the group. Return rates varied by group, ranging from a low of 11% to a high of 74% during the course of the three survey periods. Over 26,000 student surveys and 1700 teacher surveys were collected and analyzed. In addition, over the course of the first 15 months of the project, 39 site visits were conducted in 21 schools.”

While former Governor Angus King's brainchild was the school laptop program, he recently announced another program aimed at eliminating the so-called digital divide: free home Internet for kids who receive free or reduced-cost school lunches. -

- <http://www.wlbz2.com/newscenter/article.asp?id=25414>

Within the MLTI effort, the evaluation document most directly applicable to the ACPS is the Piscataquis (Maine) Community High School evaluation report. This report noted the following disadvantages: 1) potential for distraction in the classroom, 2) non-educational and/or inappropriate laptop use by some students, and 3) technology failure that interrupts planned class activities.

The report concluded:

“There is convincing evidence that the laptop program has contributed to improvements across the spectrum of PCHS students, and has led to the greatest improvements for at-

risk and low-achieving students. This suggests that one-to-one computing is an effective tool for promoting equity in high schools. While the laptop program has helped to prepare all students for more rigorous, higher-level learning and to get them more engaged in school, it appears that the curriculum and classroom practices have not fully “caught up” with all the possibilities that one-to-one computing presents. We recommend that PCHS concentrate its professional development activities in the coming year on shifting classroom practices to more fully integrate technology into the curriculum, with a particular focus on improving rigor and providing personalized learning opportunities for all students. We believe such efforts could maximize the impacts of the laptop program on teaching and learning at PCHS.”

Henrico County

The Henrico County (VA) Public Schools, which surrounds much of the city of Richmond, provides laptops to its 24,000 students in grades 6 through 12. High schools students were first given laptops in the middle of the 2001-02 school year (Teachers had received laptops at the beginning of the school year). At the middle schools, teachers received laptops by January, 2002, and students in January 2003. Parent training occurred in fall 2002.

Henrico has switched from Apple iBooks to Dells:

“[With the iBooks], at any given time, we were still having 4 to 5 percent of computers needing some type of repair. Apple's repair efforts were resulting in more than a 96 percent repair rate within a 24-hour time frame. While we applauded this effort, we were still concerned about the amount of instructional down time. This is why loaners were one of the major areas of interest in our planning for the future.” -<http://www.henrico.k12.va.us/Announcements/Dell/>

Dell's proposal includes 15,800 laptops for \$17.8 million during the next four years. The per-unit price for the laptops is \$1,130. Apple's proposal was \$1,386 per iBook.

Henrico has conducted several surveys to assess the impact of their laptop program. The surveys showed overall satisfaction with the training and practical application of the laptops. Almost 80% of respondents stated they were satisfied or somewhat satisfied with the laptop training available. Eighty percent of respondents were satisfied or somewhat satisfied with the instructional use of the laptops. Technical difficulties and content-filtering issues sometimes inhibited laptop use. Slightly fewer respondents, though still the majority, expressed satisfaction regarding those issues. About 70% of respondents were satisfied or somewhat satisfied with filtering, while 60% of respondents were satisfied or somewhat satisfied with repairs.

The majority of middle school students believed that the iBook made research easier (9 in 10) and helped them to be more organized (7 in 10). However, only 6 in 10 believed that the program helped them to do better in school. About half of the students believed that the iBook was very useful in the context of learning in specific subject areas. While student views on the utility of the program did not differ by gender, they did differ by subdistrict, race/ethnicity, and free/reduced lunch.

Users problems included the frequent need for repairs, at a rate of 6 in 10 between September, 2004 and January, 2005, and the fact that 7 in 10 cannot print from their iBooks at home.

The majority of high school students believed that the iBook made research easier (9 in 10) and helped them to be more organized (7 in 10). Again, however, similar to middle school, only 5 in 10 believed that it helped them to do better in school. Over 5 in 10 believed that the iBook was useful in history class, and 4 in 10 felt that it helped in science classes and another 4 in 10 reported that it helped in English or language arts. High school students' views on the utility of the program differed only by subdistrict and these differences were small. There were no student-reported differences in the utility of the iBook program by gender, race/ethnicity, or free/reduced lunch status.

User problems at the high school were the same as those experienced by the middle school students: over 5 in 10 had their machine repaired at last once between September, 2004 and January, 2005. Also some 8 in 10 cannot print from their iBook at home.

According to the parents, the chief difficulties their children experience with the iBook were the need for repairs and inability to print from home. Over 5 in 10 students' iBooks required repairs between September 2004 and January, 2005. The parents' out-of-pocket costs for these repairs were either nonexistent or very small. Over 4 in 10 parents felt that the \$100 deductible was fair, while another 4 in 10 did not.

The program line budget for Henrico was not inconsequential. Beginning in 2001, HCPS dedicated 5% of its operating budget (approximately \$20 million) to fund the lease of 25,000 iBook laptops from Apple Computer, Inc. The lease was for a 4-year period and included a plan for replacing old equipment with new equipment over time, as well as maintenance support. Students and their families paid \$50 for an insurance policy for the iBooks (with a \$100 deductible), but alternative arrangements were made in cases where paying the fee presented a hardship.

The technical specifications for the iBooks covered multiple criteria. The students' iBooks weighed less than 5 pounds and came equipped with USB and FireWire ports, 10-gigabyte hard drives, wireless cards to connect to the network, and other features. Because of concerns about network integrity and security, student e-mail capability was blocked in HCPS. Each classroom had a large television set to which the computers could be connected for whole-class displays. In addition, multiple computer projectors were available in each school.

A variety of software titles were installed on the students' laptops and the division licensed the use of many Web sites. HCPS also paid many of its teachers to help develop lessons and other resources for using the iBook computers. The pay scale for summer curriculum development work was \$18 per hour.

Students were allowed to take their iBooks home. In some cases, siblings or parents also used the iBooks. HCPS also negotiated a low monthly rate for home Internet access (less than \$10 per month if paid for a full year). Parents with access to a computer and Internet access could stay up-to-date about their student's grades, attendance, and other information via computer. For this purpose, HCPS licensed K12Planet® which is part of Mac School®, the student information system adopted by HCPS2.”

Software installed:

- Acrobat Reader
- AOL
- AppleWorks
- Keynote
- iMovie
- Internet Explorer
- iTunes
- Hog Bay Notebook
- iphoto

Restrictions

Students are prohibited from sending e-mails, instant messages, and/or hosting personal web pages with their iBooks. Chat rooms are not to be accessed. Additions, modifications or deletion of files except in the students document folder is prohibited.

Internet access - optional. Service provider: Access Technology of Richmond.

Recommendation to get filtering option. Tiered pricing – \$12.50 per month to pay on a monthly basis. Additional fee to sign up for monthly billing of \$12.50. \$11.00 per month for a prepaid 6-month contract (\$66.00). \$9.75 per month for a prepaid 12-month contract (\$117.00).

(HENRICO?) “e-learning infrastructure set up as an online campus for students requiring individual or home-bound instruction”. -<http://classroomtco.cosn.org/virginia.pdf>

Parents have filtering choices which include:

Individual client filters installed on the laptop

Restricted access to school and public libraries

Laptops can be left at school

Opt-out of the laptop program

“More than half the teachers (56 percent) reported that the filtering system installed on the iBooks is not at all effective in preventing students from accessing inappropriate websites on the Internet, while 23 percent of teachers indicated that they did not know enough about the filtering

system to be able to determine what its effectiveness is. However, the vast majority of teachers (74 percent) reported that they frequently monitor students’ use of the iBooks in their classes. Teachers do request their students to conduct research on the Internet. Only 6 percent of teachers reported that they never request their students to use information from the Internet, while 8 percent request their students to use such information every day. The majority of teachers (59 percent) request their students to use the Internet once per week or less than once per week.”

Most middle school students print at school but do not print at home. The majority of middle school students with iBooks indicated that they printed at school at least once per week (83 percent). In contrast, less than a quarter (24 percent) responded that they could print at home from the iBook. Of those students who print at school and who print at home, 7 in 10 reported rarely or never having problems printing at either location...

...Most high school students print at school but do not print at home. The majority of high school students with iBooks indicated that they printed at school at least once per week (76 percent). In contrast, 1 in 5 responded that they could print at home from the iBook. Of those students who print both at school and at home, 72 percent reported rarely or never having problems printing at home. A smaller percentage, 54 percent, reported rarely or never having problems printing at school.

Training

“All HCPS teachers and staff participated in a “professional growth plan” to reach specific goals (including technology integration) each year. To help teachers incorporate laptops into the curriculum, every middle and high school had a full-time technology trainer who worked with teachers to integrate computers and other digital technologies (e.g., cameras, science probes) into teaching and learning. The goal was to improve students’ mastery of basic and advanced academic skills and concepts. In addition, workshops and classes about technology integration were available to teachers, both during the academic year (e.g., at a Mathematics and Science Center located in Richmond) and during the summer. The technology trainers also met regularly as a group to exchange ideas, and they produced a quarterly publication for teachers highlighting innovative uses of the computers in the classroom

– (http://www.henrico.k12.va.us/iBook/tech_connect/404issue.pdf). The school system provided \$300,000 annually for tuition assistance and training for teachers and staff.”

Texas

A pilot program began in the 2004-05 school year. Twenty-two schools received laptops for all students; 22 similar schools are control group (no laptops). Some schools did not receive their computers until Dec. 2004/Jan. 2005 due to a lag in the grant process. An initial evaluation is scheduled to be completed sometime during 2005-06 school year with a complete evaluation to be conducted sometime thereafter, after which State will decide the extent of “immersion” (providing laptops to all students throughout the state), as well as make decisions concerning operating system, hardware, software, and restrictions.

In Clarksville and Irving districts, elementary students receive handheld devices while older students receive laptops.

In order to explore the relationship between student performance and educational technology in Texas public schools, the Technology Immersion Pilot (TIP) was enacted by the 78th Texas Legislature in Senate Bill No. 396. The purpose of the pilot project is to explore the impact of technology immersion on student progress by providing each student with a wireless mobile computing device and integrating software, online resources, and other appropriate learning technologies that have been shown to improve student achievement.

The primary goal of TIP is to increase the academic progress of students who are participating in the pilot project by immersing the campus with appropriate innovative technologies including, but not limited to, wireless mobile computing devices, software, online formative assessment tools, and online resources.

Participants:

1 Whole District - Clarksville Independent School District

1 Vertical Team - Irving ISD

1 Single Secondary Campus - Ysleta ISD (El Paso)

22 Middle Schools (Immersed) - Brady, Bryan, Charlotte, Corpus Christi (2 campuses), Dublin, Floydada, Fruitvale, Galena Park, Houston, Laredo (2 campuses), Mcleod, Memphis, Monte Alto, Morton, Newton, Port Arthur, Post, Presidio, Riviera, San Diego

22 Middle Schools (Control) - Brownsville, Bryan, Cameron, Coleman, Corpus Christi, Cotulla, Edgewood, Galena Park, Hamlin, Harleton, Houston, Laredo, O'Donnell, Odem-Edroy, Ore City, Port Arthur, Seagraves, Skidmore-Tynan, Slaton, Timpson, Wellington

Some of the components of the Texas pilot include:

1. Professional development
2. Wireless mobile computing devices
3. Online content resources in the core curriculum areas
4. Online diagnostic and assessment tools
5. Productivity software
6. Tier 1 technical support

Michigan

In Michigan, much of the dialogue revolved around the computers' restrictions. What was appropriate content filtering, protection & Internet safety? The school district accepts full responsibility for either: (1) installing and managing the firewall and content filtering software (currently, Computer Associates' (CA) EZ-Armor and Solid Oak Cybersitter, respectively) provided by HP on the FTL laptops or (2) installing and managing suitable alternative firewall and content filtering software at the discretion of the school district....[P]olicies regarding "use" of laptops are determined by the district.... In most of the districts I've visited, students can print....Restrictions on laptops use do not appear to be a big issue here - although we may learn more as evaluation results are compiled.”

- e-mail from Bruce Montgomery, Executive Director, Freedom to Learn (July 5, 2005)

Florida

The Educational Technology Clearinghouse, a portal for educational resources for teachers in Florida, created a task force to assess classroom laptop usage. This excerpt is from their “Laptops for Learning” report:

“First, the laptop computer itself must be capable of the production demands of real world projects. It should be sufficiently powered to allow for video and audio editing as well as multimedia production. It must also have necessary ports (USB, FireWire, etc.) to connect to other digital devices such as video cameras or scanners. The screen resolution should be sufficient for productive tasks. The laptop should also be lightweight so that it can easily be transported around the school or to the students' homes and it should have adequate battery life.

“Secondly, the installed software should be adequate to the task of content creation. A full range of software should be available that enables the student to do word processing, concept mapping, spreadsheets, audio, photo, and video editing, multimedia authoring, Web browsing, and communication. As much as possible, software should be chosen to allow maximum integration among the separate programs.

“Third, the student should have access to the laptop whenever it is needed. Students who have access to computers at home and at school have shown an increase in writing skills, a better understanding of math, greater problem solving and critical thinking skills, ability to teach others, greater self confidence and self esteem, and more confidence with computer skills (Coley, 1997; Rockman & Sloan, 1995). To reserve the use of the laptop to the school setting is to waste more than half of its potential use by students.

“Guiding principle: Laptop hardware and software must be sufficient to allow students to be creators of content, not merely passive receivers of content. **The laptop must be available to use as a cognitive tool wherever and whenever the student is working.**”

-<http://etc.usf.edu/L4L/7-Tools.html>

Rye Country Day (Rye, NY)

“In the Fall of 1999 Rye Country Day School implemented a laptop computer program for all students in grades 7 through 10. All students in these grades were required to purchase a laptop computer and bring it to school every school day.

...RCDS took a different approach in its laptop program in that we are dual platform. Students and their families can choose either an Apple laptop or a Wintel laptop. For this to work we have chosen software which is available for both platforms. We may in the future require those with Macintosh laptops to purchase Virtual PC but this has not proved necessary yet.

We implemented our program using wireless technology. AirPort cards for iBooks, Lucent WaveLan cards for Wintel and PowerBook laptops. We are using Lucent wireless hubs.

In moving to a laptop program we had to redesign our network infrastructure so that faculty and administrative computers would be inaccessible to students from their laptops.

Faculty training has been, and remains, a huge issue in implementing a laptop program. We see this as the biggest issue facing us in the next few years.

Our technical support processes and procedures have become quite elaborate. Schools implementing laptop programs must spend the time and effort needed to build a support infrastructure that will allow students and teachers to keep their focus on education and not recalcitrant technology.”

Top Ten List of Things People Should Know about the Notebook Computer Program

1. The Notebook Computer Program is a long term project. Use of the laptops will evolve based on ideas developed by students, faculty and parents. Don't expect an overnight change in teaching and learning at RCDS. Do expect that there will be major changes as time passes.

2. Through this program we are providing students with an incredibly powerful tool for working and playing with information. This is an exciting opportunity to make school a more interesting and enjoyable place.

3. Backpack Management 101 may become a required course at RCDS. Until that time we all must make an ongoing concerted effort to reduce the backpack load.

4. Students should recharge their batteries every night with a good sleep. They should also recharge the battery of their notebook computer every night so it has a full charge the next school day.

5. Students should save their work immediately upon creating a new document, and frequently thereafter. By following this one simple rule students can avoid much stress and anguish.

6. Students should have backups of their important files somewhere besides their laptop. These backups can be on a File Server at school, floppies or zip drives at home, or on one of the new Internet backup services. Students should know that "My hard drive crashed!" is not a legitimate excuse for not turning in school work on time. Create a backup of important work at the end of every session during which you modify that work!

7. Internet use at RCDS should be confined to school related purposes. Every time a student is planning on using the Internet at school he or she should ask themselves "Am I going on the Internet to find information for a course or a school sanctioned activity?" If the answer is NO then they should wait and do that bit of surfing at home.

8. Game playing on computers, of any kind, is not allowed during the school day. The school network may not be used, at any time, for networked game playing.

9. Do not leave your laptop unattended at school or on public transportation in transit to and from school.

10. Have FUN and impress and inspire us with what you can create with these great tools! Oh, and if you run into problems....don't call us at home! Thanks.

After a year of a student laptop program the following things are clear.

- * Laptop programs are very high maintenance
- * Students very quickly come to appreciate having laptops
- * It will take years and great effort for many faculty to effectively integrate computers into their classes

Now that we have ironed out many technical issues and established many procedures for maintaining and repairing computers we can shift more of our efforts into the area of curriculum integration. We are making steady progress but know that much time and many resources will be needed for many years to come.

St. Joseph's Academy for Girls (Baton Rouge, LA)

<http://isds.bus.lsu.edu/cvoc/projects/SJACase/html/>

Security

Security took on a special meaning in an urban girls' high school. To protect students, some schools had implemented policies restricting web access to certain sites, prohibiting students from creating their own web pages, and even forbidding electronic mail outside of the school. In June 1998, SJA administrators were, by contrast, planning a fairly open policy. One motivation was the rich learning interactions SJA students had already had via email with various members of the outside community.

Moreover, LSU's role as the Internet provider required SJA to accept a fairly open environment as Carl Brandt, an LSU telecommunications manager and SJA parent, explained:

"We are not going to be able to play net nanny or cyber sitter, so the students will have access to whatever is available out there. I told them that as an academic institution, LSU has to be concerned with academic freedom."

Physical security of the laptops was also a concern, as one current student forecast:

"The logistics will be extremely amusing; you will have a bunch of freshmen with laptops - they will be dropping them, leaving them to bake in car trunks, catching viruses, running out of electricity; believe me, anything that can happen will happen."

Several parents had voiced concerns regarding security for the laptops. A locking carrying case and an optional security cable could be used to secure computers to secure stations located within the school. In addition, girls would be fined \$5 for computers found unattended and unsecured.

Berkshire County (MA)

"The Initiative is modeled after similar efforts throughout the nation, most notably the Maine Learning and Technology Initiative (MLTI). In a research report conducted by the Maine Education Policy Research Institute, the vast majority of teachers reported that students are more engaged in learning and produce better quality of work as a result of MLTI. A report from the Maine Learning with Laptop Study showed that while it takes several years to track improvements in student achievement, there is already evidence that MLTI may be effective in raising test scores for Maine's nine exploration sites, the first schools to implement the program."

Vail (AZ)

"Students at Empire High School here started class this year with no textbooks - but it wasn't because of a funding crisis. Instead, the school issued iBooks - laptop computers by Apple Computer Inc. - to each of its 340 students, becoming one of the first U.S. public schools to shun printed textbooks.....Empire High, which opened for the first time this year, was designed specifically to have a textbook-free environment."

-http://news.yahoo.com/s/ap/20050818/ap_on_re_us/no_textbooks

Kutztown, PA

Police: Students misused Kutztown laptops

Thirteen teens are accused of illegally using school-owned computers to download music or access forbidden Web sites.

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“More than a dozen Kutztown High School students have been charged with misusing and altering district-owned computers that were part of an innovative program in the high school. Juvenile court charges of computer trespass have been filed by Kutztown police against 13 students, officials said Monday...Parents of six of the accused students attended Monday night’s school board meeting to ask district officials to withdraw the charges. They said they learned of the charges through a letter sent by the police department May 31. Kutztown Police Chief Theodore R. Cole said his department acted on a complaint from the school district. When reached on his mobile phone Monday, he said he did not know the seriousness of the charges because he was out of the office. But parents said the charges are felonies. They said the students ranged from freshmen to juniors....

The parents said the students obtained administrator passwords that enabled them to circumvent security software on district-issued and district-owned Apple laptop computers. They said the students were able to access banned Web sites and download music, as well as reconfigure the computers. They insisted, however, the students could not access grades or cause permanent damage to the district’s computer system. "Our network was never jeopardized," Winkler agreed.

John Shrawder, Shoemaker’s 15-year-old son, said he did not know the seriousness of making changes to the computer issued to him. "I knew it was against school policy," said Shrawder, who will be a sophomore in the fall. "But I didn’t know I could be charged with a felony."

Every high school student received a laptop computer last school year as part of the district’s One-to-One program with Apple Computers Inc. Winkler said students were informed they could face criminal charges for misusing the laptops. The program will cost about \$886,000 over four years. A state grant of \$40,000 was used toward this year’s payment of \$166,000. The computers are district property, but students can use the laptops until they graduate.

Winkler said the incident will not force any major changes to the program. "You always learn from your first year," she said. Don C. Vymazal, board president, also said he could not comment on students. "The parents are rightly concerned," he said. "If it was my child, I would be concerned." Winkler said the district will continue to work with police regarding the case. “

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<http://www.readingeaglearchives.com/Repository/getFiles.asp?Style=OliveXLib:ArticleToMail&Type=text/html&Path=REG/2005/06/21&ID=Ar00101&Locale=english-skin-custom>

“The computers were loaded with a filtering program that limited Internet access. They also had

software that let administrators see what students were viewing on their screens.

But those barriers proved easily surmountable: The administrative password that allowed students to reconfigure computers and obtain unrestricted Internet access was easy to obtain. A shortened version of the school's street address, the password was taped to the backs of the computers.

The password got passed around and students began downloading such forbidden programs as the popular iChat (search) instant-messaging tool.”

-<http://www.foxnews.com/story/0.2933.165250.00.html>

See also <http://www.cutusabreak.org/>

This portion of the report gave a summary of the characteristics of laptop programs nationally. The explanatory narrative offered further insight into the functioning of laptop programs in various educational settings. This annotation could become endless. For readers who want to investigate other settings see Table 2

TABLE 2
Additional K-12 Settings With Laptop Programs

Alaska:	Denali Borough School District
Arkansas:	Fayetteville Public School District
Arkansas:	Fort Smith Public Schools
British Columbia	Peace River North
California	Evergreen Valley High School
California	Gunderson High School
California	San Lorenzo Unified School District
California	South Gate Middle School
California	Urban School of San Francisco
Florida	
Broward County	North Broward Preparatory
Hernando County	Moton Elementary School
Jefferson County	Howard Middle School
Miami-Dade County	Carrollton School of the Sacred Heart
Miami-Dade County	Palmer Trinity School
Monroe County	Key Largo School
Orange County	Ocoee Middle School
Palm Beach County	Pine Crest
Pinellas County	Clearview Avenue Elementary School
Kansas	Smoky Valley High School I

Illinois	Schaumburg
Kentucky	Jefferson County
Michigan	Malcolm X Academy
Minnesota	Oak-Land Junior High
New Jersey	Summit High School
North Carolina	Green County
Ohio	Cincinnati Country Day School
Oklahoma	Frontier School District in Red Rocks
Pennsylvania	Greater Latrobe School District
Pennsylvania	Irving Elementary School
Pennsylvania	Quaker Valley School District
South Carolina	Beaufort County
Vermont	Sharon Academy
Vermont: Oak Grove Elementary (Brattleboro)	Irasburg School (Irasburg)
Virginia: Olde Creek Elementary School	(Fairfax County) - teachers only

ACPS Surveys

Numerous surveys have been undertaken to gauge the technology opinions, proficiency, and needs of ACPS students, their parents, and their teachers. Initial surveys, in early 2004, were designed to assess staff habits with using computers and integrating them into the curriculum, for the purpose of designing technological training plans. Later surveys, after some classroom laptop use, were implemented in order to measure progress as well as to determine what aspects of the Technology Integration were strongest and which required remediation. A brief overview of each survey is provided in the paragraphs below. Table 3 then summarizes that information. Subsequently, each survey is thoroughly explicated.

The first of these surveys, the **Levels of Technology Implementation (LoTi) Survey**, was administered online to 129 teachers in March 2004. This self-reporting tool was designed to describe a teacher's habits with technology use and practices. The **Minnie Howard 2004 Teacher Survey** was completed by 59 MH staff members in April 2004, toward the end of the first school year with laptops at Minnie Howard. This survey asked staff their opinions regarding the Technology Integration, as well as questions about their laptop usage and their students' laptop usage. Similarly, the **Frequency of Use Survey** was administered (on paper) to 169 T.C. Williams teachers, administrators and licensed staff in June 2004, prior to any formal training on technology integration. Like the Minnie Howard 2004 Teacher Survey, this survey asked staff how often they and their students used computers to perform certain tasks.

The **Minnie Howard 2004 Student Survey** was administered via student laptops in April 2004; 95 students responded. Students were asked about their usage of the laptops and their opinions of the laptop program after its first year. The **2004 Student Pre-survey** was administered to grade 9-12 students via student laptops in October and November 2004, and garnered 368 responses. This survey was conducted largely to obtain baseline data on students' skills and perceptions regarding computer technology. The **2005 Student Post-survey** was administered to grade 9-12 students via student laptops in June 2005, and obtained responses from 719 students. This survey asked students about their usage of their laptops and their opinions of the

laptop program at the end of the first year of full implementation (second year for those who attended Minnie Howard the previous year). It mostly included the same questions as the pre-survey, in order to gauge changes over the school year. There were 160 students who took both the 2004 Student Pre-survey and the 2005 Student Post-survey, which allowed for some longitudinal analysis.

The **2005 Teacher Survey** was taken by 93 teachers via their laptops in June 2005. It collected information from teachers regarding their experiences during the first (TC) or second (MH) year of the laptop program, and contained many questions from the previous teacher surveys as well as some that paralleled student and parent surveys. The **2005 Parent Survey**, conducted in July and August 2005, was mailed out to all 2,854 parents of students who attended MH, TC, or STEP during the 2004-05 school year. Thirteen were returned as undeliverable, leaving 2,841 eligible respondents. Four hundred and eighty-six parents completed the survey, a response rate of 17.1%, somewhat better than the predicted rate of 12%.

This section of the report provides the background and summarizes key findings from each survey, in chronological order. Two tables of special note are worth previewing here. Table 5 on page 43 compares responses to the October 2004 and June 2005 student surveys by those students who completed both. This presentation highlights how opinions and practices changed for this group over the course of the 2004-05 school year. Table 8 on page 56 contrasts responses to similar questions, as appropriate, across the different surveyed groups. More detailed results (including percent breakdowns of responses to each question, summarization of open-end responses, and respondent demographic information) can be found in the appendices. Appendices B through I list results for each survey.

TABLE 3
Summary of ACPS Technology Integration Surveys

Survey	Dates	Target group	Respondents	How administered	Purpose/description
Levels of Technology Implementation (LoTi)	March 2004	TC and MH staff	129 (74 TC, 55 MH)	Online (LoTi website)	A self-reporting tool designed to describe teachers' habits with technology use and practices. Administered and scored by Learning Quest. Pinpoints strengths and weaknesses in order to provide schools with an action plan to raise the level of technology implementation in the classroom.
2004 MH Teacher Survey	April 2004	MH staff	59	Teacher laptops	Contained questions concerning frequency of teacher laptop usage for certain tasks, frequency of student laptop usage for certain tasks, and staff opinions regarding the effectiveness of the Technology Integration after its first year.
2004 MH Student Survey	April 2004	MH students	95	Student laptops	Asked students about their usage of the laptops and their opinions of the laptop program at the end of its first year.
Frequency of Use Survey	June 2004	TC staff	169	Paper	Asked staff how often they and their students used computers to perform certain tasks. Similar to the Minnie Howard Teacher Survey, but did not ask their opinions regarding technology. Adapted from a survey conducted in Arlington County Public Schools. Intended as an aid to plan training.
October 2004 Student Survey	Oct/Nov 2004	TC/MH/STEP students	368 (216 MH, 133 TC, 19 unknown)	Student laptops	Conducted largely to obtain baseline data on students' skills and perceptions regarding computer technology. Included questions about specific activities they had previously conducted on computers, and which classes used technology most effectively.
June 2005 Student Survey	June 2005	TC/MH/STEP students	719 (207 MH, 712 TC)	Student laptops	Asked students about their usage of the laptops and their opinions of the laptop program at the end of the first (TC/STEP) or second (MH) year of full implementation. Mostly included the same questions as the October 2004 survey, in order to gauge changes over the school year.
2005 Teacher Survey	July 2005	TC/MH/STEP teachers	93 (27 MH, 59 TC, 7 STEP)	Teacher laptops	Collected information from teachers regarding their experiences during the first (TC/STEP) or second (MH) year of the laptop program. Contained many questions from previous teacher surveys, and some that paralleled student and parent surveys.
2005 Parent Survey	July/Aug 2005	Parents of TC/MH/STEP students	468 (442 via mail, 18 internet, 4 fax and 4 telephone)	Mail (Also web, fax, and phone options)	Conducted to gauge parents' opinions of the laptop program after the first (TC/STEP) or second (MH) year of the laptop program.

Levels of Technology Integration Survey (March 2004)

The Levels of Technology Integration (LoTi) Survey, administered and scored by Learning Quest, is a self-reporting tool designed to describe a teacher's habits with technology use and practices. It is used to gauge the general need for technology training as well as to define specific achievable proficiency goals. The LoTi was administered online to 74 T.C. Williams and 55 Minnie Howard teachers in March 2004. Results are presented in Figures 1-3. For comparison purposes, results are also presented for North TIER in total, of which ACPS is a part. "The North TIER Partnership is a consortium of 13 school divisions in Northern Virginia and MHz NETWORKS.... to provide professional development to teachers in the successful integration of technology into instruction."

On the LoTi, the respondent self-assesses 50 statements according to the following scale:

0 1 2 3 4 5 6 7
Not true of me now Somewhat true of me now Very true of me now

Each staff member who takes the survey is measured on three components: Level of Technology Implementation (LoTi), Personal Computer Use (PCU), and Current instructional Practices (CIP). Learning Quest then aggregates results by school and creates a report with suggested goals.

Level of Technology Implementation (LoTi) component

The LoTi gives a measure of the degree to which the respondent has successfully integrated technology into the classroom, based on combined responses to certain questions. Scores on the LoTi component are defined by eight distinct levels:

- Level 0 - Nonuse
- Level 1 - Awareness
- Level 2 - Exploration
- Level 3 - Infusion
- Level 4a - Integration (Mechanical)
- Level 4b - Integration (Routine)
- Level 5 - Expansion
- Level 6 - Refinement,

where higher levels indicate a higher degree of technology use in the classroom. (*For definitions of each level, see Appendix B*)

Among Minnie Howard respondents, the predominant level (29% of respondents) was 2, Exploration. Sixty percent were at Level 3 or below. (*See Figure 1*) At T.C. Williams, the predominant LoTi level (51% of respondents) was 0, Nonuse, and 84% percent of respondents were at or below Level 3. Among all North Tier respondents, a plurality (19%) indicated a LoTi level 2, Exploration; 69% of respondents were at Level 3 or below. Thus, T.C. exhibited a much

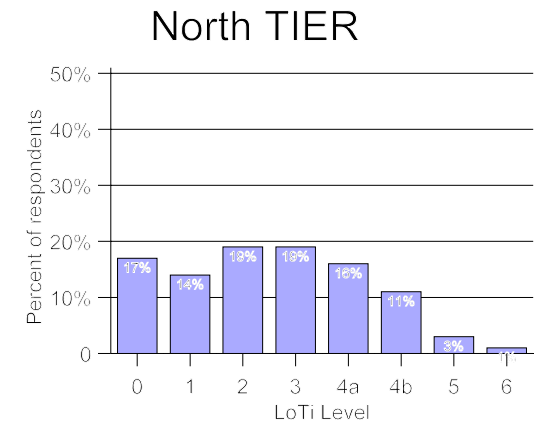
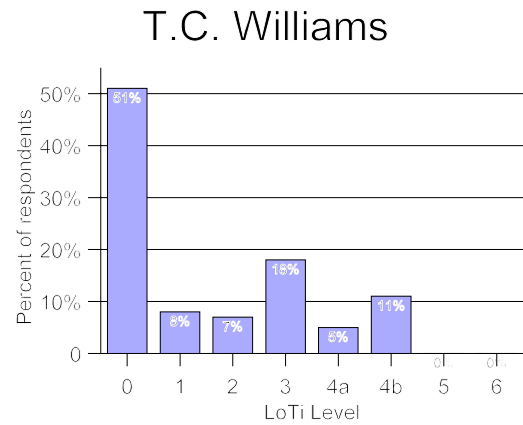
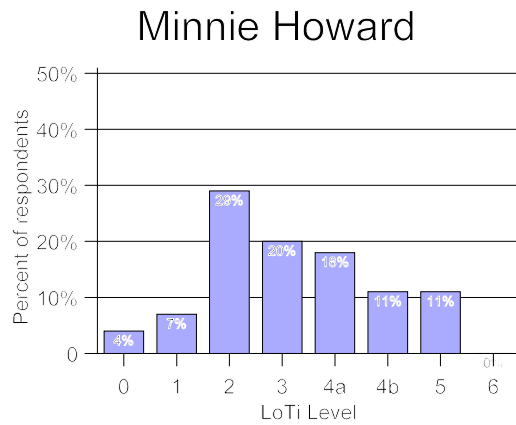


Figure 1. Level of Technology Implementation (LoTi) Profile at Minnie Howard, T.C. Williams, and North TIER, March 2004

Key:

- | |
|------------------------|
| Level 0 - Nonuse |
| Level 1 - Awareness |
| Level 2 - Exploration |
| Level 3 - Infusion |
| Level 4a - Integration |
| Level 4b - Integration |
| Level 5 - Expansion |
| Level 6 - Refinement |

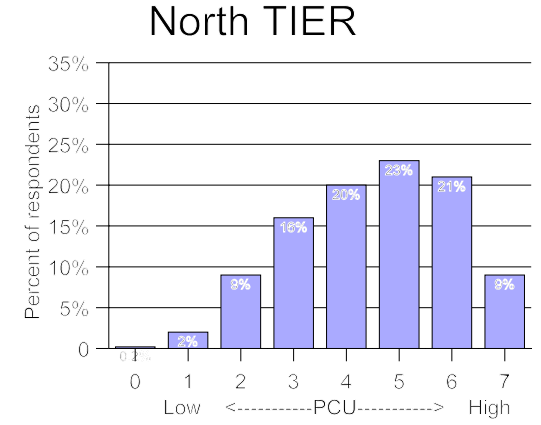
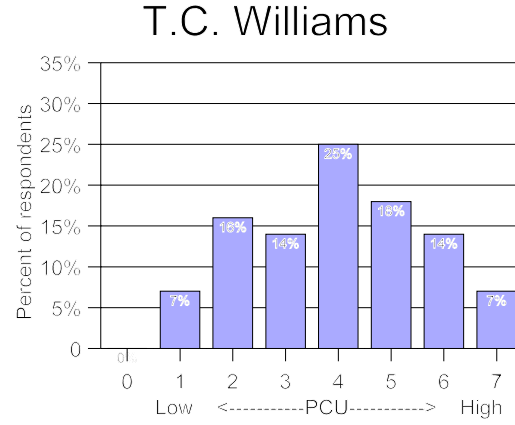
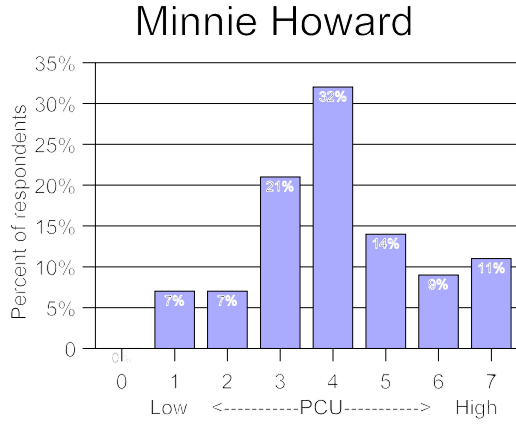


Figure 2. Personal Computer Usage (PCU) levels at Minnie Howard, T.C. Williams, and North TIER, March 2004

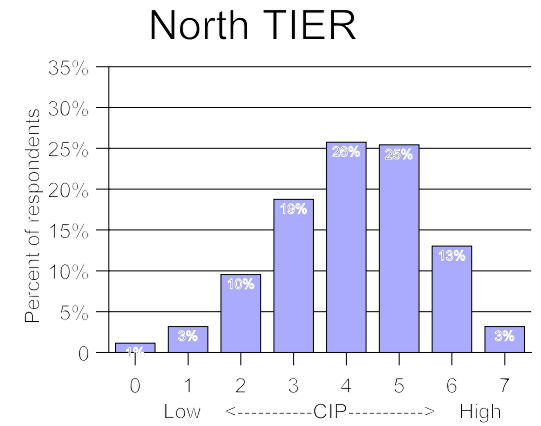
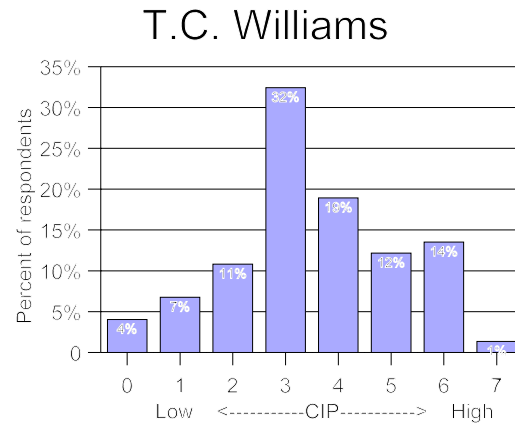
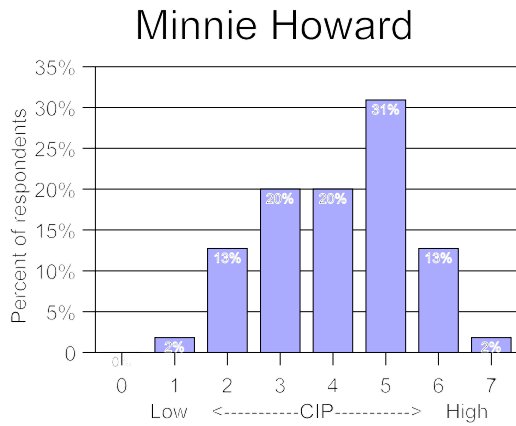


Figure 3. Current Instructional Practices (CIP) levels at Minnie Howard, T.C. Williams, and North TIER, March 2004

lower level of initial technology implementation than did the North TIER in aggregate, indicating either a greater need for training or a more humble self-appraisal. Minnie Howard's results were on par with North Tier as a whole, although Minnie Howard showed more mid-level rankings and fewer extremes.

Personal Computer Use (PCU) component

The PCU profile level gives a rating of the extent to which respondents feel they have the ability to use basic software applications or troubleshoot routine computer problems, on a scale of 0 to 7, based on responses to certain questions on the survey. Higher levels indicate a higher mastery of basic computer skills. Generally, levels 0-2 indicate the respondent is not comfortable/ proficient with basic computer tasks, levels 3-5 indicate the respondent is somewhat comfortable/ proficient with basic computer tasks, and levels 6-7 indicate the respondent is very comfortable/ proficient with basic computer tasks.

At Minnie Howard, the predominant PCU level was a 5, meaning that respondents were somewhat comfortable/proficient with basic computer tasks, bordering on very comfortable/proficient. Approximately one in ten (11%) were at level 0, 1, or 2; 65% were at level 3, 4, or 5; and 24% were at level 6 or 7. (*See Figure 2*).

The T.C. Williams PCU profile indicated that 23% felt they were not comfortable/proficient performing basic or routine computer tasks, 57% felt somewhat comfortable/proficient, and 20% felt very comfortable/proficient.

Among all North TIER respondents, 29% felt they were not comfortable/proficient, 60% felt they were somewhat comfortable/proficient, and 11% felt they were very comfortable/proficient.

Current Instructional Practice (CIP) component

The CIP profile level gives a rating of the extent to which respondents feel that their technological practices are aligned with learner-based design, such as integrating multiple assessment strategies into the curriculum. Ratings are on a scale of 0 to 7, based on responses to certain questions on the survey. Higher levels indicate a stronger alignment of technological practices with learning-based design. Generally, levels 0-2 indicate the respondent feels that his or her technological practices are not aligned with learner-based design, levels 3-5 indicate the respondent feels that his or her technological practices are somewhat aligned with learner-based design, and levels 6-7 indicate the respondent feels that his or her technological practices are aligned with learner-based design.

At Minnie Howard, 15% of respondents felt their technological practices were not aligned with learner-based design, 71% felt their technological practices were somewhat aligned with learner-based design, and 15% felt their technological practices were aligned with learner-based design.
(*See Figure 3*).

Self-perceptions at T.C. Williams were slightly lower: 22% of respondents felt their technological practices were not aligned with learner-based design, 64% felt their technological practices were somewhat aligned with learner-based design, and 15% felt their technological practices were aligned with learner-based design.

Among all North TIER respondents, 17% felt their technological practices were not aligned with learner-based design, 70% felt their technological practices were somewhat aligned with learner-based design, and 13% felt their technological practices were aligned with learner-based design.

Learning Quest's reports contained sample goals for the schools in the following year, mainly targets outlining the percentage of staff members who should attain each LoTi level. For instance, they recommended striving to raise 25% of Level 2 Minnie Howard staff up to level 4a, and raising the other 75% of Level 2 Minnie Howard staff up to Level 3. Another recommended target was to raise the level of all skills 0 staff, ensuring that all teachers are able to incorporate technology into practice at least to a basic degree.

Other recommendations (which appear to be default recommendations for any LoTi report) included creating a consolidated staff development program, ensuring that each classroom has at least one working computer, and providing staff development that increases staff confidence and competence.

2004 Minnie Howard Teacher Survey (April 2004)

Administered to Minnie Howard staff toward the end of the first school year with laptops, after the LoTi Survey, this survey contained questions concerning frequency of teacher laptop usage for certain tasks, frequency of student laptop usage for certain tasks, and staff opinions regarding the effectiveness of the Technology Integration. All Minnie Howard teachers were encouraged to take the survey; there were 59 respondents. Opinions ran the gamut from enthusiasm to despair, but on the whole came down on the positive side of neutral. (*For complete results, see Appendix D*)

The following aspects are among the key findings:

- A large majority of respondents reported using their laptop at least once a week for communicating with colleagues inside and outside the school (88%) and managing student information (83%). Additionally, 20% reported using their laptop at least once a week for creating and/or maintaining a website for instructional purposes.
- A majority reported that their students used their laptops at least once a week for researching information using the Internet (63%) and sending/receiving e-mail (60%), while very few reported that their students used their laptops at least once a week to work with spreadsheets or databases (18%) or to take tests or quizzes (22%).
- Teachers expressed a high opinion of the capabilities of their students. Very few agreed with the statements “A lack of formal training for my students in computer use has prevented me from implementing the laptops fully.” (10%) and “My students' inability to keyboard (type) has interfered with our use of the laptop.” (11%).
- Respondents also reported a high level of support from administrators and Technology Resource teachers: 70% agreed or strongly agreed that “The Technology Resource Teacher in my school has assisted me in finding ways to integrate the laptops within my curriculum,” and 68% agreed or strongly agreed that “The administrator(s) in my school actively encourages me to integrate the laptops into my curriculum.”
- Most respondents (62%) agreed or strongly agreed that “Using the laptops has increased my work load.”

Most respondents also gave open-ended responses regarding the successes and challenges experienced during the first year of the Technology Integration, as well as comments regarding professional development and other general comments.

Among the reported successes, most dealt with increased opportunity for students to demonstrate their creativity and the convenience with which students could take notes and do projects. Other respondents mentioned specific computer programs they found useful. The following is a representative sample of reported successes. (*Some responses have been slightly modified for spelling, grammar, or punctuation, or to avoid revealing a respondent's identity.*)

- “Students have been able to demonstrate their creative and their artistic ability in many assignments.”
- “The A+ program has allowed extra time for reinforcement of material.”
- “Interactive math web sites where the students can practice some math techniques.”
- “Allows for more student generated responses when they have to create presentations, documents and word charts.”
- “I can get my students to write when they have the use of their laptops. They produce a lot more then they would normally with paper and pencil. I can do writing on a daily basis since every student has access to a computer every day.”

Most of the reported challenges and problems had to do with students using their laptops for non-academic purposes, such as surfing the internet or playing games; several respondents indicated frustration at the lack of a way to monitor student usage. A few respondents mentioned technical problems. The following is a representative sample of reported challenges:

- “Students spend all their time instant messaging and it is impossible to monitor all students at once.”
- “The main challenge that I have experienced is my inability to control the amount of music, movies, and other things that my students have downloaded. I think that we would greatly benefit from Network Nannies to prevent this from happening.”
- “I'm disappointed with the number of appliances that have "broken" or have been damaged.”
- “While I think the idea of the Technology Integration has been successful, I find that it is difficult to manage students activities on the computer during class and I find it more of an isolating experience for them as there is less discussion and more intensive focus (for the students) on what they are doing on their laptops, whether relevant to the instructional topic or not. I am also concerned that my students do not have the necessary maturity to be responsible for this type of equipment on an individual basis. I suggest perhaps classroom sets might be more helpful.”
- “System crashing, freezing, technological difficulties.”

Many respondents submitted an open-ended response when asked to describe the types of technology-related professional development they would like to receive. Several mentioned they would like to learn more about creating web pages for their classes, while others mentioned a need for more training in Excel, PowerPoint, and other specific programs. Several mentioned programmatic needs, such as ideas related to recertification points or staffing.

Please describe the types of professional development you would like to receive as you continue to use the laptops in your classroom:

- “The use of web pages and graphic designs would be useful.”
- “Technology Integration Education, since it is mandatory, needs to be available on-line at any time for anyone to complete the sessions, especially the Test-Out options. I think further development time would be a waste: I get more done by doing things than I do by listening to someone tell me what I could be doing. More step-by-step manuals for programs need to be implemented. Many of us learn by reading and following written instructions better than by being browbeaten by a Technology Resource Teacher.”
- “1. Better ways of integrating technology in the classroom. 2. How to give tests online. 3. Microsoft Word. 4. Excel. 5. Geometers Sketch Pad. 6. How to have my own webpage.”
- “I think the development we have had is adequate. We need time to plan, period, and to think about how we can enrich with computers.”
- “I would like more ideas on using different programs that are pertinent to my classes. I would like to see how other teachers have used the laptops, not just ‘hear’ about what they are doing.”

Finally, respondents were asked to include any other comments they thought may help in assessing the impact of the laptop program. Again, this section contained a wide variety of praise, suggestions, and complaints, including the following:

- “I think it would be beneficial to have a classroom set and then allow the students to use the classroom set as necessary. This would cut down on abuse and misuse of the laptops.”
- “I feel the money for the laptops could have been better utilized. A classroom set for each teacher would have been more than sufficient. As a math teacher, laptops are no substitute for me carefully looking over a student's work to find out where they are making mistakes. Just putting down an answer does not show me the student's thought process and where he/she may need intervention from me.”
- “I would like to reiterate that I believe the IDEA of the laptops is terrific, I would like to see class sets instead of individual laptops and stronger firewalls/protection for students from inappropriate websites.”
- “The limitation of internet use for students who possess the ability to search other sites that are inappropriate is a part of the laptop program that should be assessed.”
- “Classroom sets of laptops would benefit instruction. Students would not spend so much time downloading songs from the internet. Students mistreat the technology and do not remember to charge the lap top at home. Overall, I find that while this gives some kids equal access to computers, they do not use them for this purpose. I would never

recommend this program to any other school. And I say this even though I use them all the time. I just feel that classroom sets would let teachers achieve the same academic objectives. Kids would be able to check out laptops for home use for long term projects. Also, the fact that they cannot print gives the teacher much more work.”

2004 Minnie Howard Student Survey (April 2004)

Around the same time as the 2004 Minnie Howard Teacher Survey, students were administered the 2004 Minnie Howard Student Survey. Students were asked about their usage of their laptops and their opinions. All Minnie Howard students were encouraged to take the survey; there were 95 respondents. (*For complete results, see Appendix E*)

The major findings are:

- Ninety percent (90%) reported using their laptops at least once a week to research information using the internet. Sixty-six percent (66%) used their laptop at least once a week to take notes. Sixty-three percent (63%) used it at least once a week to organize information. Sixty percent (60%) used the laptop at least once a week in creating presentations or multimedia projects. These figures align with teacher perceptions of student use as noted in the Minnie Howard 2004 Teacher survey.
- By content area, students reported using their laptops in class comparatively equally in History, Language Arts, and Science, but usage in Mathematics was apparently for less.
- When they needed help with their laptop in school 79% said they sometimes or usually asked a friend or other student for help (the most popular choice). Teachers were the next source of assistance (65%). Friends and other students were found to be helpful by 92% of those who asked them for help. Once again, teachers were second at 85%.
- Nearly two-thirds agreed or strongly agreed with the statements “Having a laptop helps me to be better organized” and “I am more likely to revise/edit my work when it is done on the laptop.” (65% each). Productivity was impacted by the laptop as 60% indicated they get their work done more quickly and 58% said that they do more work. Only 5% agreed or strongly agreed with the statement “I would rather not use my laptop,” and 9% with the statement “All of the information available on the Internet makes it difficult for me to research/analyze the information.”
- 61% rated their overall computer skills as advanced or expert-level.

Frequency of Use Survey (June 2004)

This survey, adapted from a survey conducted in Arlington County Public Schools, asked T.C. Williams staff how often they and their students used computers to perform certain tasks. This survey was similar in purpose to the aforementioned Minnie Howard 2004 Teacher Survey, but asked only about usage and not opinions. It was administered in hard copy to 169 T.C. Williams teachers, administrators and licensed staff in June 2004, prior to any formal training on technology integration, and several months prior to laptop rollout at the school. (*For complete results, see Appendix E*).

Key findings are:

- 62% said they frequently or occasionally use computers to present a lesson or part of a lesson in their role as a teacher. 58% said they frequently or occasionally use computers to individualize instruction.
- 72% said their students frequently or occasionally use computers in their classes to do research on the Internet, online library catalog, and/or reference databases.
- 96% reported using e-mail at least once a week in their role as a teacher, and 90% did word processing at least once a week.
- 27% had yet to complete their Technology Standards for Instructional Personnel requirement.
- There was much variability among staff in terms of technology usage.

October 2004 Student Survey (October/November 2004)

Shortly after the initial rollout of laptops at T.C. Williams and STEP, a survey of all grade 9-12 students was conducted largely to obtain baseline data on students' skills and perceptions. Respondents were asked about specific activities they had previously conducted on computers, and what classes used technology effectively, among other things. Respondents took the survey on their laptops. There were 368 respondents – 216 from Minnie Howard, 133 from T.C. Williams, 15 at STEP, and 4 whose school was unknown due to incomplete logon data. (*For complete results, see Appendix F*).

Among the major findings:

- 8% of respondents reported having no computer at home, or not using it during the previous school year. Of those with a home computer, 63% had used it for both homework and personal use during the previous school year. 23% of those with a home computer had no internet access.
- 76% listed their overall computer skills as good or excellent.
- 51% said having access to technology was very important to their education; an

additional 26% said it was somewhat important. 73% thought having access to a personal laptop would make a big difference in the way they did school work.

- The activities done on a computer by the most respondents during the previous year: typed a paper (86%), done research (84%), surfed the web (71%), and sent or received e-mail (71%). The activities cited least: maintained a blog (11%), read fanfiction (12%), and added memory or an external drive to a computer (17%).
- Two-thirds (66%) said technology was used effectively in their English class the previous year, 51% made that claim about their science class, 50% about history/social studies, 20% about mathematics, and 17% about foreign language. The proportions for art, music, and physical education were each 5% or under. Twelve (12%) responded that none of their classes used technology effectively during the previous year (please note, due to the question’s construction, the converse (88%) cannot be concluded). Opinions on the effective use of technology in class, particularly with regard to mathematics and English, differed somewhat depending on the respondent’s grade.

Table 4 examines the digital divide from the perspective of the October survey.

Table 4
Computer Use As Reported by Students, Fall 2004

Education Level		Computer Use in Hours/Week							Total	% Level of Educ.
		zero: no computer	<1	1 to 3	4 to 6	7 to 9	10 to 12	13 +		
Degree or Some College	Number students	14	12	62	52	33	21	65	259	
	%	5%	5%	24%	20%	13%	8%	25%	100%	73%
No College	Number students	14	14	24	15	10	4	13	94	
	%	15%	15%	26%	16%	11%	4%	14%	100%	27%

As presented in Table 4, the “digital divide” between students can be quantified by access and use of computers. The Fall 2004 Student Survey provided an opportunity to assess the educational opportunities that students have in terms of quantity of access, given that students were asked to report both their level of computer use and also the highest educational level achieved by any adult in the household.

- More than two-thirds (73%) of students reported that an adult in their household had attained an education level beyond high school. Before the fall of 2004, of those students:
 - 5% did not have access to a computer;
 - 34% used a computer for fewer than 4 hours per week.
- A much smaller proportion (27%) of students reported that no adult had attained an education level beyond high school. Before the fall of 2004 of those students:

15% did not have access to a computer
66% used a computer for fewer than 4 hours per week.

- At the lowest levels of computer use (in hours per week), there was a divide between students by parental education level, a divide that increased at higher levels of computer use. For example, 46% of students of post high school educated parents used a computer seven or more hours per week vs. only 29% of students from the high school or less parent group.
- Of the students who used a computer more than 13 hours per week, essentially two or more hours per day, weekends included:
 - 25% of students with post high school educated parents home had that level of access, compared to only
 - 14% of students from the high school or less homes.
- The sharpest divide can be seen for those students who lived in a home where no adult had earned the equivalent of a high school diploma:
 - 70% used a computer for fewer than 4 hours per week
 - 20% (n=4) used a computer more than 6 hours per week, and
 - only one student had the 13+ hours per week of computer access that was available to one-quarter of the students living in the higher education level homes.

June 2005 Student Survey

This survey during the last two weeks of school was required for all grade 9-12 students who had not yet turned in their laptop. Administered via student laptops from the ACPS website, the survey included several of the same questions as the October 2004 baseline survey, along with additional questions regarding their experiences with the laptop program during the 2004-05 school year. There were 719 respondents: 207 at Minnie Howard and 512 at T.C. Williams. Of these, 160 had also taken the October 2004 survey (127 Minnie Howard students and 33 T.C. Williams students). (*For complete results, see Appendix G*).

Respondents overall had a fairly good opinion of the laptop program, although many mentioned what they perceived to be flaws, especially restrictions placed on printing, web access, and file portability. The greatest perceived benefits of the laptop program were the ability to type papers and class notes instead of writing by hand and the ability to conduct internet research. Some respondents also liked the fact that the laptop was able to replace textbooks, thereby “lightening the load”, although some others mentioned the weight of the laptop as a burden. Most respondents felt their teachers did at least a decent job of explaining to them how to use the laptops, and most gave the help desk high marks for fixing problems. The ability to take SOL exams online proved a big plus.

By far the biggest perceived problems with the laptops were restrictions and limitations placed on printing, web access, and file portability. Students found it frustrating that they could not print from their laptops to their home computer, nor could they transfer files from their laptop to their home computer, since USB ports were disabled administratively. Many also expressed

frustration that their laptops were not internet-accessible outside of school. Furthermore, some useful research websites (such as Dictionary.com) were blocked by the firewall, a problem which could be solved by altering the firewall settings. Another problem mentioned by many respondents was that too many students were using their laptops inappropriately – an indication both of the maturity of some students (for recognizing this as a problem) and the immaturity of others (for the inappropriate use).

There were not many major differences by grade, although grade 10 students were more likely than others to report that technology was used effectively in mathematics class; grade 9 students were more likely than grade 10 students to report that technology was used effectively in history/social studies class; grade 9 students were more likely than grade 10 students to report that technology was used effectively in physical education class; and grade 10 and 11 students were more likely than others to report that technology was used effectively in foreign language class.

Key findings are:

- 69% reported using their laptop no more than three hours a week for homework during the school year. 64% reported using their laptop no more than three hours a week for research.
- 30% said most or all of their teachers regularly incorporated the use of computers into their classroom work during the school year.
- 74% said they brought their laptop to school every day.
- The median number of “laptop loss days” – days a student was unable to use his/her laptop because it needed repairs – was three, meaning around half of respondents experienced three or fewer laptop loss days. Almost one-fourth of the respondents (23%) did not lose a single day of laptop use due to repairs, but 16% reported ten or more laptop loss days.
- 90% of respondents reported taking a SOL exam online. Of these, 89% found it easy to do so.
- Percent of respondents who agreed or strongly agreed with selected statements:
 - My laptop made it easier for me to type papers: 74%
 - My laptop made it easier for me to do research for school projects: 72%
 - Not being able to print from my laptop was a major inconvenience: 70%
 - Having access to a personal laptop made a positive difference in the way I did my school work: 53%
 - I am/was worried about losing or damaging my laptop: 49%
 - The laptops are more trouble than they are worth: 27%
- Percent of respondents who indicated they learned “a lot” during the school year about

each of the following:

Searching the Web for information: 44%

Word processing: 30%

Computers in general: 27%

Technology in general: 21%

Databases and spreadsheets: 16%

Laws and policies related to technology: 15%

- 39% said having access to computer technology is very important for their education; and additional 31% said it is somewhat important. Among students who also had taken the October 2004 survey, 34% said having access to computer technology is very important for their education, down from 53% in October; and 13% said it is very unimportant, up from 7%.
- 55% of respondents said technology was used effectively in their English class during the 2004-05 school year, 63% felt that way about their science class, 69% about history/social studies, 27% about mathematics, 11% about foreign language, and 18% about “other” (especially Human Growth and Development, mentioned as a write-in by 6% of all respondents). The proportions for art, music, and physical education were each 5% or below. A few respondents (4%) responded that no class used technology effectively, compared to 12% of October 2004 respondents who felt that way.

Numerous respondents took the opportunity to write in responses to the open-ended questions on the survey. Some of the perceived benefits of the laptops:

- “You can do research online at school and not have to go to the nearest library nor have to wait till you arrive home to begin research. You can do it right there and then.”
- “It helped me get my homework completed. I didn’t have to carry so many books, didn’t need to use that much paper – just went on my laptop and did my work.”
- “It enables us to get used to recent technologies. We are able to do our homework quickly and more clearly. If a person doesn’t have a working computer at home, they are able to do their work otherwise. It also improves our computer skills.”
- “We can use the internet in school to do research and we can write on the computer and send it to our teachers. Also that we took our SOLs on the computer, that was very fast and efficient.”
- “It is easier to learn and do school work. We are living in a society where the majority of teens know how to use computers really well and have their own pieces of high-tech technology. Teens aren’t used to pen and paper anymore. Everyone is really used to typing and doing research on computers.”

Some of the perceived problems with the laptop program:

- “The help desk is not much help when something happens to the computer. They erase the documents you have stored on the drive.”
- “The biggest problem with the laptop program is well remembering to bring it to school or to charge it. Other problems have to be with the kind of care. You have to be really careful with it.”
- “They should have LINUX and not WINDOWS.”
- “No email access: email is another method of communication, not a POISON! It provides those without home computers to be a part of something, and allows another way for a teacher and student to contact each other. No home internet access: what’s the difference in what kids will do at home on the internet and what the kids do at school? At least with the opportunity to use the internet at home, less students will have that legitimate excuse of not being able to access the web to do research. Do a better job of blocking music and porn sites, but other things like email are again helpful at school and home. Limited printing: ONLY at SCHOOL, ONLY during lunch. I mean come on. What’s with all the restrictions. If a student has had a busy week and has come to the last minute and must do a project, he/she IS at least getting it done. That limited printing could make or break someone sometimes.”
- “The laptops didn't have enough battery power like the laptop at Minnie Howard last year did. Some of the sites that I tried to go to for a class assignment were actually blocked so I couldn't do the assignment. The server was down a lot and if I had work that I needed to send to my teacher it couldn't be done. They just added more weight to my already heavy bookbag.”
- “Very heavy, nuisance to carry around along with our textbooks, many blockers on things that were actually useful to research (i.e., Discovery Channel, etc.), laptops were not very good quality (broke many times this year), and not all teachers would use them or make folders for us so we had to find our own ways to printing our papers.”

Other general comments and suggestions:

- “At first, the laptop program seemed like a nuisance, but once I got used to how it all worked, it helped me do class assignments.”
- “I believe that if we have lap-tops next year, the computer should only block things that are really not needed. I also believe that we should be able to check our e-mails. The computers should be able to be used outside of school, if the student has an internet line. The computer people should encourage teachers to use the computers more often in class.”
- “I must say, these laptops are A LOT better than Minnie Howard's laptops. I went through SIX of the laptops at Minnie Howard last year. None of the problems were my fault either. They were just really [bad]. The laptops this year, at TC, are great. I never had any problems with mine.”

- “If I was to offer some additional ideas, it would basically be the options of customization (background pictures; color usage; screen savers), better internet capabilities (the use of favorites; access to more sites (outside of the ones that could get you in trouble); and the use of our media players (realplayer, windows media player, quicktime). Other than that, I think that these laptops were wonderful, and I enjoyed having one. One more thing: I understand that this was the first year of this program, and it’s going to take time to really get things going, so I’m not holding anything against you. But please take some (if not all) of these comments into consideration when doing this program in years to come. Thank you.”

Matched Student Surveys October 2004 and June 2005

Though not separate surveys, per se, 160 student surveys from October 2004 were matched to the same students’ June 2005 surveys to ascertain any whether there were any changes over the school year in their response patterns. Table 5 presents their percentage responses in October as compared to their percentage responses in June. Because of the previously mentioned October sample size (368 respondents – 216 from Minnie Howard, 133 from T.C. Williams, 15 at STEP, and 4 whose school was unknown due to incomplete logon data), there are inherent biases built into this matched comparison. The matched comparison is primarily composed of Minnie Howard students (127 Minnie Howard and 33 T.C. Williams students). Nonetheless, as a possible prototypical analysis for the future, it has heuristic merit. Thus, with the foregoing caveat in mind, caution is urged in interpreting and extrapolating from these data.

As seen in Table 5, there was little apparent change in the general response of these matched students from October to June. Given that 79% of these students were ninth graders, their October responses should have been based primarily on their eighth grade year. Home computer and internet access grew slightly, while increasing percentages of students described their overall computer skills as good or very good. The overall importance of technology appeared to wane somewhat within this group. Students’ feelings about technology wavered slightly with more students helping friends with technology, while more students viewed technology as a tool and not a hobby. Students’ views of teacher use of computers in the classroom were one of the areas where there was noticeable change from October to June. For example, in October, only 14% of students reported that “most” or “all” of their teachers regularly incorporated the use of computers in classroom work. In June, 33% of students reported that “most” or “all” of their teachers incorporated computers. Student computer activities generally increased over the year, but perhaps the most notable was creating graphs or charts, which went from 63% in the October to 86% in June.

TABLE 5
Comparison of October 2004 and June 2005 Surveys for Matched^a Student Responses

	October 2004 Student	June 2005 Student
Has computer at home:	84%	90%
Has internet access at home:	77	86
How would you describe your overall computer skills?		
Very poor	1%	2%
Poor	1	1
Fair	21	13
Good	51	45
Very good	25	39
How important is having access to technology to your education?		
Very unimportant	6%	14%
Somewhat unimportant	5	9
Don't know	6	11
Somewhat important	31	38
Very important	52	39
Which of these statements best describes your feeling about using technology?		
I avoid using technology as much as possible.	2%	3%
I use technology a lot, but it's just a tool for me, not a hobby.	21	29
I enjoy working with technology and learning new ways to use it.	67	49
I often help my friends with their technology problems and I like showing them how to use technology in different ways.	10	19

Table 5, cont'd

	October 2004 Student	June 2005 Student
During this past school year, how many of your teachers regularly incorporated the use of computers into your classroom work?		
None	13%	4%
Some	55	40
About half	19	23
Most	11	24
All	3	9
Thinking about this past school year, in which three subject areas do you think computer technology was used most effectively at your school?		
English	74%	56%
Mathematics	14	21
Science	52	69
History/Social Studies	54	71
Foreign Language	19	14
Art	3	5
Music	2	1
Physical Education	3	9
Other subject	--	20
No subject area used technology effectively	14	4

Table 5, cont'd

	October 2004 Student	June 2005 Student
Indicate below any of the activities that you did with any computer during this school year.		
Sent or received e-mail	74%	71%
Sent or received an instant message	61	58
Surfed the web/gone online (e.g., looked for song lyrics)	78	85
Shopped online	39	33
Typed a paper	88	95
Done research	47	52
Used Excel or another spreadsheet	53	57
Created graphs or charts	63	86
Used PowerPoint	48	62
Downloaded music from a website or friend	39	30
Downloaded pictures from a digital camera	49	40
Created music CD's	21	33
Downloaded music into an iPod, Rio or other music storage device	72	84
Played Internet computer games	52	67
Watched Internet videos	35	36
Visited a chat room	26	39
Posted at a message board	28	34
Created a personal website	14	23
Read a blog	9	13
Maintained a blog	14	11
Read fanfiction	23	21
Set up a computer	18	13

^a Includes only students who responded to both student surveys (n=160)

Microanalysis of Selected Responses from June 2005 Student Survey

As a complementary investigation to the generic listing out of students' responses, Monitoring and Evaluation linked the June 2005 Student Survey responses to each student's demographic characteristics. This linking of student characteristics to survey responses permitted analysis of the responses by the familiar No Child Left Behind subgroups. As with all NCLB data displays, the reader should keep in mind that a student could fall into multiple subgroups, i.e., a disadvantaged, ESL, Hispanic student. The selected questions were chosen based on some of the initial suppositions about the varying availability of technology to sundry student subgroups in high school.

Table 6 presents the microanalysis of NCLB subgroups. In regard to students' meal status: students on free/reduced meals agreed more frequently than regular-price meal students that the laptop made it easier to do research for school projects and they were also less likely to have a computer, printer, and internet access at home.

In regard to ESL status: ESL students agreed more frequently than non ESL students that the laptop made it easier to do research for school projects and they were also less likely to have a computer, printer, and internet access at home.

In regard to students' ethnicity: minority students agreed more frequently than white students that the laptop made it easier to do research for school projects and they were also far less likely to have a computer, printer, and internet access at home.

TABLE 6
 Selected Spring 2005 Student Laptop Survey Responses
 Broken Out by NCLB Subgroup

Survey Questions	Meal Status			ESL		Ethnicity			All Students
	Free (n=226)	Reduced (n=70)	Full Price (n=420)	Yes (n=124)	No (n=592)	Black (n=282)	White (n=221)	Hispanic (n=156)	(n=716)
Question 13 - My Laptop made it easier for me to do research for school projects - % Agree and strongly agree	87%	87%	62%	87%	69%	80%	57%	78%	72%
Question 16 - How important is having access to computer technology for your education - % Somewhat and very important	68%	64%	71%	70%	70%	72%	71%	69%	70%
Question 17 - Do you have a computer at home - % Yes	77%	87%	93%	85%	88%	85%	98%	76%	87%
Question 18 - Do you have internet access at home - % Yes	65%	80%	90%	75%	82%	77%	96%	65%	81%
Question 19 - Does your home computer have a printer - % Yes	62%	71%	88%	72%	80%	71%	95%	66%	78%

2005 Teacher Survey (July 2005)

The 2005 Teacher Survey sought to collect information from teachers regarding their experiences during the first (at T. C. Williams) or second (at Minnie Howard) year of the laptop program. It was available on the ACPS website to grade 9-12 teachers following the end of the 2004-05 school year. (Teachers are allowed to keep their laptops over the summer, as long as they are contracted to teach in ACPS the following school year.) Of the 266 teachers, 93 took the survey – 27 at Minnie Howard, 59 at T.C. Williams, and 7 at STEP. (*For complete results, see Appendix H*).

Results indicated that there still exists a wide gap among teachers, both in terms of comfort using computers and in terms of integrating technology into classroom instructions. Some teachers desired more technology training, while others felt that the push toward technology was causing undue burden and interference with their regular instruction. Teachers generally thought well of the program, although they were troubled by the widespread inappropriate use by students and the lack of a way to monitor such use. Some suggested that having class sets may be more effective and cost-efficient than giving a computer to each student. Many others also made useful comments.

Key findings from the teacher survey:

- 72% assigned their students three hours of homework per week or less that was to be completed on their laptops. On the other hand, when asked how much time they and their students spent using the laptops in a typical class period, almost half (48%) said it was fifteen minutes or more.
- The average respondent said 12% of their lesson plans were devoted mainly to teaching their students technology.
- Percent agreeing or strongly agreeing with the following selected statements:
 - Laptops have made it easier for students to type papers: 65%
 - Laptops have made it easier for students to do research for school projects: 63%
 - I am better able to access diverse teaching materials and resources for my students when using the laptop: 62%
 - I feel my teaching benefits from laptop use: 62%
 - (Lack of) printing access was a big problem for my students: 54%
 - The presence of the laptops in my classroom is disruptive to my teaching: 36%
 - Homework is easier to collect, grade, and give back with laptops: 30%
 - Students use their laptops responsibly: 23%
- 23% felt there has been too much emphasis on technology training; 38% said they have received the right amount.
- Percent saying the following types of tech training/instruction were at least somewhat effective (out of those who participated in or used that type):
 - Informal help from students (n=69): 94%

Informal help from colleagues (n=82): 94%

- Self-taught (n=79): 87%
- Regular meetings with colleagues (n=58): 86%
- ITS support (n=65): 85%
- Help-desk technical support in their school (n=77): 82%
- TRT training (n=47): 75%
- Local workshops/seminars on how to use the laptop (n=81): 68%
- Library of Congress training (n=36): 67%
- TIE training (n=63): 67%
- Classroom Connect training (n=34): 65%
- Local workshops/seminars on integrating the laptop into curriculum (n=83): 63%
- Staff development workshops (n=81): 73%
- North TIER Consortium online training (n=75): 55%

Many teachers gave illuminating responses to the open-ended questions. A representative sample of perceived benefits of the laptop program:

- “Students are able to type up notes and research paper, create PowerPoint presentations - keeps students interested in work.”
- “They have opened the world up to my students who need to acquire as much background knowledge as possible. My students have learned to think in ways that the computer enhances and they have learned to be creative and find information that they need. They can now scan effectively, make presentations and write using the computer.”
- “Students are exposed to the different programs and the internet which has great opportunities for research and extended learning.”
- “Leveling the playing field by providing access to the internet.”

Some of the perceived problems:

- “Pornography, downloading games, music, inability of students to get online at home to do realistic amounts of research, students trashing computers.”
- “Lack of printer access, inability to monitor computer usage by students, lack of internet access in students homes, lack of maturity/discipline by students, too much gaming and internet play by students, lost/missing/broken laptops, too much emphasis by Central Office personnel on laptop use, lack of student e-mail, students lack knowledge to use computers effectively.”
- “Technological problems precluding use of laptops by whole class or by individuals. Student overuse of computers for recreation: music, games, virtual shopping on commercial web sites. The disparities of proficiency levels among students in a class and among teachers.”
- “Laptops are replacing the need to teach the basics. Our kids can surf but can’t read.”

- “The students are not responsible with them, they use them for everything except school work. Many students have them taken away, so they can not (sic) do the same work as the other students.”

Other general comments and suggestions:

- “The initiative is useful but I’m not sure how useful, relative to the costs and time involved in issuing them, fixing them, and using them. I can never count on the fact that my students will either have them or be able to access information in class, so I rarely use them in lessons. Ditto with homework - the only thing students can do with them at home is word processing and then they have to print out in school, which can be an obstacle.”
- “It’s great. I think the students should have email accounts and be able to print in places other than the library.”
- “I am concerned about the physical condition of the Dell laptops here at Minnie Howard. They have been used and abused by 9th graders for 2 years. Will all of the laptops be in good working order when school starts in September? Will there be enough replacements for those not returned this year? I think that we would be better served by using class sets of computers rather than giving each student their own computer. Laptops could be checked out for those who will be having long term assignments.”
- “A great start to the program. We got a little ahead of ourselves and had to play some serious catchup but I guess that’s better than being behind ourselves. Thank you for going out on and putting us out on a limb.”
- “The best way to utilize these computers is to give students without computers at home one to take home and leave at home, except when required to bring back for a check. Then, have clean working and charged computers in cabinets ready for class work. This way we would have 100% working and available class computers.”

2005 Parent Survey (July 2005)

In July 2005, questionnaires were mailed to parents of all Minnie Howard, STEP, and T.C. Williams students to gauge their opinions of the laptop program after its first year at TC and STEP and second year at MH. Each of the 2,852 questionnaires was mailed along with a cover letter explaining the survey and a self-addressed pre-stamped envelope in which respondents were to return the questionnaire to ACPS’ Office of Monitoring and Evaluation. Parents were also given the option to take the survey via fax or internet, or in Spanish via telephone. Fifteen envelopes were marked as undeliverable by the U. S. Postal Service, leaving 2,837 households receiving the survey. A total of 486 responded (459 via mail, 18 via internet, 5 via fax, and 4 via telephone) for a response rate of 17.1%, somewhat better than expected. *(For complete results, see Appendix I).*

Because 43% of parents provided their names, Monitoring and Evaluation was able to link parent respondents to students’ demographic information. Based solely on this names subsample, which may not be representative, it appears that the ethnicities of these parent respondents were: White = 47%; African American = 34%; Hispanics = 10%; and Asian = 8%. Approximately, 34% were from, free/reduced meal homes, 18% ESL, 9% Special Education,

35% TAG, and 30% were from Minnie Howard. As appropriate, in later analysis, mention will be made of the above names subsample of parents for whom demographic information is known. Obviously, caution is urged when extrapolating to all of the parent respondents. However, the subsample is the best approximation available to estimate demographic characteristics of all the respondents.

Parent perceptions were mixed, but seemingly more negative than positive, particularly in their open-ended responses. The overarching theme of the parents' qualms was that laptop usage contained too many restrictions with regard to printing capability, internet access, and file transfer (from student laptop to home computer, and vice versa). Another problem was that some teachers did not accept electronic versions of homework and papers, and some did not make use of the laptops at all. The combination of factors led to some parents' to view the laptops as nothing more than expensive word processors. Overall, parents saw the laptop program in its current state as too limited, although many felt the problems were fixable.

Despite the unfavorable parent opinion, many parents saw a benefit in giving laptops to students from lower income families and other students who would otherwise have little exposure to technology. Based on the subsample demographics, this feeling was shared consistency across all of the various subgroups, including those in free/reduced meals homes and those who were regular priced meal homes. Overall opinion of the laptop was higher for parents in households without a home computer, although several such parents stated they would like to see an increase in the time allotted for home dial up access. (In the 2004-05 school year, MH students were allowed to connect to the school server from home through a regular telephone line, for up to an hour a day).

Results also indicate that there is a healthy degree of communication between students and their parents regarding the laptop program, as evidenced by the numerous parents giving detailed accounts of the challenges and successes encountered by their children.

Opinions tended to be split along socioeconomic lines: parents of children receiving subsidized meals expressed more satisfaction with the program than did other parents. Lower socioeconomic parents had much higher levels of agreement with the following statements than did other parents:

- The laptop made it easier for my child to do research for school projects;
- The laptop made it easier for my child to type papers;
- My child learned a lot about computers this school year;
- I learned a lot about computers by using my child's laptop;
- My child feels more comfortable using computers than he/she did a year ago;
- The laptop made it easier for me to help my child with schoolwork; and
- Having access to a personal laptop made a positive difference in the way my child did school work.

These parents, however, also assigned lower ratings to the importance of technology for their children's education.

A summary of key findings from the parent survey:

- 24% of respondents agreed or strongly agreed that there are too many problems with the laptop program.
- 57% agreed or strongly agreed that the laptop made it easier for their child to type

papers, 56% agreed or strongly agreed that the laptop made it easier for their child to do research for school projects, and 53% agreed or strongly agreed that having access to a personal laptop made a positive difference in the way their child did school work.

- 53% reported their child used the laptop for homework/research for three hours or less per week. 61% said their child took the laptop to school every day.
- 24% opined that having access to technology is very unimportant for their child's education. (It is unknown what percentage felt this way before the rollout.)
- Over 90% have computers at home. Of these, over 90% have internet access at home.

Some of the perceived benefits of the program:

- "Makes a computer available to those that do not otherwise have the opportunity."
- "It helped me to develop some skills about using computers."
- "The laptop program did not help my child at home. However I hope it provided needed support to other students."
- "She did use it at school in her World Civ class to access sites and programs made by her teacher."

Some of the perceived problems:

- "Even though we have a computer at home with internet, my child cannot use the school laptop at home to research from the net. She can only save her papers from school from the internet. Considering other kids that do not have internet at home, they will not be to do their homework and will have to wait until they go back to school."
- "Not enough printers. Teachers do not utilize the technology."
- "Need text on CD or daily assignments via web - why are kids schlepping heavy text for 2 pages of material? Integrate web into curriculum - every subject has wealth of online info."
- "You didn't do your homework before going to implementation. This survey should have been sent out 2 years ahead of implementation. Nowhere near enough planning went into this. Better to have started it in 2-3 schools in 4th or 5th grade and gradually expanded."
- "Something is always broken on it and when it's taken to get fixed the student's work is always erased."
- "The biggest problem is that kids these days look up stuff that isn't appropriate."
- "Teachers don't have time to work the laptops into their curriculum."
- "Could not print at home. Some teachers wouldn't accept soft copy of homework."

Could not connect to home network- printers/scanners etc. Slow dial-up vs. broadband.”

Other comments/suggestions:

- “If there are problems/benefits that a parent should be made aware of, that information should be communicated to parent independent of the student letter, e-mail, website a parent can check.”
- “The laptop was a great help for my child e.g., when we go on short trips on the weekend, he gets to take his homework along with him, saving it on the laptop instead of paper.”
- “I believe the city could save money if the laptops were given on a need basis, i.e., to those students who do not have access at home. Our experience was that the laptop was not a useful tool for our son who already had experience at home and access to computers at home which were more useful than the school supplied laptops. Biggest difficulty with the school laptops was inability to print other than at the library. There was also the inherent challenge to hack the school laptops!”
- “I applaud this effort to get a handle on the issues surrounding the laptops, and I am encouraged that Mr. Dawson's shop is handling the survey because I know him to have the utmost integrity!”
- “Would be helpful if she could get online for longer periods of time at sites provided at school.”
- “My daughter was a member of the ‘pilot’ group at MHS. She used the laptop daily there. This year at T.C. between some teachers not using it and the fact that it had been essentially stripped down to a word processor that could not print, it was just a waste of potential, waste of space in her backpack, and a waste of taxpayer money. The program needs to be re-evaluated. I was a huge supporter of the program until this year's experience.”

An analysis of the nonpareil survey question was carried out on the names subsample of parents to see if their demographic characteristics could further clarify responses. As noted earlier, caution must be exercised when interpreting the responses of this group because they may not be representative of all surveyed parents.

What is known though, is that the names subsample is not entirely representative of ACPS high school students. For example, African-Americans and Hispanics are under represented (67% of high school and 43% of the names subsample), while Whites are over represented (26% of high school and 48% of names subsample) Asians were the most representative ethnic group with 7% in the high school and 8% in the subsample. In a similar vein, free/reduced meal status parents were underrepresented as they comprised 33% of the names subsample while the comparable high school percentages were: Minnie Howard = 47%, T.C. Williams = 40%, and STEP = 56%.

Table 7 displays parent responses of the names subsample to the question. “ Do you have a computer at home?” broken out by the selected subgroups. For comparisons sake, student responses to this question, as previously shown in Table 6, have been added.

TABLE 7

Percentage Who Said They Do Not Have A Computer at Home,
by Respondent (Parent/Student) and by Selected Subgroups ^a

	Parents		Students	
	Number	%	Number	%
All Students	480	9%	716	9%
American Indian	1	- ^b	2	- ^b
Asian/Pacific Islander	18	0%	55	11%
Black	70	23%	282	15%
Hispanic	21	38%	156	24%
White	102	2%	221	2%
Unspecified Race	268	6%	NA	NA
Economically Disadvantaged Students	71	25%	296	20%
Students with Disabilities	20	30%	70	17%
LEP Students	37	16%	124	15%
TAG Students	74	3%	201	5%

^a Analyses were conducted by matching the respondent's survey to the student's SASI demographic data. Match rates were 43% for parents and 100% for students.

^b Less than 5 students tested.

Along with previously mentioned caveats about the names subsample, readers should keep in mind that the type of computer was not qualified in the parent's survey. So, an affirmative response could mean a 1995 Windows based machine with a 64k processor or, it could mean a home wireless network of multiple 1 gigabyte RAM machines.

As may be seen in Table 7, the percentage of parents reporting no computer at home varied widely by ethnicity. Thirty-eight percent of Hispanic and 23% of African-American parents indicated that they did not have a computer at home, while only 2% of White parents said that they did not have a computer at home. Parents characterized as economically disadvantaged or the parents of students with disabilities also had relatively high percentages of households without computers. Interestingly enough, student responses were in synchrony with their parents within some subgroups, but not in others.

For example, both White students and parents indicated that about 2% of their homes had no computer. Similarly, economically disadvantaged, LEP, and TAG figures were parallel. Data for Asians, Hispanics, and students with disabilities showed wider divergence. These differences could be caused by that fact that responding parents and students, both subsets of larger populations, did not overlap. There is also a social desirability aspect to answering a question about home computer access that may have impacted either group's responses.

Comparison of Responses to Similar Questions on Student, Teacher, and Parent Surveys

Table 8 summarizes and compares the survey responses of students in October 2004 and June 2005 to those of teachers and parents in 2005. The intent of this comparison was to gain insight into the various groups who obviously impact students' learning and use of technology. All of the previously mentioned caveats are still at work in this table, so caution is advised.

The overall results displayed in Table 8 portray an interesting symmetry across the four groups. Regarding the use of technology and computer skills, it appears that teachers lag behind students and parents. Teachers felt, more so than students and parents, that the laptops made it easier for students to do research and type papers. Perceptions of how often students brought their laptops to class varied markedly. Students and parents were nearly identical in their recollection of laptop use per week. Well over 75% of these two groups saw laptop use at three or more days per week and zero usage at 4% or below. In contrast, only 34% of teachers thought students took their laptop to school on three or more days per week and the zero usage figure was 25%.

TABLE 8

Comparison of Responses to Similar Questions on Student, Teacher, and Parent Surveys

	October 2004 Student	June 2005 Student	2005 Teacher	2005 Parent
Which of these statements best describes your feeling about using technology?				
I avoid using technology as much as possible.	2%	3%	3%	5%
I use technology a lot, but it's just a tool for me, not a hobby.	20	29	44	31
I enjoy working with technology and learning new ways to use it.	62	52	35	50
I often help my friends with their technology problems and I like showing them how to use technology in different ways.	15	15	17	14
How would you describe your overall computer skills?				
Very poor	1%	1%	0%	3%
Poor	2	1	3	3
Fair	20	16	33	26
Good	45	43	34	37
Very good	32	39	29	31
Has computer at home:	82%	87%	84%	91%
Has internet access at home:	77	81	85	82
Has printer at home:	–	78	–	83
How important to student's education is having access to technology?				
Very unimportant	7%	13%	5%	24%
Somewhat unimportant	5	9	10	3
Don't know	8	9	5	3
Somewhat important	27	31	41	15
Very important	53	39	39	55

Table 8, cont'd

	October 2004 Student	June 2005 Student	2005 Teacher	2005 Parent
Was it easy to take/administer SOL exams online?				
Yes		81%	47%	
No		9	4	
Not applicable		10	48	
Agree or strongly agree with the following statements:				
Laptop made it easier for student to do research for school projects.		59%	72%	55%
Laptop made it easier for student to type papers.		75	85	56
The laptops are more trouble than they are worth. (Students)/ There are too many problems with the laptop program. (Parents)		28	–	22
Student(s)/my child feel(s) more comfortable using computers than a year ago.		51	46	45
Student/parent worried about losing or damaging laptop		49	24	46
Having access to a personal laptop made a positive difference in the way students did school work.		54	35	51
Not being able to print from the laptop was a major inconvenience for student.		58	54	–
How often student took laptop to school/class:				
Never		2%	25%	4%
One day a week		4	29	5
Two days a week		5	12	7
Three days a week		7	5	7
Four days a week		8	2	7
Every day		74	27	64
Don't know		–	--	6

Table 8, cont'd

	October 2004 Student	June 2005 Student	2005 Teacher	2005 Parent
Hours per week student used laptop for homework (HW) and research (Res):		<u>HW</u>	<u>Res</u>	<u>HW+Res</u>
Zero hours per week		12%	7%	9%
Less than one hour per week		29	19	15
1-3 hours per week		29	37	31
4-6 hours per week		15	18	18
7-9 hours per week		7	9	8
10-12 hours per week		4	4	8
13 or more hours per week		4	4	6
Don't know		-	--	5
Number of days student was unable to use laptop because it needed repairs:				
0 days			24%	39%
1 or 2 days			23	11
3-10 days			37	28
More than 10 days			16	11
Don't know/no response			-	10
What is the highest educational level completed by any adult in your household?				
Less than a high school diploma			6%	5%
High School diploma or GED			20	10
Some college and/or technical training			19	16
Associate degree			8	7
Bachelor degree			18	22
Advanced degree			26	37
No response			3	4

Table 8, cont'd

	October 2004 Student	June 2005 Student	2005 Teacher	2005 Parent
During this school year, how much have you learned in school (your students learned from you) about the following:	(Percent responding "A lot" or "Some")			
Technology in general		47%	47%	
Computers in general		52	43	
Laws and policies related to technology		34	37	
Searching the Web for information		60	58	
Databases and spreadsheets		37	28	
Word processing		57	45	

Classroom Observations - T.C. Williams, STEP, and Minnie Howard

During April and May 2005, an analyst from Monitoring and Evaluation visited classes at T.C. Williams, STEP, and Minnie Howard to observe usage of laptops (and to a lesser extent, technology in general) in the classroom. Fourteen different classes were observed, usually for one full period each (most of which were 95 minutes long). The classes ranged in size from 4 to 24 with an average of 15.4 students in each. They covered a wide variety of subjects, grade levels, and student ability. Ten of the classes were specifically recommended for observation by the Principal, staff, or students as exemplars of laptop usage, while the others were chosen at random by the observer.

TABLE 9
Summary of Classroom Characteristics

	School	Subject	Level	Grades	#Students	% of period using laptops ^a
1.	TC	Physics	Regular	11-12	19	20
2.	TC	Life Skills, Vocational	SPED	10-11-12	6	0
3.	TC	English Literature & Composition	AP	10-11	18	10
4.	TC	Computer Math	Regular	11-12	14	95
5.	TC	Nurses Aid	Career/Tech	11-12	15	0
6.	TC	US History	ESL	11	9	90
7.	TC	Astronomy	“Above average”	11-12	24	15
8.	TC	Geometry	Regular	10	17	75
9.	MH	World Literature	H	9	21	80
10.	MH	Earth Science	ESL	9	20	90
11.	MH	Human Growth and Development	Regular	9	23	100
12.	MH	Biology	Regular	9	20	75
13.	STEP	English 10	Regular	10-11	4	100
14.	TC	Auto	Vocational	10-11	6	0

^a *Note: On different occasions, at the beginning of a period, when the observer (and sometimes the principal) was looking for classes that would be using laptops that day, it was necessary to inquire in several classrooms before finding a suitable one. Approximately 30 such classes were visited briefly and because they did not use laptops that day, they do not appear in the table above. This table should not be used to estimate the percentage of classes using laptops.*

The primary purpose of observation was to gain first-hand knowledge regarding how much teachers and students use their laptops during a typical period, how adept they were with the technology, what programs were used, what other ways the laptops were used, and the benefits and pitfalls of the technology integration in its current state.

Observation was conducted to be as unobtrusive as possible. Teachers and students were made aware of the purpose of the observation, but aside from that, classes went on as usual. The observer generally sat quietly in the back of the classroom, although in a few classes he was invited to look on with a student or to circulate around the classroom in order to get an up-close view of the laptops in use.

Although comments from teachers and students were not specifically solicited, most teachers eagerly offered up their opinions of the Technology Integration and with minimal probing, additional pertinent information was acquired. Several students also volunteered feedback.

Classroom Observations

The observer witnessed a wide range in amount and scope of laptop usage. In two classes the laptops were not used at all, while in two other classes the students used their laptops for the entire period. In a third set of two classes, teachers used the laptop for instruction almost the entire period, while students took notes.

In the two classes where laptops were not used at all, the students knew that they would not need their laptops in that class that day, so most did not bring them, although a few did. In the other classes, there were usually two or three students who did not have their laptops with them; most of these instances were a result of students forgetting to bring them to class or their laptops were in for repairs at the help desk, although some had theirs confiscated for misuse.

Those teachers who used the laptops appeared very comfortable with the computer technology, as did most of their students. Much of the computer usage was standard computer fare (such as Excel, PowerPoint, various websites), but it was all appropriate to the lessons. Three teachers had their own personal websites set up for class use, containing academic resources available to their students including lesson outlines, notes, links, and homework.

Several teachers also incorporated subject-specific applications and websites into their lessons, such as Think.com and collegeboard.com. One application that stood out was an interactive whiteboard device (from SMART Technologies Inc.), used in a mathematics class. With this technology, the teacher was able to manipulate, stretch, rotate and move geometric shapes projected on a special whiteboard by touching the board with his hand and a special pointing device. This seemed to be a far more effective instructional method than traditional hard copy diagrams to present the geometric concepts of rotation and translation.

In some classes, students collaborated with each other on work involving the laptops; in others, they worked independently; and in some, they switched seamlessly between collaborative mode and independent mode, depending on the task.

The observation period was not free of technological problems. During the first day of observation, some teachers expressed frustration that the server for the R:/ drive, which contains individual folders for teachers and students, was not operating correctly. Students were unable to access teacher folders for assignments and graded homework, and teachers were unable to

access student folders for a drop-off of materials. This problem had been going on for several days. More than one teacher surmised the problem had to do with the recent SOL load testing. There were no major computer problems during subsequent days of observation, although there were some scattered incidents concerning the lack of wireless connectivity or battery power.

There was also some unauthorized nonacademic usage of the laptops by students during class, such as online shopping, games, chat rooms, or arranging photo albums. Observing such usage by individual students was done surreptitiously and unobtrusively in order to have as little impact as possible on class activity. Thus, it was difficult to gauge accurately and fully, but it appeared that most classes contained a small group of students who spent at least part of the class engaged in extracurricular laptop activities. (It should be noted that there were also some students without laptops who engaged in off-task activities.) Teachers were well aware of the potential for misuse, but their general feeling seemed to be that it was a small price to pay.

Non-classroom Observation

The observer gained further insight into laptop usage by watching student usage in the library and cafeteria during one period, and through informal conversation with TC Help Desk staff. A walk through of the cafeteria showed an estimated 40% of students had their laptops up and running during lunch, with some doing academic activities and some doing nonacademic activities (games, chat, online shopping, etc.). Several students were using their laptops in the library, in addition to the students who were using the library's desktop computers.

A Hewlett-Packard contractor working at the Help Desk stated that fewer than 100 laptops were in for repairs at any given time, and that most problems are quickly fixable. Only a few have been damaged beyond repair, mainly due to accidents and/or gross negligence (not the contractor's words): one was run over by a car, and another fell down a sewer. Also, some screens have been broken due to careless handling.

The observer also noted the presence of numerous signs in the hallways and on classroom doors strongly reminding students that they would need their laptops in class that day. This highlights the emphasis placed on laptops by the faculty. The signs were particularly prevalent in Titan Village.

All in all, it appears the laptops are being used as an effective instructional tool, although some (fixable) problems do exist.

Teacher and Student Comments Gathered During Observations

While opinions of the teachers and students were not a prime focus of the observations and thus were not actively solicited, many teachers and several students were eager to volunteer their opinions.

Their opinions were valued, as they helped point out strengths and weaknesses of the Technology Integration, as well as of particular programs. Some comments were broad in nature, along the lines of “The students get a lot of use out of the laptops.” Through conversational probing, the observer was able to elicit opinions of a more specific nature. Following are paraphrased summaries of comments from teachers and students. Each numbered paragraph represents the comments of one person.

Teacher comments

1. Teacher was still getting accustomed to inbox (teacher folder). Problems: Can only print in library. Training consisted of two afternoons with the TRT. Didn't need much training. It took a week to get laptop.
2. Class uses laptops less than once per month, mainly for research projects, anatomy, physiology, cultural stuff. Students like the laptops, although they didn't at first. Sometimes a student's or teacher's laptop is not charged; this poses a problem because the teacher has no keys to the cabinet so can't get batteries, since it's not the teacher's regular classroom. Teacher always brings laptop. There is frequent inappropriate use by students.
3. Web access is more reliable than R: drive access for students, at school anyway. Most students have Internet access at home; those who don't must copy work to hard drive. Laptops are used in class every day.
4. Teacher feels he is about average when it comes to technology use. Technology training has been good, and there has been a good amount. Students learn best when technology is a tool but not a main focus of instruction. Doesn't like virtual labs -- likes classical method, hands-on.
5. “Do we want our students familiar with and comfortable and competent to function in the very near future of "always-on" internet, immediate access to information, services, and products or not? I'm assuming we're all going with yes, and if that's the case, then I think we're taking the steps in the right direction.”
6. Teacher uses Whiteboard very frequently. Students have gotten familiar with it.
7. The laptops are the “greatest thing ever to happen to teaching.” Labs with sensors and probes need to be done on desktops due to the lack of USB ports. The lack of USB ports is not a big nuisance because it is easy to conduct labs on the desktop computers, then move lab results from desktops to student folders to laptops. The teacher spends about two hours for preparation of laptop.
8. (From Life Skills class): Class makes greeting cards on computers sometimes. Some students

type greetings on their laptops. Class created a photo album from a class trip to craft store; a photo album is on the class computer; students picked out favorites to put in a class yearbook. The teacher likes technology. Laptops generally useful but can't print. Sometimes in class students will read along to books on "tape" played on the computer's CD drive. They also occasionally use MathQuest.

9. Class uses laptops often during the year. PowerPoint, Excel, Word, research, Internet. Think.com is not good for some things - many students find workarounds to the firewall: lot of chat, instant messaging. Students enjoy doing projects on laptops but some just copy material directly from web to projects without any of their own input. Some students never used a computer before this school year, but they learn quickly, largely through peers. The technology is very good for ESL students. The teacher prefers Apple to Windows. Minnie Howard is tech-oriented. "Flanagan" is a good application for biology and earth science.

Student comments

1. Repairs are needed often. Problems are usually fixed pretty quickly.
2. "The laptops are more trouble than they are worth." (A teacher replied, in obvious disagreement, "That's one student's opinion.")
3. Class learned much using the laptops: PowerPoint, Word, internet for research, how to find good websites, Google, Inspiration, A+, essays, homework, dial-up.
4. Some students, of course, will be distracted by the ability to chat, shop, instant message, but even if they didn't have computers those students would still be doing things like talking or drawing or passing notes.
5. (From Life Skills class): Student loves using his laptop, especially typing and creating photo albums.

Discussion

The survey results offered a veritable buffet of considerations. Students, their parents, and teachers have illuminated strong points, weak points, and possible choke points as the Technology Integration strives toward optimization. Since this evaluation was formative, many of the suggestions for improvement provided by stakeholders have already been incorporated into the ever evolving program.

As illustration, a host of the issues brought to the fore are addressed in the current ACPS Technology Plan. E-mail accounts and increased printing capabilities are scheduled to be instituted in the 2005-06 school year. Increased internet access from home is now a reality. All MH, TCW, and STEP students now have dial-up access to the ACPS network for up to two hours every evening and have wireless access during weeknights at George Washington Middle School and TCW. While many benefits would no doubt come about were students to gain full unfettered network rights, these benefits must be balanced against the division's need to protect both the privacy of its students and the security of its computer network. Once the robustness of firewalls, antivirus software, and monitoring software can be assured by technical staff, it might be feasible to grant additional access to a small group of students on a trial basis.

Another complaint that can be easily addressed is that of the physical strain on students caused by the weight of the laptop in addition to their myriad textbooks. Since many textbooks are now available in electronic format, curriculum staff have been investigating and comparing traditional versions with electronic versions. Electronic availability also plays an important role in text adoption criteria. Aside from reducing the net weight of a student's materials, electronic texts are faster and cheaper to update: students may be more apt to relate to and understand social studies lessons if their texts use examples about the current President rather than former Presidents. One school, Empire High School, in Vail, AZ, began an all-wireless, all-laptop program at the beginning of the 2005-06 school year, trading their textbooks for iBooks. While it is too early yet to glean any meaningful results from their decision, it may be useful in the future for examining the feasibility of such a plan in ACPS.

Filtering, another area of complaint, is a ticklish area. However, in a time when "a wardrobe malfunction" has entered the popular lexicon, when song lyrics describe prurient activities in graphic detail, when the vice president of the United States drops the F-bomb on the floor of the U.S. Senate, with barely a ripple in the popular media, perhaps it is time for schools to revisit the filtering mechanisms on students' computers. An October 13, 2005 article in eSchool News Online entitled, "Overzealous Filters Hinder Research" argues that "the internet-content filters most commonly used by schools block needed, legitimate content more often than not." This article references a U.S. Department of Education study, which estimates that 90% of K-12 schools employ some sort of web filtering technology in deference to the guidelines in the Children's Internet Protection Act (December 2000). In essence, schools may not receive the discounts offered by the E-Rate program unless they certify that they have an internet safety policy and technology protection measures in place to block or filter internet access to pictures that: (a) are obscene, (b) are child pornography, or (c) are harmful to minors, for computers that are accessed by minors.

Lynn Sutton, director of the Z. Smith Reynolds Library at Wake Forest University, contends

that excessive filters hurt the students on the wrong side of the digital divide the most. For students with sufficient computer access from home, the filters on school machines have little impact. Similarly, the most computer savvy students will figure out ways to outwit the filters. There is no one easy answer to this conundrum. Even with some lessening of restrictions based on parental permission and/or students' grade levels, "overblocking", when legitimate educational content is blocked by the technology, and "underblocking", when inappropriate content manages to circumvent ACPS filters, will still likely occur. Nonetheless, filtering is a nagging problem that must be addressed by K-12 educators across the country.

All teachers must be trained to a basic proficiency level in technology. While it is not expected that all teachers become computer savants, it is imperative that they are all able to perform basic tasks such as collecting homework in an online folder and using technology to develop enriching lessons in their content areas. A common set of technology expectations for teachers should be delineated by content area and/or grade level. These would be ACPS expectations, above and beyond those required by the State for instructional personnel. The expectations should be fulfilled in the normal process of classroom instruction and assessment. An administrative monitoring process should be developed to systematically monitor the implementation of these basic instructional expectations. If more and/or varied staff development is required, so be it. The laptop investment is an ongoing commitment.

Surveys and the self-assessments of the use of technology conducted in early 2004, prior to full rollout, showed a wide range of technological proficiency, habits, and views among school staffs. While many faculty members (especially at T.C. Williams) reported having a low level of integration of technology into the curriculum, others reported that they used technology often in the classroom in advanced ways. Some staff did not foresee much of a use for computers in the classroom beyond creating spreadsheets for tracking student grades, while others felt it was important to explore new technologies in new ways to use them for instruction. Some teachers found the laptops to be a great leap forwards in opening up new methods of instruction, while others found them to be burdensome due to the time and training required to find ways to incorporate laptops into their lessons. Creating an instructional technological culture will require time, patience, prodding, and opportunity.

Parents, who completed the questionnaire, were largely critical of the program after (and during) the 2004-05 school year, the first year of full implementation in grades 9-12. These results are corroborated by non-survey comments made by parents to the School Board and the schools. While many parents felt the provision of free laptops did provide opportunities for students who had no other means of using computers, parents with computers at home also felt that the program's restrictions on usage and access limited its utility. In many cases, parents felt that the school-provided machines were inferior to their home computers, making them superfluous.

The difficulty with completely understanding the Technology Integration's impact on family computer literacy (a Board goal) is that those most likely to complain about the "deficiencies" of the laptop are also the parents with the most technological sophistication. Understandably, far fewer comments were received from parents who had little or no computer access. The Board's pledge to implement laptop training for parents and family members of students in grades 9-12 will certainly go a long way in establishing the online collaborative learning community that is envisioned.

Recent transmittals (February 13, 2006) to the Board Curriculum Committee from Dr. Elizabeth Riddle, Instructional Technology Coordinator, updated the High School Technology Implementation Plan. In those documents, she addressed many of the topics raised in the surveys of various constituencies during the past two years. Her progress report focused on the following topics: instructional integration, staff development, laptop customization, offsite internet access, printing access, email access, family involvement, evaluation, and the plan for implementation of Blackboard.

When viewed through the original lens of the Board's goals, there is evidence of the Technology Integration's effectiveness. For example, students were asked about their computer use twice during the 2004-2005 school year. In October, 60 percent of students reported that they used a computer at home more than 3 hours per week during the previous school year, but

- only 13% reported using that computer time for schoolwork, homework, or research (q. 2)

Contrasting the usage in the fall, in June 2005, after the first full school year of the Technology Integration:

- 30% of students reported using their laptop computers for more than 3 hours per week for homework (not including research), (q. 1) and
- 31% reported using their laptops more than 3 hours per week for research projects (q. 2).

To determine students' assessment of the level of technology implication in the classroom, they were asked to report *teachers'* use of computers for classroom work, specifically, "how many of your teachers regularly incorporated the use of computers into your classroom work?"

- 15% reported that "most" or "all" teachers used computers in October 2004 (q. 5), compared to
- 30% who reported that "most" or "all" teachers used computers in June 2005 (q. 3).

So, within a single school year, students noticed a doubling of the level of technology implementation. Moreover, student reports confirmed that low levels of technology employment had been reduced substantially.

- 14% reported that "none" of their teachers used computers in October 2004 (q. 5), whereas
- only 4% reported that "none" of their teachers used computers in June 2005 (q. 5).

As technology implementation levels increased, students evaluated that computer use was more effective in three of four core subject areas.

- In June 2005, a smaller percentage of students reported that the technology was used effectively in their English classes (55%) (q. 6), but this percentage was still a majority and in October 2004 students reported that English was the class where technology was already used "most effectively" (66%) (q. 4).

The single-year changes by content area teachers' usage of technology reported by students were:

- 6 percentage point increase for Mathematics (21% vs. 27%),
- 12 percentage point increase for Science (51% vs. 63%), and
- 19 percentage point increase History/Social Studies (50% vs. 69%).

One final aspect of the Technology Integration in 2004-05 that cannot be over stressed is the administration of the 5600 end-of-course SOLs in June 2005. This effort was an unequivocal success and it required an extraordinary amount of administrative collaboration across departments and schools, as well as the allegiant involvement of teachers and students. If the reader desires a sense of what online testing requires, please reference the five page online testing checklist of procedures and deadlines available at the Virginia's Department of Education website:

http://www.pen.k12.va.us/VDOE/Assessment/OnlineTesting/FA05_online_testing_checklist.pdf

The fulfillment of these extensive requirements for online testing meant that students had electronic SOL practice tests on their laptop and they had a far quicker turnaround of results than ever before. In past years, it was common for students who were tested in June to not receive their results until September. The late receipt of results was especially disastrous for those students who needed to retake previously failed SOLs in order to graduate. Online testing shortened the elapsed time to inform students, parents, and teachers of test results from weeks to days.

Online testing had other value-added aspects. For example, the availability of laptops enabled all students to access information on post secondary education, submit web-based applications for admission and financial aid, and to apply for scholarships, e.g., the Scholarship Fund of Alexandria. Probably the most important form for T.C. students is the FAFSA -- Free Application for Federal Student Aid. In recent years, it has moved toward a greater dependence on online submissions, corrections, and reports. Students must complete this form to establish eligibility for need-based grants, loans, work study, and many scholarships. Laptops increased students' opportunities to pursue post secondary education and training.

Valuable classroom instructional time was saved because of the relatively compacted time frame for administering SOL tests. Other meaningful activities, such as preparing for finals, could occur. Another value-added contribution of online testing with the laptops was that classroom space did not have to be devoted to numerous computer labs. In this transition period to the new T.C. Williams, space is a precious commodity. Finally, had the laptops not been purchased, lab computers would have had to have been purchased to meet online testing requirements.

Earlier in this report, a section analyzed the digital divide in the ACPS by examining students' access and use of computers as reported on the Fall 2004 student survey. There was only one student who came from a home where no adult had earned the equivalent of a high school diploma who had 13+ hours per week access as compared to the nearly one-quarter of students living in the higher education levels homes who had such access. That lone student may best define the *raison d'être* for the Technology Integration, that is, to enhance educational opportunities for all students by providing more equal access to technology. Clearly, that access was not equal when the initiative began. Subsequent data collection needs to focus on the quantity of technology use and access according to home educational level. Project success can thus be quantified by determining computer use for all students and tracking the change. A narrowing of the gap in computer use by household educational level will provide a clear indicator of improved equity.

ACPS will need to monitor non academic indices as well. Such areas as attendance, student motivation, engagement in problem solving, improved self-esteem, style of student presentations, and the quality of student writing, teacher communication, and parent-school

communication are Technology Integration, now renamed and conceptually recast more appropriately as the High School Technology Integration Project, evaluated by an outside consultant demonstrates a continued commitment to make the ACPS effort exemplary.

REFERENCES

Apple Computer, Inc. "Research: What It Says About 1 to 1 Learning." Apple Computer Inc., June 2005.

Ascione, Laura. "Teachers' tech use on the rise nearly nine in 10 educators say it has changed the way they teach." *eSchool News Online*, August 29, 2005.

Bartels, Fred. *Reflections on the RCDS Laptop Program After One Year*. Rye, NY: Author, 2000.

Bonifaz, Alejandra and Zucker, A. 2004. "Lessons Learned about Providing Laptops for All Students." (for NEIRTEC) Downloaded February, 2006 from <http://www.neirtec.org/laptop/LaptopLessonRprt.pdf>

Borja, Rea R. "Internet Filtering Is Balancing Act For Many Schools." *Education Week*, January 16, 2002.

Cohn, David. "Boards Get Brains, Chalk Vanishes?" *Wired News*, June 9, 2005 from <http://www.wired.com/news/technology/0,1282,67710,00.html>

Dede, C. "The scaling-up process for technology-based educational innovations." In *Learning with Technology. 1998 ASCD Yearbook*, edited by C. Dede, 199-215. Alexandria, Va: Association for Supervision and Curriculum Development (ERIC Document Reproduction Service No. ED416857), 1998.

Development Associates, Inc. Study Team. *Henrico County Public Schools iBook Survey Report-DAI*. Arlington, VA: Development Associates, Inc., February 10, 2005.

Diaz, Roberto L. "Internet Filtering in Public Schools: An Overview of the Struggle Between the Endorsers and the Detractors." Alexandria, VA: Institute for Public Research at CNA Corporation, 2003.

eSchool News Online. "Michigan laptop program shows early success." Available on-line at <http://www.eschoolnews.com>, July 2005.

Fairfax County Public Schools, Office of Program Evaluation. *Laptop Computer Pilot Final Report 2002-2003*. Fairfax, VA: Fairfax County Public Schools, December 2004.

Frechtling, J., and Sharp, L., editors. *User-Friendly Handbook for Mixed Method Evaluation*. Arlington, VA: National Science Foundation, 1997.

Hawkes, M., and Cambre, M. "Identifying the effects." *Principal Leadership*, 1(9):48-51, 2001.

Hubbard, Julie. "Schools using more technology to keep students engaged in learning." *Macon Telegraph*. Available at MaconTelegraph.Com. February 15, 2005.

Lane, Dawn M.. *The Maine Learning Technology Initiative: Impact on Students and Learning*. Gorham, ME: University Of Southern Maine, Center for Education Policy Applied Research, 2003.

Maine, State of, Department of Education, Task Force on the Maine Learning Technology Endowment. *Teaching and Learning for Tomorrow: A Learning Technology Plan for Maine's Future*. Augusta, Maine: DOE, 2001.

Maine, University of Southern Maine, Center for Education Policy Applied Research, Maine Education Policy Research Institute. *Teacher, Student, and School Perspectives Mid-Year Evaluation Report*. Gorham, ME: Maine Education Policy Research Institute, University of Southern Maine, 2003.

Murray, Corey. "Overzealous filters hinder research." *eSchool News Online*. October 13, 2005.

The Mitchell Institute. *Great Maine Schools Project. One-to-One Laptops in a High School Environment. Piscataquis community High School Study*. Portland, Maine: The Mitchell Institute, February 2004 from http://www.mitchellinstitute.org/Gates/pdf/One-to-One_Laptops_Report.pdf

Myers, Megan. "School worry about up keep of Technology." *South Dakota Free Press*. January 12, 2006.

National Telecommunications and Information Administration (NTIA). *Falling through the net: A survey of the "have nots" in rural and urban America*. July, 1995 from <http://www.ntia.doc.gov/ntiahome/fallingthru.html>,

Olson, Stefanie. "The 'Millennials' usher in a new era." *CNET News.com* November 18, 2005.

Parsad, Basmat and Jones, J. *Internet Access in U.S. Public Schools and Classrooms: 1994-2003*. National Center For Education Statistics. Washington, DC: U.S. Department of Education, Institute of Education Sciences, 2005 from <http://nces.ed.gov/pubs2005/2005015.pdf>.

Pate, Nilam. "Laptops offer several advantages: Is the laptop program worthwhile?" Roanoke, VA: *Roanoke Times*, October 12, 2005.

Ress, D. "Henrico County strongly behind laptops." Richmond, VA: *Richmond Times-Dispatch*, May 28, 2004.

Rockman et al. "Powerful tools for schooling: Second year study of the laptop program." San Francisco, CA: Author, 1998.

Russell, R., Bebell, D., & Higgins, J. *Laptop Learning: A Comparison of Teaching and Learning in Upper Elementary Classrooms Equipped with Shared Carts of Laptops and Permanent 1:1 Laptops*. Chestnut Hill, MA: Boston College, Technology and Assessment Collaborative, 2003 from <http://www.bc.edu/research/intasc/PDF/Andover1to1.pdf>

Sandholtz, J. and Reilly, B. "Teachers, Not Technicians: Rethinking Technical Expectations for Teachers." *Teachers College Record* 106(3):487-512,2004.

Schontzler, Gail. "Online learning is changing education in Montana." Bozeman, MN: *The Bozeman Daily Chronicle*, July 10, 2005.

Sivin-Kachala, J., and Bialo, E. *Research report on the effectiveness of technology in schools* (6th ed.). Washington, DC: Software and Information Industry Association, 1999.

Waraftig, Alan. "A Costly Gift." Reproduced in the Teacher Magazine section of <http://www.edweek.org>, October 1, 2005.

Ward, Lucy. "Working-class children fall foul of digital divide." United Kingdom: Guardian Newspaper Limited from <http://www.education.guardian.co.uk>, April 28, 2005.

Welch, William M. "Schools ask parents to pay up before kids log on." *USAToday* January 3, 2006 from http://www.usatoday.com/printedition/news/20060103/pay_for_laptops03.art.htm

Wendland, Mike. "School laptop project at risk." Detroit, Michigan: *Detroit Free Press*, April 2005 from <http://www.FreePress.Com>

Whitehead, B. "How does technology measure up?" *Principal* 80(2):45-46, 2000.

Willard, Nancy. "Filtering the Internet: Should Private Companies Make Schools' Decisions About What Online Content Is Safe for Their Students?" *Education Week*, March 27, 2002.

Zucker, Andrew A. and Raymond McGhee. 2005. *A Study of One-to-One Computer Use in Mathematics and Science Instruction at the Secondary Level in Henrico County Public Schools*. Education Development Center, Inc and SRI International.

[http://www.henrico.k12.va.us/Announcements/tech_eval/Henrico County Report_22Feb05.pdf](http://www.henrico.k12.va.us/Announcements/tech_eval/Henrico%20County%20Report_22Feb05.pdf)

APPENDIX A

Virginia's Technology Standards of Learning for Grades 9-12

Computer/Technology Standards of Learning

Grades 9-12

Basic Operations and Concepts

-C/T 9-12.1 The student will demonstrate knowledge of the nature and operation of technology systems.

- Discuss the inherent advantages and limitations of technology.
- Define the relationship between infrastructure, electronic resources, and connectivity.
- Identify and describe the impact of new and emerging technologies and their applications.

C/T 9-12.2 The student will demonstrate proficiency in the use of technology.

- Identify and resolve hardware and software compatibility issues.
- Develop and communicate strategies for solving routine hardware and software problems.

Social and Ethical Issues

C/T 9-12.3 The student will demonstrate knowledge of ethical, cultural, and societal issues related to technology.

- Assess the potential of information and technology to address personal and workplace needs.
- Demonstrate knowledge of electronic crimes such as viruses, pirating, and computer hacking.
- Explore and participate in online communities, and online learning opportunities.
- Identify the role that technology will play in future career opportunities.

C/T 9-12.4 The student will practice responsible use of technology systems, information, and software.

- Adhere to fair use and copyright guidelines.
- Adhere to the school division's Acceptable Use Policy as well as other state and federal laws.
- Model respect for intellectual property.

C/T 9-12.5 The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity.

- Respectfully collaborate with peers, experts, and others to contribute to an electronic community of learning.
- Model responsible use and respect for equipment, resources, and facilities.

Computer/Technology Standards of Learning

Technology Research Tools

- C/T 9-12.6 The student will use technology to locate, evaluate, and collect information from a variety of sources.
- Integrate databases, spreadsheets, charts, and tables to create reports.
 - Use available technological tools to expand and enhance understanding of ideas and concepts.
- C/T 9-12.7 The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.
- Analyze and draw conclusions about the comprehensiveness and bias of electronic information sources.
 - Design and implement a variety of search strategies to retrieve electronic information.

Problem-solving and Decision-making Tools

- C/T 9-12.8 The student will use technology resources for solving problems and making informed decisions.
- Investigate and apply expert systems, intelligent agents, and simulations in real-world situations.
 - Select and apply technology tools for information analysis, problem-solving, and decision-making.
 - Use technology resources such as educational software, simulations, and models for problem-solving, and independent learning.
 - Produce and disseminate information through collaborative problem-solving activities.

Technology Communication Tools

- C/T 9-12.9 The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
- Determine the most effective tool, format, and style to communicate to specific audiences.
 - Use technology-based options, including distance and distributed education, to collaborate, research, publish, and communicate.
 - Practice self-directed use of advanced technology tools for communicating with specific audiences.

APPENDIX B

LoTi Profile Level Definitions

LoTi Profile Level Definitions

Level 0 - Nonuse

Technology-based tools (e.g., computers) are either (1) completely unavailable in the classroom, (2) not easily accessible by the classroom teacher, or (3) there is a lack of time to pursue electronic technology implementation. Existing technology is predominately text-based (e.g., ditto sheets, chalkboard, overhead projector).

Level 1 - Awareness

The use of technology-based tools is either (1) used almost exclusively by the classroom teacher for classroom and/or curriculum management tasks (e.g., taking attendance, using grade book programs, accessing email), (2) used to embellish or enhance teacher-directed lessons or lectures (e.g., multimedia presentations) and/or (3) is one step removed from the classroom teacher (e.g., integrated learning system labs, special computer lab pull-out programs, central word processing labs).

Level 2 - Exploration

Technology-based tools supplement the existing instructional program (e.g., tutorials, educational games, basic skill applications) or complement selected multimedia and/or web-based projects (e.g., internet-based research papers, informational multimedia presentations) at the knowledge/comprehension level. The electronic technology is employed either as extension activities, enrichment exercises, or technology-based tools and generally reinforces the content under investigation.

Level 3 - Infusion

Technology-based tools including spreadsheet and graphing packages; multimedia and desktop publishing applications; and the internet complement selected instructional events or multimedia/web-based projects at the analysis, synthesis, and evaluation levels. Though the learning activity may or may not be perceived as authentic by students, emphasis is placed on using a variety of thinking skill strategies (e.g., problem-solving, decision-making, experimentation, scientific inquiry) to address the content under investigation.

Level 4a - Integration (Mechanical)

Technology-based tools are integrated in a mechanical manner that places heavy reliance on prepackaged materials, outside resources, and/or interventions that aid the teacher in the daily management of their operational curriculum. Technology is perceived as a tool to identify and solve authentic problems as perceived by the students relating to an overall theme/concept. Emphasis is placed on student action and/or on issues resolution that requires higher levels of cognitive processing and in-depth examination of the content.

Level 4b - Integration (Routine)

Technology-based tools are integrated in a routine manner whereby teachers can readily design and implement learning experiences (e.g., units of instruction) that empower students to identify and solve authentic problems relating to an overall theme/concept using the school's available technology with little or no outside assistance. Emphasis is placed on student action and/or on issues resolution that requires higher levels of student cognitive processing and in-depth examination of the content.

Level 5 - Expansion

Technology access is extended beyond the classroom. Teachers actively elicit technology applications and networking from outside sources to expand student experiences directed at problem-solving, issues resolution, and student activism. The complexity and sophistication of the technology-based tools used are now commensurate with (1) the diversity, inventiveness, and spontaneity of the teacher's experiential-based approach and (2) the students' level of complex thinking and in-depth understanding of the content at hand.

Level 6 - Refinement

Technology is perceived as a process, product, and/or tool for students to find solutions related to an identified "real world" problem or issue of significance to them. Technology provides a seamless medium for information queries, problem-solving, and/or product development. The classroom content emerges based on the needs of the learner according to his/her interests, needs, and/or aspirations and is supported by unlimited access to the most current computer applications and infrastructure available.

APPENDIX C

Frequency of Use Survey Results

Breakdown of Responses to Frequency of Use Survey

Student Computer Use: In your classes, how often do STUDENTS use computers...	% of respondents answering “frequently” or “occasionally”
1. To create multimedia presentations, slide shows, video reports, and/or projects?	36%
2. To analyze information (manipulate, organize, filter, sort, display, or graph data)?	38
3. To practice skills or receive drill?	41
4. To run simulations? (Scenario-based interactive environments, online or on CD, that involve learners in problem solving. Titles include The Oregon Trail, Green Globes and Graphing Equations.)	19
5. To do research on the Internet, online library catalog, and/or reference databases?	64

Teacher Computer Use: In your classes, how often do YOU use computers...	% of respondents answering “frequently” or “occasionally”
6. To promote cooperative learning? (Methods that provide structured opportunities for students to work together in small groups/pairs to help each other learn).	49%
7. To individualize instruction?	51
8. To integrate two or more curriculum areas?	37
9. To adapt instruction (e.g. with special population students)?	45
10. To present a lesson or part of a lesson?	55

Teacher Computer Use: In your role as teacher, how often do YOU use computers...	% of respondents answering “daily” or “a few times a
11. To locate instructional materials and/or lesson plans (e.g., on the Internet, CDs, library system, reference databases)?	63%
12. To do word processing?	83
13. To create spreadsheets?	51
14. To build databases?	35
15. For drawing, painting, or graphics?	34
16. For multimedia production (e.g., HyperStudio, PowerPoint)?	29
17. For video editing?	8
18. For email?	88

19. Technology Standards for Instructional Personnel (TSIPs): I completed the TSIP requirement ...	% of respondents
I will complete the TSIP requirement next year.	8%
During 2003-2004	9
During 2001-2003	30
During 1999-2001	22
I have not completed the TSIP requirement	14

20. Which of the following best describes your use of computer technologies in your content area/ instructional program/ area of responsibility?	% of respondents
I have little or no technical knowledge.	1%
I am focusing most of my effort on the short term, day to day concerns. I use processing, email and the Internet for personal productivity more so than for direct word instruction.	39
I've established a routine pattern and typically use the same software and hardware with my students for instruction and for my professional productivity.	22
I often explore and experiment with different technology uses with my students. I vary my use of technology based on my evaluation of its effect on my students and my instruction.	17
I regularly collaborate with colleagues to explore using technologies as a way of improving instruction and student	11

APPENDIX D

2004 Minnie Howard Teacher Survey Results

Breakdown of responses to the April 2004 Minnie Howard Teacher Laptop Survey

1. On average, how frequently do YOU perform the following tasks USING YOUR LAPTOP?

	Never	Less than once a week	Once a week	A few times a week	At least once a day
Conducting research that contributes to lesson plans and curriculum design	3%	29%	17%	34%	17%
Developing instructional materials (handouts, tests, etc.)	5	24	16	19	36
Using presentation software for instructional purposes	22	32	20	19	7
Creating and/or maintaining website's) for instructional purposes	51	29	5	10	5
Providing classroom instruction	15	31	17	25	12
Producing homework assignments	21	24	16	28	12
Assessing student work	17	29	17	25	12
Managing student information	10	7	14	19	50
Communicating with colleagues inside and outside the school	7	5	8	19	61
Communicating with parents and students	12	21	17	33	17

n=59

2. How often do STUDENTS in your classroom USE THEIR LAPTOPS to do the following?

	Never	Less than once a week	Once a week	A few times a week	At least once a day
Writing first drafts of papers	16%	39%	27%	14%	4%
Editing papers	25	33	26	14	2
Working with spreadsheets/databases	51	32	11	7	0
Taking notes on the computer	25	25	14	27	8
Managing/analyzing information	21	32	26	21	0
Researching information using the Internet	5	32	19	35	9
Taking tests/quizzes	47	31	16	7	0
Doing drills to increase their competency (educational drill software, online quizzes, A+, BoxerMath, etc.)	24	38	22	16	0
Creating culminating projects to show what they have learned (web pages, multimedia projects, videos, etc.)	19	43	24	14	0
Working on short-term assignments / worksheets	14	36	26	17	7
Sending/receiving email	33	7	4	18	39

n=58

3. Indicate how much you agree or disagree with each of the following statements about TEACHERS AND TEACHING.

	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
I feel my teaching benefits from laptop use.	8%	12%	22%	37%	20%
I need to learn more skills before I can more effectively use the laptop for teaching.	15	25	29	15	15
I feel enthusiastic about the laptop program.	15	12	17	29	27
Using the laptops has increased my work load.	16	28	17	26	14
I am better able to access diverse teaching materials and resources for my students when using the laptop.	3	14	21	34	28
The presence of the laptops in my classroom is disruptive to my teaching.	14	27	27	15	17
Given laptop problems such as freezing or an inability to access the Internet, I have to create two lesson plans for everything I do.	11	29	29	18	14
I am able to explore topics in greater depth with my students when we use the laptops.	4	24	33	20	20
I wish that I had more time during the day to explore using the laptops effectively in my classroom.	4	21	27	18	30
It is difficult for me to monitor appropriate Internet use in my classroom.	7	22	22	12	36

n=59

4. Indicate how much you agree or disagree with each of the following statements about TECHNOLOGY IMPLEMENTATION.

	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
The administrator(s) in my school actively encourages me to integrate the laptops into my curriculum.	2%	5%	25%	40%	28%
The Technology Resource Teacher in my school has assisted me in finding ways to integrate the laptops within my curriculum.	5	14	11	34	36

n=57

5. Indicate how much you agree or disagree with each of the following statements about STUDENTS AND LEARNING.

	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
Use of the laptops has resulted in more open communication between students and teachers in the classroom.	21%	33%	29%	7%	10%
Students in my classroom do more work when they are using their laptops.	19	28	24	21	9
My students are more apt to revise/edit their work when it is done on the laptops.	6	19	38	21	17
Students in my classroom are careless with their laptops.	0	16	38	16	30
My students' inability to keyboard (type) has interfered with our use of the laptop.	23	50	16	9	2
A lack of formal training for my students in computer use has prevented me from implementing the laptops fully.	28	48	14	7	3
My students are more engaged when we are using the laptops.	9	19	28	21	23

n=58

6. Please Describe Successes and/or challenges you have experienced with the laptops.

Challenges cited most often were the distraction to students posed by the laptops; improper use and the lack of a way to monitor use; the isolation (decline in interactivity among children) the use of the laptops leads to; and students not charging them every day.

Successes cited most often: students produce more due to typing instead of writing; students are more engaged in their work; the breadth of research available.

7. Please describe the types of professional development you would like to receive as you continue to use the laptops in your classroom.

Topics mentioned by numerous respondents: exposure to course-specific software; web page development; training in basic Microsoft or Windows applications.

8. Please include any other comments that you think may help us in assessing the impact of the laptop program.

Comments were mixed. Most respondents felt there were problems with the program but were optimistic the problems could be fixed with much hard work. Some respondents felt the initiative was complete failure. Many suggestions for fixing the perceived problems involved having class sets of laptops instead of one laptop for each child, or implementing ways to monitor student usage.

APPENDIX E

2004 Minnie Howard Student Survey Results

Breakdown of responses to the 2004 Minnie Howard Student Laptop Survey

1. Indicate the response that describes how often YOU USE YOUR LAPTOP to do the following.

	Never	Less than once a week	Once a week	A few times a week	At least once a day
Writing first drafts of papers	15%	41%	19%	18%	8%
Editing papers	19	35	18	21	8
Working with spreadsheets / databases	46	23	12	14	4
Taking notes	15	18	13	26	27
Organizing information	20	16	25	22	16
Researching information using the Internet	3	7	7	35	48
Taking tests / quizzes	33	23	18	15	11
Doing drills to increase your skill (educational drill software, online quizzes, A+, BoxerMath, etc.)	31	21	19	18	11
Creating presentations and other multimedia projects	12	18	21	28	11
Working on short-term assignments / online worksheets	17	22	21	20	20
Sending / receiving email	32	14	11	17	26

(n=91)

2. Indicate how often YOU USE YOUR LAPTOP IN SCHOOL for each class listed.

	I do not take this class	0 hours per week	1-3 hours per week	4-6 hours per week	Use it for homework
Language Arts (reading/writing)	6%	21%	46%	22%	4%
Social Studies / History	3	13	56	24	3
Mathematics	7	49	35	9	0
Science	3	25	48	17	7
Health	7	37	35	19	2
Foreign Language	36	20	31	8	4

(n=90)

3. Indicate how often you ask for help from each of the following people when you need help with your laptop IN SCHOOL. Then indicate if this person is USUALLY ABLE TO HELP YOU.

	How often you ask person for help :		
	Not very often	Sometimes	This is usually the person I ask
A teacher	35%	45%	20%
A friend or other student	21	49	30
Librarian	80	12	17
Technology Specialist	65	26	8
Other adults in School	66	30	4

(n=86)

	Person is usually able to help you:	
	Yes	No
A teacher (n=47)	85%	15%
A friend or other student (n=49)	92	8
Librarian (n=41)	49	51
Technology Specialist (n=43)	77	23
Other adults in School (n=41)	59	41

4. Indicate how much you agree or disagree with each of the following statements about YOUR LAPTOP USE.

	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
I go to the school library to locate information less now that I have my laptop.	6%	9%	29%	34%	22%
Having a laptop helps me to be better organized.	3	7	25	34	31
I am more involved in school when I use my laptop.	6	13	33	31	17
I would rather not use my laptop.	44	34	17	4	1
I am more likely to revise/edit my work when it is done on the laptop.	3	8	24	33	33
All of the information available on the Internet makes it difficult for me to	36	38	17	8	1
Now that I have my laptop I interact with my teachers more.	8	32	34	20	6
I get my work done more quickly now that I have my laptop.	4	9	27	36	24
I do more work when I use my laptop.	6	14	23	43	15
I am better able to understand my schoolwork when we use the laptops.	7	12	41	26	15
I am more interested in school when we use the laptops.	7	8	28	29	28
I prefer to handwrite my assignments rather than use my laptop.	25	31	28	14	2
The quality of my work has improved since I received my laptop.	5	13	45	26	12

(n=89)

5. How would you rate your overall skill in using computers?

Novice	3%
Beginner	6
Intermediate	30
Advanced	47
Expert	14

(n=87)

6. Have you had your laptop taken away for more than a class period because you misused your laptop?

Yes	9%
No	91

(n=86)

APPENDIX F

October 2004 Student Survey Results

Breakdown of responses to the October 2004 Student Survey

1. During the previous school year, how many hours per week, on average, did you use a computer at home?

zero hours per week (no computer at home)	8%
less than one hour per week	7
1-3 hours per week	24
4-6 hours per week	19
7-9 hours per week	12
10-12 hours per week	7
13 or more hours per week	22

n=365

2. When you used the computer at home last school year was it mostly for ...(check one)

schoolwork/homework/research	13%
personal/recreational use	11
both for homework and personal use	63
not applicable	12

n=363

3. Do you have internet access at home?

Yes	77%
No	23

n=362

4. How would you describe your overall computer skills?

Very poor	1%
Poor	2
Fair	20
Good	45
very good	32

n=360

5. Thinking about last school year, how many of your teachers regularly incorporated the use of computers into your classroom work?

None	14%
Some	54
About half	18
Most	11
All	4

n=362

6. Again, thinking about last school year, in which three subject areas do you think technology was used most effectively at your school? (check up to three)

English	66%
Mathematics	21
Science	51
History/Social Studies	50
Foreign language	16
Art	5
Music	3
Physical Education	2
No subject area used technology effectively	12

n=360

7. Which of these statements best describes your feeling about using technology

I avoid using technology as much as possible	2%
I use technology a lot, but it's just a tool for me, not a hobby.	20
I enjoy working with technology and learning new ways to use it.	62
I often help my friends with their technology problems and I like showing them how to use technology in different ways.	15

n=358

8. Check off below any of the activities that you have done with a computer in the past year (check as many as apply).

Sent or received email	71%
Sent or received an instant message	60
Surfed the web/gone online (e.g. looked for song lyrics)	71
Shopped online	34
Typed a paper	86
Done research	84
Used Excel or another spreadsheet	48
Created graphs or charts	55
Used PowerPoint	62
Downloaded music from a website or a friend	47
Downloaded pictures from a digital camera	35
Created music CD's	41
Downloaded music into an iPod, Rio, or other music storage device	23
Played internet computer games	65
Watched internet videos	48

Visited a chat room	33
Posted at a message board	27
Created a personal website	30
Read a blog	18
Maintained a blog	11
Read fanfiction	12
Set up a computer	21
Added memory or an external drive to a computer	14

n=368 for all

9. What is the highest educational level completed by any adult in your household?

Less than a high school diploma	6%
High school diploma or GED	20
Some college and/or technical training	19
Associate degree	8
Bachelor's degree	18
Advanced degree	26
(No response)	3

n=368

10. How important is having access to technology to your education?

Very unimportant	7%
Somewhat unimportant	5
Don't know	8
Somewhat important	27
Very important	53

n=357

11. Do you think having access to a personal laptop will make a big difference in the way you do your school work?

Yes	73%
No	27

n=358

Demographics of October 2004 Student Survey respondents

Most (95%) respondents could be linked to their SASI information via their login ID. The following figures do not include the 5% unknowns.

Race

African American	33%
Asian	9
Hispanic	18
White	39

Sex

Female	56%
Male	44

Free/Reduced Lunch

Yes	37%
No	63

ESL

Yes	15%
No	85

Special ED

Yes	10%
No	90

TAG

Yes	29%
No	71

Grade

9	62%
10	15
11	5
12	18

(n=349 for all)

APPENDIX G

June 2005 Student Survey Results

Breakdown of responses to the June 2005 Student Survey

1. During this past school year, how many hours per week, on average, did you use your laptop for homework (not including research)?

Zero hours per week	12%
Less than one hour per week	29
1-3 hours per week	29
4-6 hours per week	15
7-9 hours per week	7
10-12 hours per week	4
13 or more hours per week	4

n=719

2. During this past school year, how many hours per week, on average, did you use your laptop for research?

Zero hours per week	7%
Less than one hour per week	19
1-3 hours per week	37
4-6 hours per week	18
7-9 hours per week	9
10-12 hours per week	4
13 or more hours per week	4

n=719

3. During this past school year, how many of your teachers regularly incorporated the use of computers into your classroom work?

None	4%
Some	48
About half	18
Most	23
All	7

n=719

4. Again, thinking about this past school year, in which three subject areas do you think computer technology was used most effectively at your school? (Check up to three)

English	55%
Mathematics	27
Science	63
History/Social Studies	69
Foreign Language	11
Art	3
Music	2
Physical Education	5
Other subject	4
No subject area used technology effectively	3

n=719

If a respondent answered “Other subject”, he/she was asked to specify the subject. Subjects mentioned by the most students:

Human Growth & Development (20 students)

Criminal Justice (5)

Marketing (3)

Computer Math (2)

Drama (2)

Journalism (3)

Government (2)

Health (2)

Subjects mentioned by one student each (listed verbatim):

academey of Finance	Early Childhood Education II	playing games
Accounting	eh	Psychology
adv cis	finance & business law	Reading
AJROTC	homework	Reaserch Skills
algebra support	International foods	sociology
all	internet	SOL
biology	Intro to Fashion Design	spanish for native speakers1/2
botany	Intro to Health Occup.	speech
business	jrotc	sports and ent. mktng
business center21	keyboarding	Study Hall
Computer	Lunch	study skills
computer maintenance	Nurse aid	TA
Drivers ED	Nursing Assistance	television productions 2
Early Child Education		

5. On average, how many days per week did you bring your laptop to school?

Zero days per week	2%
One day per week	4
Two days per week	5
Three days per week	7
Four days per week	8
Every day	74

n=719

6. During this past school year, how many days were you unable to use your laptop because it needed repairs? Categorization of write-in responses:

0	24%
1-2	23
3-9	32
10-19	12
20 or more	9

Mean=6.7; n=677

7. How would you describe your overall computer skills? (Check one)

Very poor	1%
Poor	1
Fair	16
Good	43
Very good	39

n=719

8. Which of these statements best describes your feeling about using technology?

I avoid using technology as much as possible.	3%
I use technology a lot, but it's just a tool for me, not a hobby.	29
I enjoy working with technology and learning new ways to use it.	52
I often help my friends with their technology problems and I like showing them how to use technology in different ways.	15

n=719

9. Was it easy to take SOL exams online? (Check one)

Yes	81%
No	9
Does not apply	10

n=719

10. Did you take any SAT practice tests using your laptop?

Yes	23%
No	77

n=719

11. Was it easy/convenient to take an SAT practice test online?

(Among those who responded “Yes” to 10)

Yes	87%
No	13

n=167

12. Which of these best describes why you did not take an SAT practice test online?

(Among those who responded “No” to 10)

I didn't know it was available	30%
I didn't take the SAT	34
Other	36

n=552

13. Please indicate how much you agree or disagree with each of the following statements.

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Does not apply
My laptop made it easier for me to do research for	7%	7%	14%	29%	43%	1%
My laptop made it easier for me to type papers.	7	6	10	30	44	1
The computer programs used in my classes helped me learn things that would have been more	12	14	23	29	17	4
Most of my teachers set up folders on the server	10	12	13	29	32	3
The laptops are more trouble than they are worth.	22	24	25	14	14	2
I am no better at research (locating, collecting,	26	26	21	14	10	3
I feel more comfortable using computers than I	13	11	23	27	22	3
I am/was worried about losing or damaging my	18	13	19	27	21	1
Having access to a personal laptop made a	11	12	22	31	22	2
The helpdesk was good at fixing problems with	11	9	19	26	25	11
Not being able to print from my laptop was a	7	6	12	21	48	4
My teachers did a poor job explaining how to use	21	26	29	12	8	5

n=719 for all

14. During this school year, how much have you learned in school about ___?

	A lot	Some	A little	None
word processing	30%	27%	19%	24%
databases and spreadsheets	16	21	22	41
searching the Web for information	44	17	15	25
laws and policies related to technology	15	19	22	43
computers in general	27	25	23	25
technology in general	21	26	24	29

n=719 for all

15. Indicate below any of the activities that you did with any computer during this school year.
 (Check as many as apply)

Sent or received e-mail	63%
Sent or received an instant message	52
Surfed the web/gone online (e.g., looked for song lyrics)	80
Shopped online	33
Typed a paper	96
Done research	94
Used Excel or another spreadsheet	46
Created graphs or charts	56
Used PowerPoint	87
Downloaded music from a website or friend	54
Downloaded pictures from a digital camera	34
Created music CD's	36
Downloaded music into an iPod, Rio or other music storage device	27
Played Internet computer games	78
Watched Internet videos	64
Visited a chat room	36
Posted at a message board	32
Created a personal website	25
Read a blog	24
Maintained a blog	13
Read fanfiction	13
Set up a computer	22
Added memory or an external drive to a computer	15

n=719

16. How important is having access to computer technology for your education?

Very unimportant	13%
Somewhat unimportant	9
Don't know	9
Somewhat important	31
Very important	39

n=719

17. Do you have a computer at home? (Not including the school-provided laptop)

Yes	87%
No	13

n=719

18. Do you have Internet access at home?

Yes	81%
No	19

n=719

19. Does your home computer have a printer? (Among those with home computer)

Yes	90%
No	10

n=627

20. What do you feel are the biggest benefits of the ACPS laptop program? (Open-ended response)

Benefits cited most often:

- Easier to do research
- Easier to take notes (typing)
- Easier to do homework
- Teacher and student inbox/folders/R: Drive
- Convenience (can use whenever/wherever I want to)
- Light weight/portability
- Helps kids who don't have their own computers
- SOLs
- Learn general computer/tech skills
- Internet access
- Entertainment/relieve boredom.

21. What do you feel are the biggest problems with the laptop program? (Open-ended response)

Problems cited most often:

- Site restrictions/blocks/firewall/filters
- No home internet access
- No e-mail
- Printing
- Too many repairs needed/easy to break
- Help Desk not good/slow repairs
- Technical problems (server, battery, slowness, etc)
- One more thing to remember/worry about
- Too heavy/big
- Distracting/inappropriate use
- Teachers didn't use them well/not used much in class

Demographics of June 2005 Student Survey respondents

Respondents were linked to their SASI information via their login ID.

Race

African American	39%
American Indian	< 1
Asian	2
Hispanic	22
White	31

Sex

Female	52%
Male	48

Free/Reduced Lunch

Yes	41%
No	59

ESL

Yes	17%
No	83

Special ED

Yes	10%
No	90

TAG

Yes	28%
No	72

Grade

9	46%
10	18
11	19
12	17

School

Minnie Howard	46%
STEP	4
T.C. Williams	50

(n=716 for all)

APPENDIX H

2005 Teacher Survey Results

Breakdown of responses to the 2005 Teacher Survey

1. During this past school year, how many hours of homework per week, on average, did you assign to your students that was specifically to be completed on their laptops?

Zero hours per week	31%
Less than one hour per week	41
1-3 hours per week	24
4-6 hours per week	2
7-9 hours per week	2
10-12 hours per week	0
13 or more hours per week	0

2. During this past school year, how much time did you and your students spend using the laptops in a typical class period? __minutes

Categorization of write-in responses:

0 minutes	20%
1-10	21
15-25	23
30	20
More than 30	16

mean=22.0; n=91

3. How much of your lesson plans were devoted mainly to teaching your students technology? __%

Categorization of write-in responses:

0 percent	25%
1-5 percent	37
10-20 percent	22
More than 20 percent	17

mean=12.2

n=93

4. In an average week, how often were your students required to bring their laptops to your class?

zero days per week	25%
one day per week	29
two days per week	12
three days per week	5
four days per week	2
every day	27

n=93

5. How often did your students experience technical problems with their laptops?

Rarely or never	9%
Occasionally	47
Frequently	25
Very frequently	9
Don't know	11

n=93

6. How often did you personally experience technical problems with your laptop?

Rarely or never	43%
Occasionally	51
Frequently	5
Very frequently	1

n=93

7. How would you describe your overall computer skills?

Very poor	0%
Poor	3
Fair	33
Good	34
Very good	29

n=93

8. Which of these statements best describes your feeling about using technology?

I avoid using technology as much as possible.	3%
I use technology a lot, but it's just a tool for me, not a hobby.	44
I enjoy working with technology and learning new ways to use it.	35
I often help my friends with their technology problems and I like showing them how to use technology in different ways.	17

n=93

9. Which of these statements best describes your feeling about the amount of technology training you have received in the past year?

There has been too much emphasis placed on technology training.	23%
I have received a lot of training but want/need more.	20
I have received just the right amount of training.	38
I have not received enough training.	19

n=93

10. Was it easy to administer SOL exams online?

Yes	47%
No	4
Does not apply	48

n=93

11. How important is having access to technology for your students' education?

Very unimportant	5%
Somewhat unimportant	10
Don't know	5
Somewhat important	41
Very important	39

n=93

12. On a scale from 1-10, with 10 being the most beneficial, how beneficial has the laptop initiative been for low-achieving students? Average students? High-achieving students?

Low-achieving students	mean=5.5
Average students	mean=6.2
High-achieving students	mean=6.1

n=88

% of respondents saying program is most beneficial to:

Low-achieving students	15%
Low-achieving and average students	10
Average students	3
Average and high-achieving students	11
High-achieving students	18
All benefit equally	43

13. Below are listed different types of professional development and/or support for laptop use. Please indicate the level of effectiveness for each activity.

Professional Development Activity	Not Available	Available, but Did Not Participate	Not Effective	Somewh at Effective	Effective	Very Effective
TIE Training (n=85)	2%	24%	25%	27%	18%	5%
TRT training (n=78)	18	22	15	27	15	3
Local workshops/seminars on how to use the laptop (n=81)	2	16	22	38	20	1
Local workshops/seminars on integrating the laptop into curriculum (n=83)	4	18	29	35	13	1
North TIER Consortium online training (n=75)	31	40	13	5	8	3
Library of Congress training (n=81)	9	47	15	11	16	2
Classroom Connect training (n=77)	17	39	16	21	8	0
Staff Development workshops (n=85)	0	5	26	52	14	4
Help-desk technical support in your school (n=83)	0	7	17	24	30	22
ITS support (n=79)	6	11	13	30	22	18
Informal help from colleagues (n=84)	1	1	6	24	32	36
Regular meetings with colleagues (n=82)	17	12	10	26	26	10
Informal help from students (n=86)	9	10	5	34	28	14
Self-taught (n=84)	2	4	12	31	32	19

14. Please indicate how much you agree or disagree with each of the following statements.

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Does not apply
Laptops have made it easier for students to do research for school projects.	3%	6%	15%	34%	29%	12%
Laptops have made it easier for students to type papers.	2	3	8	32	43	12
Homework is easier to collect, grade, and give back with laptops.	16	16	20	20	11	17
My laptop has made it easier to prepare lesson plans.	13	10	23	18	31	5
I have learned a lot about computers this school year.	6	14	33	31	13	2
I have learned a lot about technology this school year.	6	13	37	29	12	2
I feel more comfortable using computers now than I did a year ago.	6	16	29	27	17	4
Students are worried about losing or damaging their laptop.	25	32	17	18	5	2
Having access to a personal laptop has made a positive difference in the way students do their school work.	13	23	26	18	15	4
Students use their laptops responsibly.	26	41	9	22	1	2
Printing access was a big problem for my students.	8	11	13	28	26	15
I use my laptop to communicate with students.	20	18	17	23	10	12
I use my laptop to communicate with other teachers/staff.	4	5	4	27	49	10
I use my laptop to keep track of grades.	4	2	3	20	57	13
I feel my teaching benefits from laptop use.	10	5	15	32	30	8
I need to learn more skills before I can more effectively use the laptop for teaching.	19	12	27	25	11	5
I feel enthusiastic about the laptop program.	9	18	26	19	20	8
Using the laptop has increased my work load.	12	30	20	24	5	5
I am better able to access diverse teaching materials and resources for my students when using the laptop.	5	3	19	41	21	11

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Does not apply
The presence of the laptops in my classroom is disruptive to my teaching.	18	22	17	17	18	7
Given laptop problems such as freezing or an inability to access the Internet, I have to create two lesson plans for everything I do.	15	24	11	22	18	10
I am able to explore topics in greater depth with my students when we use the laptops.	6	12	26	30	17	10
I wish that I had more time during the day to explore using the laptops effectively in my classroom.	6	11	19	37	19	8
It is difficult for me to monitor appropriate Internet use in my classroom.	15	14	15	21	25	10
My students' inability to keyboard (type) has interfered with our use of the laptop.	20	31	19	13	9	9

n=91, 92, or 93 for all

15. During this school year, how much have your students learned from you about.....

	A lot	Some	A little	None
...word processing	20%	25%	16%	39%
...databases and spreadsheets	4	20	16	60
...searching the Web for information	33	25	27	14
...laws and policies related to technology	4	28	21	47
...computers in general	16	27	36	21
...technology in general	18	30	31	22

n=91 or 92 for all

16. What computer programs do you feel have been the most effective in your classroom/ department?

Programs with most mentions:

Word (23 mentions)

Power Point (18)

Excel (10)

Inspiration (8)

A+ (7)

Integrade Pro (6)

SOL test prep (5)

SASI (5)

Internet Explorer (5)

Geometer's Sketchpad (4)

17. What computer programs do you feel have not been effective in your classroom/ department?

All relevant responses listed verbatim:

Think.com (3 mentions)

No science based software A+ Probes
Power Point

Gizmos

power point access als workstation

Human Dynamic

synco. Eyes teacher program

Sycron eyes test maker

A+ because not all students bring their laptops!

everything else

Most everything else.

The ones I don't know about or don't use

internet for surfing when should not be

THE JOB WEBSITES ARE TOO ADVANCED FOR THEM FOR WORK AWARENESS

Lap tops in here they use to play music or games. Do not need them in this program.

Would like to see more educational programs on laptops

Laptops have been difficult to integrate into upper-level math courses.

Database because of the low level of English, also I didn't use any of the multimedia programs because I didn't have access (or wasn't aware of access) to a scanner or digital cameras.

Although it appears to have the potential to be an excellent tool, think.com was very ineffective this year. Also, the software purchased for the digital probes in the science department was not useful.

18. Are there any computer programs you think ought to be used more in your classroom/department?

All relevant responses listed verbatim:

A+ Science Software

There are several math programs produced by Riverside (I believe) that are worth exploring.

A+

A+LS

A+ and Read Naturally
Synchroeyes (sp)

Synco. Eyes

Sycron eyes test maker

Geometer's Sketchpad, A+

Adobe Photoshop/Illustrator

Excel

I should use Geometer's Sketchpad - I will next year.

Vernier Software Graphical Analysis - It's *Cheap*!

Start night E.Sci discovery

Smart notebook software from smarttech.com

1. earth systems interactive 2. earthcomm

Some kind of typing program, particularly keyed to English language learning

Yes but I am unable to name them at present.

Audio editing programs

A good accessible typing program like mavis beacon

Any program that promotes stronger reading and research skills through access to established university libraries.

What ever happened to the Visualize software we were promised? Someone really dropped the ball on that!

**BOOKS FROM DISNEY TO READ THAT GO IN THE COMPUTER AND CREATE A CARD CD PROGRAMS
INSTEAD OF USING THE INTERNET**

None that I am aware of. Learning in upper level math courses takes place at the point of a pencil and a sheet of paper.

We need access to more questions for Geometry using the toolbar compass and ruler. There were only 2 problems for the students to practice with. While I could put problems on a website, the students still could not access toolbar compass.

Would like to see more educational type games on student hard drives so that students have other choices than internet games.

As I mentioned in #16, I feel that the computer based resources that go along with our textbooks should be utilized along with online sites like explorellearning.com and quia.com.

19. Your school:

Minnie Howard	29%
STEP	8
T.C. Williams	63

n=93

20. What subject area(s) do you teach? (Check all that apply)

English	16%
Mathematics	20
Science	15
History/Social Studies	20
Foreign Language	5
Art	5
Music	0
Physical Education	6
Other subject (Specify)	25

n=87

Other: (listed verbatim)
 CTE (3 respondents)
 Trades & Industry (2)
 ESL (2)
 Human Growth & Dev (2)
 dr. ed.
 Finance and Law
 ajrotc
 JROTC
 Life Skills/ MR
 Marketing
 T& I
 Tech. Dwg.
 Technology
 TV Production
 Dance
 Science

21. What level(s) do you teach? (Check all that apply)

Honors/AP	32%
TAG	3
Career/Tech	13
ESL	24
Regular	66
Other level (specify)	15

n=87

Other: (listed verbatim)
 Special Ed. (3 respondents)
 Algebra I; Alg I, Part 1; Geometry
 All
 All levels - heterogen
 Basic, Advanced
 ld/ed
 LIFE SKILL LOW

22. What grade(s) do you teach? (Check all that apply)

9	31%
10	62
11	66
12	62

n=90

23. Do you have a computer at home?

Yes	84%
No	16

n=90

24. Do you have Internet access at home?

Yes	85%
No	15

n=91

24. What do you feel are the biggest benefits of the laptop program? (Open-ended response)

Benefits mentioned most often:

- Easy/quick access to information
- Enables more research
- Narrows the achievement gap
- Students find typing easier than writing
- Exposes students to technology and to specific software
- Encourages/enhances creativity
- Lower income students get computer exposure

25. What do you feel are the biggest problems with the laptop program? (Open-ended response)

Problems mentioned most often:

- Inappropriate use by students, as well as difficulty monitoring use
- Student disregard/irresponsibility with regard to condition of laptops
- Students not bringing laptops to class
- Restrictions/limitations on student use (lack of printing, home internet access, e-mail)
- Inadequate training of staff
- Inadequate batteries
- Repair issues

Feel free to provide any additional comments about the ACPS Laptop Initiative:

Some comments/suggestions provided by respondents: (some edited for brevity or spelling/punctuation)

Have a class set of laptops for every room, instead of giving every student a computer.

This year went lots better than last year at Minnie Howard.

We need a way to really enforce the rules of computer use.

What's the deal with the almost obsessive need to collect laptops *before* exams?

I feel teachers should have been given more training long before the beginning of school.

I feel the program that allowed us to monitor student screens should have been in place before we gave out laptops.

Please keep this program and continue to allow us the latitude to expand our use of these machines.

I would like to see more emphasis on curriculum than technical skills.

More information about repair and replacement cost of laptops.

The kids need an email account so that I can contact them regarding assignments and grades.

I think an upfront security deposit for all students would benefit the program. It's a great initiative. Obviously, there are many kinks to it. I hope you guys are able to work it out.

A great start to the program. We got a little ahead of ourselves and had to play some serious catch up but I guess that's better than being behind ourselves. Thank you for going out on and putting us out on a limb.

The best way to utilize these computers is to give students without computers at home one to take home and leave at home, except when required to bring back for a check. Then, have clean working and charged computers in cabinets ready for class work.

APPENDIX I

2005 Parent Survey Results

Breakdown of responses to the 2005 Parent Survey

1. During this past school year, how many hours per week, on average, did your child use the laptop for homework and/or research?

Zero hours per week	9%
Less than one hour per week	15
1-3 hours per week	31
4-6 hours per week	18
7-9 hours per week	8
10-12 hours per week	8
13 or more hours per week	6
Don't know	5

n=477

2. During this past school year, about how often did your child take his/her laptop to school/class?

Never	4%
One day per week	5
Two days per week	7
Three days per week	8
Four days per week	7
Every day	64
Don't know	6

n=475

3. During this past school year, about how many days was your child unable to use his/her laptop because it needed repairs? _____

Categorization of write-in responses:

0	44%
1-2	12
3-9	24
10-19	10
20 or more	9

Mean=6.0; n=437

4. Which of these statements best describes your feeling about using technology?

I avoid using technology as much as possible.	5%
I use technology a lot, but it's just a tool for me, not a hobby.	31
I enjoy working with technology and learning new ways to use it.	50
I often help my friends with their technology problems and I like showing them how to use technology in different ways.	14

n=472

5. How important is having access to technology for your child's education?

Very unimportant	24%
Somewhat unimportant	3
Don't know	3
Somewhat important	15
Very important	55

n=471

6. Do you have a computer at home?

Yes	91%
No	9

n=477

7. Do you have Internet access at home? (Among those with a home computer)

Yes	93%
No	7

n=432

8. Do you have a printer for your home computer? (Among those with a home computer)

Yes	94%
No	6

n=434

9. How would you describe your overall computer skills?

Very poor	3%
Poor	4
Fair	26
Good	37
Very good	31

n=476

10. What is the highest educational level completed by any adult in your household? (optional)

Less than a high school diploma	5%
High School diploma or GED	10
Some college and/or technical training	16
Associate degree	7
Bachelor degree	23
Advanced degree	38

n=469

11. What do you feel are the biggest benefits of the laptop program? (Open-ended response)

A vast majority of responses had to do with providing computer exposure to students who otherwise would have very little such exposure, such as students from low-income households. Many mentioned that this “leveled the playing field”. This benefit was mentioned by parents from all socioeconomic backgrounds.

Other benefits mentioned often:

Made it easier for students to do type papers.

Made it easier for students to do research.

Gets students familiar with technology, which will be useful for employment and college.

Portability.

12. What do you feel are the biggest problems with the laptop program?

A vast majority of responses had to do with restrictions and limitations placed on the computers. Specifically, these included the inability to print except at the school library; the inability to share files between school laptops and home computers; and the inability to access the internet at home.

Other problems mentioned often:

Inappropriate use by students, such as games, chat, pornography. Distraction to students.

Some teachers did not make use of laptops.

Home computer has much more capability than school laptop.

Some teachers would not accept assignments in electronic format.

Laptops increase weight of backpacks.

Inadequate training for students.

Laptops break easily; repairs take too long.

Money would be better spent on other things.

Some students have been robbed of the laptops.

13. Please indicate how much you agree or disagree with each of the following statements.

(Mark one in each row)

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Don't know/ does not apply
The laptop made it easier for my child to do research for school projects.	12%	15%	14%	30%	25%	4%
The laptop made it easier for my child to type papers.	13	14	14	30	26	3
The school did not provide enough technical support for the laptops.	10	33	25	15	6	11
My child learned a lot about computers this school year.	15	20	22	26	12	4
I learned a lot about computers by using my child's laptop.	42	20	13	6	3	16
The laptop made it easier for me to help my child with schoolwork.	29	17	20	15	8	12
My child feels more comfortable using computers than he/she did a year ago.	14	15	20	28	17	6
I was worried about my child losing or damaging the laptop.	12	24	16	28	18	2
Having access to a personal laptop made a positive difference in the way my child did school work.	12	13	21	31	21	4
There are too many problems with the laptop program.	17	33	22	14	8	6
The schools did not keep me informed about the laptop program.	15	33	25	18	6	4

n between 477-481 for all

Please feel free to use the space below for any additional comments.

Most additional comments were negative, and went into more detail about perceived problems with the laptop initiative.

Some other suggestions and general comments provided by parents: (some edited for brevity or spelling/punctuation)

Need to have text books available on laptop (CDs but no CD drive on laptop) because not fair kids must carry books AND now laptop.

I think a school computer lab could accomplish technology needs for students at a much lower expense to the school district.

Continue implementing the laptop program. If budget permits, upgrade the computer. Install more programs to cultivate curiosity and creativity.

If there are problems/benefits that a parent should be made aware of, that information should be communicated to parent independent of the student letter, e-mail, website that a parent can check.

I believe the city could save money if the laptops were given on a need basis, i.e. to those students who do not have access at home. Our experience was that the laptop was not a useful tool for our son who already had experience at home and access to computers at home which were more useful than the school supplied laptops.

I applaud this effort to get a handle on the issues surrounding the laptops, and I am encouraged that Mr. Dawson's shop is handling the survey because I know him to have the utmost integrity!

Overall I feel the laptop program is a good one. I also feel that we should make sure there are necessary restrictions in place to protect our children.

The laptops were a lot better this year than the first year at MH....The school system is still breaking ground.

I think ACPS went too far in trying to address the problems experienced in the trial run the previous year at MH. If you're going to continue to give out laptops to students, there has to be a way for them to share documents for group projects.

Orientation for parents was held only one time. If you missed it due to illness or work commitment or bad weather causing bad traffic issues, there was no other opportunity for parents to become familiar with this all-important program.

The money spent on laptops could have been better used to hire better teachers in general and hire more elective teachers.

I feel it is a wonderful program. There will always be problems with anything. We all have problems with our home computers. Maybe the teachers will get used to it as it continues and work out homework issues.

Future laptop usage should only be funded if the textbooks are accessible on the computer. Handwritten assignments should continue to be encouraged.

The ninth grade was much more successful -- the teachers seemed better trained and assigned work on computers.

My child tells me the program was easy once she got used to everything.

Demographics of 2005 Parent Survey respondents's children

A space was provided for respondents to give their name if they so chose; 43% provided their names legibly enough to be able to link them to student demographic information. For some respondents who did not give their name, their child's gender (and sometimes school) could be determined from open-ended responses. The following demographic information refers to the children of respondents.

Note that these percentage breakdowns may not be applicable to the many respondents who did not provide a name or demographic information. Also note that if a respondent who provided a name had more than one child in ACPS grades 9-12, student demographic information was captured only for the oldest of these children, since these respondents were instructed to answer survey questions in reference to the oldest one.

Race

African American	34%
American Indian	< 1
Asian	8
Hispanic	10
White	47

n=216

Sex

Female	53%
Male	47

n=249

Free/Reduced Lunch

Yes	34%
No	66

n=216

ESL

Yes	18%
No	82

n=216

Special ED

Yes	9%
No	91

n=218

TAG

Yes	35%
No	65

n=216

Grade

9	31%
10	24
11	32
12	13

n=218

School

Minnie Howard	30%
STEP	1
T. C. Williams	69

n=223