TEACHERS AND TECHNOLOGY:
UNPACKING ILLUSIONS OF A ONE-TO-ONE
COMPUTER INITIATIVE

A Thesis in
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by
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ABSTRACT

In January 2005, the US Department of Education announced the National Education Technology Plan, the latest vision for computer technology in education in public schools. In it, districts and schools which have moved toward being computer technology based were applauded. My descriptive study is set in one of these “success” story districts which has embarked on a massive one-to-one laptop computer initiative for all secondary (grades 6-12) students, faculty, and staff which started in 2001. Primarily through the voices of classroom teachers, I share their perspectives about the administrative directed program. The participating teachers revealed that the presence of the laptops changed their teaching, solidified their pedagogical beliefs, and reinforced their ideas about what successful teaching is and what it looks like. The teachers described how their classroom changed when students did not have access to the laptops because of students’ parents/guardians' financial constraints, help desk delays, and consequences of students' misbehavior. Overall, my descriptive study aimed to expose and problematize the overwhelming positive illusions of the one-to-one initiative and publicized effects on teaching and learning within this celebrated laptop program.
# TABLE OF CONTENTS

List of Tables ........................................................................................................... vi

Acknowledgements ................................................................................................... vii

Chapter 1. THE BEGINNING ..................................................................................... 1
References .................................................................................................................. 10

Chapter 2. TEACHERS AND TECHNOLOGY: A FOCUS ON THE LITERATURE ....... 12
The Role of Teachers in Classrooms with Computer Technology ....................... 13
Computer Technology Does (Not) Change Teaching and Learning ..................... 17
The Effect Computer Technology Access and Training have in the Classroom ...... 25
Conclusion and Need for the Study .......................................................................... 28
References .................................................................................................................. 30

Chapter 3. THE PHASES OF A JOURNEY: THE METHODOLOGY ......................... 34
Qualitative Lens—Descriptive Studies and Interpretivism .................................... 35
Data Collection—Phase I .......................................................................................... 36
Data Collection—Phase II ....................................................................................... 39
Data Analysis .......................................................................................................... 41
Benefits and Limitations of the Methodology ....................................................... 43
Definitions within the Study .................................................................................... 44
References .................................................................................................................. 46

Chapter 4. DISTRICT PUBLIC SCHOOLS: A CLOSER LOOK .................................. 48
DPS—Getting Teachers Ready through Training and Professional Development ...... 53
Sketches of Participating Schools and Teachers ...................................................... 56
References .................................................................................................................. 67

Chapter 5. (RE)CONSIDERING SUCCESSFUL TEACHING .................................. 68
Successful Teaching: A Brief Look at the Literature ............................................ 69
Successful Teaching: Its Look and Its Implications .............................................. 71
Successful Teaching: Controlling the Classroom .................................................. 77
Successful Teaching: Engaging Students in School .............................................. 82
Successful Teaching: Engaging Students in Society ............................................ 88
References .................................................................................................................. 92

Chapter 6. I WANT TO USE THE LAPTOPS: ACCESS DENIED ........................... 95
The DPS Vision of Access to Computer Technology ............................................ 97
Access Denied: Concerns about Socio-economic Status ..................................... 100
Access Denied: Help from the Help Desk .............................................................. 103
Access Denied: Student Misbehavior ................................................................. 105
LIST OF TABLES

Table 2:1  Shifts Underlying New Student Competencies…………………………19
Table 3:1  Purpose of Study Chart…………………………………………………..34
Table 3:2  Participation Schools’ Summary of 2005 State Standardized Test Scores…………………………………………………………………….37
Table 3:3  Participant Demographics………………………………………………..39
Table 4:1  Summary of DPS Demographics………………………………………...50
Table 4:2  Participating School Demographics from 2000 Census Data……………56
Table 6:1  Percentage of Students without Laptops Each Day According to Participants……………………………………………………………………103
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Chapter 1

The Beginning

I taught seventh grade English in a school and district that “gently forced” technology into all aspects of teaching and learning (King\(^1\), personal communication, June 7, 2004). Technology included many things such as overhead projectors, computers, televisions, calculators, Alphasmarts, VCRs, tape players, and Smart boards\(^2\). I worked with a team of teachers who either liked or disliked using these various technologies within their instructional practice. The mathematics teacher on my team welcomed the Smart board, for she was able to project graphs, charts, images, and handwritten and/or word processed texts to show her students. Moreover, this technological tool allowed her to stray away from the chalkboard and the empty textbook examples. The capabilities of the Smart board caused this teacher to rethink her style of teaching, resulting in a more engaged and interactive classroom. Because the other teachers did not have the Smart board, we were restricted to more minimal experiences with computer technology within the classroom. The computer technology was restricted to one classroom computer that had the capacity to have what was on the screen to be displayed on the wall-mounted classroom TV monitor. Therefore, we mainly showed

\(^{1}\) This person’s identity is protected by a pseudonym.

\(^{2}\) Alphasmarts are portable keyboards that enable students to practice keyboarding and become more proficient with word-processing. They are marketed as being easy to use, teacher-friendly, solely for learning, and affordable (2006). Smart boards are interactive whiteboards that connect to a computer. They have touch-sensitive displays which the user can “control computer applications directly from the display, write notes in digital ink and save [the] work to share later” (2006). Both the Alphasmarts and the Smart boards are computer technological tools which are publicized tools that motivate students.
Power Point presentations from the one computer, utilized the overhead projector, and/or rolled the TV/VCR carts to our rooms. Our students worked on computers only in one of the four computers labs and/or in the library. Despite the fact that my school was one of the most technologically advanced, many of my colleagues were unable to incorporate rich computer technological experiences into their teaching.

Looking back, I recall times when I tried to figure out ways to bring the multiple technologies into my classroom. I particularly wanted to stretch my thinking and step out of my comfort zone with computer technology. As a classroom teacher who wanted to have access to as many primary and secondary resources as possible, I continuously sought ways to make learning more meaningful, motivating, and engaging. The challenge served as a catalyst for me. I set out to reserve more time in the computer labs, so my students could complete various tasks—problem solving, inquiry, research, and/or presentations—on the computers. At times, the computer technology was more of a hindrance due to technical issues and difficulties reserving the computer lab or traveling cart. In addition to my personal desire to use computer technology within my teaching, my school’s administrators pushed us teachers to use computer technology in new ways.

Following the district’s lead, my school’s administrators required many technological tasks that went beyond the state’s professional personnel technology standards:

- Building administrators mandated lessons which showcased “active learning” videotaped and turned in.
- Staff professional development classes, where attendance was mandatory, taught teachers to create web pages.

2
• Teachers were required to use software programs for the calculation and uploading of grades, for attendance, and for email.

• Teachers completed the state’s technology competency and proficiency tasks for recertification points.

Teachers through these tasks were strongly encouraged to turn to computer technology for a multitude of daily classroom activities. The transition to a stronger district-wide presence and expectation of computer technology was on the horizon.

Coupled with the federal visions for the increased integration of computer technology in education (see the Clinton, 1996; United States Department of Education [ED] Office of Educational Technology, 2001) and the influences from the business sector, my former district in 2001 began an intensive and massive computer technology initiative by providing Apple iBook laptop computers to every high school student (grades 9-12) and faculty and staff member. The laptops trickled down to the middle school (grades 6-8) student the following year. As a middle school teacher, I received one in November 2001 in order to receive computer training. The building and district administrators wanted us middle school teachers to transition to the laptop, to eventually completely abandon our desktop computer, and to feel at ease to make it an integral piece in teaching and learning.

When the iBooks were distributed to the middle school students, I was no longer teaching with the district. I wonder how I would have reacted and how I would have taught. Would my instructional methods have shifted dramatically had I stayed in the district and not left the state to pursue my doctorate at Penn State University? When I left the district, I knew that I wanted to talk to this district’s teachers and ask questions
regarding their choices, or lack thereof, with the laptops in their instructional planning and activities. I just did not know from what angle to begin.

A class at Penn State, “Education Policy and Politics,” started me on the direction toward this dissertation. The final paper for the course was a critique on an existent or future policy. Browsing through *Education Week*, I noticed a blurb, nothing more than a paragraph, about a new federal educational technology policy named the National Education Technology Plan (NETP) (Trotter, 2003a). Immediately, I perked and became intrigued. Since this policy was in the infant planning stages, I forecasted the possible direction of the NETP, particularly because it supplemented No Child Left Behind (NCLB), the signed 2002 revision of the Elementary and Secondary Education Act. The early reports of the NETP advocated standardized technology exams (Trotter, 2003b). I became enraged at the thought of yet another test for students; I wondered how these tests would be fair (perhaps “possible” would be a better word) to those without computer technology in their classrooms and other instructional areas. How would students be assessed? Would the tests be taken on paper or online? After meeting with those who helped shape, develop, and write the NETP, I learned that these early reports were inaccurate; however, the developers did share that the individual states would still, or should, have technology standards which outlined the technological literacy goals for students at the end of middle and high school. With the emergence of the NETP in my mind, I knew the direction of my research: I needed to speak to teachers who are in the midst of this new technology in education policy.

In January 2005 the U.S. Department of Education (ED) formally presented the National Education Technology Plan. In this report, entitled *Toward a new golden age in...*
American education: How the Internet, the law, and today’s students are revolutionizing expectations (ED Office of Educational Technology, 2004), ED officials concentrated on technology integration into all aspects of U.S. public schooling: student access to information technology with increased digital and network applications; the transformation of teachers’ instruction, technology, and information literacy skills; and applicable research and evaluation of technology in schools. During the public announcement, which was simulcast on the Internet, the former U.S. Secretary of Education Dr. Rod Paige and school officials from across the country told anecdotes of “successful” public schools and districts that harnessed technology, expanded access to learning, and reported the narrowing of the achievement gap. These “success stories” occurred in areas with the resources and means to bring technology into the daily workings of K-12 education. Federal policy and business leaders praised:

States, localities, and schools are creatively using existing resources to restructure money within their existing budgets to align technology with improved learning. These examples show the benefits of realizing efficiencies and results through systemic improvement. …The restrictive walls of the past are being torn down and a transformation in teaching is underway. (ED, Office of Educational Technology, 2004, p. 22)

For example, the Irving Independent School District in Irving, Texas, which provided laptop computers to over 8000 high school (grades 9-12) students, overhauled the educational community from the top-down with its massive influx of technological tools for teaching and learning (“Success Stories,” 2003a). My dissertation is situated in another one of these “success” districts—my former district—located in a mid-Atlantic
state of the United States. The presenters equated technology to productivity, progress, and the pathway to an educational revolution.

In addition to the announcement of the NETP and my classroom teaching background, my professional experiences at Penn State directed my research further. As a supervisor for pre-service secondary English teachers, I observed and interacted with those taking their first steps into the teaching profession. One of my pre-service teachers was assigned to a school that had a one-to-one student to computer ratio. She taught a lesson wherein students brainstormed for an upcoming writing assignment; she had them use the computers because they “had been writing a lot lately.” While this lesson unfolded, I wondered if the students’ note-taking on the computers had indeed enhanced the lesson and student learning. Were the computers used just because they were there? Why did this pre-service teacher decide to use the computers for this assignment? Thinking more broadly, I questioned: Does computer technology improve teaching and learning? Has access to a quality education increased with the use of computers in this classroom and ones like it (see Tyack and Cuban, 1995; Cuban, 2001; Sandholtz, Ringstaff, and Dwyer, 1997; ED Office of Educational Technology, 2004)? As I reflect on these questions, my observation, my former district, and the current federal technology in education vision, I am drawn to better understand the veteran and novice teachers working in schools with similar resources (one-to-one computer ratio) in terms of why they use, or do not use, computer technology in their daily teaching and planning.

A recent study set within my research district deliberately focused on teachers selected by the administration to discuss the positives of the computer technology and readily accepted and embraced it (Zucker and McGhee, 2005). The study leaves an
incomplete assessment of the one-to-one computer initiative in terms of the effects on teacher professional judgments. To gain a more holistic perspective from teachers across the technological spectrum, I sought those who did or did not embrace the computer initiative. Therefore, I addressed the following objective: To describe teachers’ use or nonuse of computer technology in their instructional and planning activities within a particular district that has initiated a one-to-one computer ratio. Each subsequent examines this objective more closely.

The next chapter entitled “Teachers and Technology: A Focus on the Literature” explores the scholarly research about teachers and technology. Technology has regularly been viewed as a panacea for societal issues. For example, the National Defense Education Act of 1958, in addition to leading U.S. public schools to increase mathematics, science, and foreign language studies, proposed that audio-visual technologies be used to augment teaching and learning. The promise of technology continues today. Now, the attention has turned to digital computer technology.

I acknowledge that there are various technologies; however, I focused on the computer which has advanced software and Internet capabilities. Confining my discussion of technology to the computer goes against Best and Kellner’s (2001) description of the narrowing view of technology which states that all “other technologies—radio, film, television, video, photography, telephones, fax machines, and so on—are being absorbed into the black hole of digitalization” (2001). I deliberately directed my attention to the computer. I examined major qualitative, quantitative, and mixed-method studies about teachers’ use of technology. The reviews, critiques, and commentaries provide insight regarding computer technology and teachers from
historical, political, and economical contexts. My literature review deliberately excluded those studies which focused mainly on the student rather than the teacher. My intent was to gain information and perspectives of teachers’ choices about computer technology in their classrooms.

The third chapter of my dissertation, entitled “The Phases of a Journey: The Methodology,” outlines how I conducted my descriptive study. I placed special emphasis on the teachers’ perceptions of what has happening in and around their classrooms. Also because my professional background is that of a classroom teacher, not an administrator, I read and analyzed the data through that lens.

Chapter Four, “District Public Schools: A Closer Look,” delves deeper into the first phase of the data collection. It includes descriptions of both the participants and their schools. Plus, it gives a sketch of the research district as a whole.

Next, Chapters Five and Six explore the effects of the computer technology on the teachers’ practice. Chapter Five, “(Re)considering Successful Teaching,” unpacks, according to the teachers’ perspectives, what successful teaching is and what it looks like. Also teachers reveal their perceptions of the administration’s views of successful teaching within the one-to-one initiative. Sections include teachers’ descriptions of how control was exerted within computer saturated classrooms. Finally in Chapter Six, as its title “I Wanted to Use the Laptop: Access Denied” suggests, the reality of one-to-one access is exposed. Three of the intervening variables denying one-to-one access—financial constraints, help desk delays, and student misbehavior consequences—are discussed. The variables caused the teachers some difficulties as they (re)negotiated their teaching with the laptops.
Lastly, Chapter Seven, called “A Look Toward the Future,” attempts to place this dissertation in context of future implications and research. I also share the overarching lessons gained from this research project for the educational community and policy makers.
References


United States Department of Education Office of Educational Technology. (2004). Toward a new golden age in American education: How the Internet, the law, and
today's students are revolutionizing expectations. Washington, D.C.: Office of Educational Technology.

Chapter 2

Teachers and Technology: A Focus on the Literature

The debate surrounding the increase of technology in education has reached a feverish pitch. Advocates for and opponents of technology’s proliferation voice their stances throughout the research literature. Those in favor of increased technology in education propose that it will motivate teachers, improve their instruction, and aid in the promotion of ambitious students’ and teachers’ learning (Johnson, Schwab, and Foa, 1999; Kerr, 1991; Mellon, 1999; Robertson, 2003; Wilheim, 2000; Wiske, Franz, and Breit, 2005). Specifically, access to computer technology in education, according to proponents, creates more opportunities to a quality education, blurring geographic and socio-economic boundaries. In addition, greater use of computer technology, they assert, prepares students for a 21st century global environment and economy and supports national defense (see Clinton, 1996; ED Office of Educational Technology, 2001, 2004). Opponents maintain that

the campaign to infuse schools with information and computer technologies, we see a reconfiguration of many elements that impact teachers’ roles including curriculum development as standards, and social interaction framed by elaborate accountability schemes. (Ferneding, 2003, p. 5)

The “common sense of cultural bias” (Ferneding, 2003) regarding the positive possibilities and potential of computer technology has been met with sharp criticism by
those within the educational community partly due to the omission of the realities and intricacies of classroom teaching.

This literature review explores the relationships between teachers and computer technology in the classroom. I focus on the classroom teachers’ use of computer technology, which includes the “means of administering [curricular] material to the student” (Rushby, 1979, p. 25). I situated my work with this conceptualization specifically because my research site’s primary publicized reason for encouraging, purchasing, and exposing computer technology to teachers and students is to administer and engage with curriculum. Numerous studies have been devoted to describe quantitatively the teachers’ use or nonuse of technology in schools (see for example Becker, 1998, 1999; Koszolka, 2001; Smerdon and Cronen, 2000; Wetzel, 2001). The research literature exploring the relationship between computer technology and classroom teachers reveals three overarching themes:

1) the role of teachers in classrooms with computer technology;
2) computer technology does (not) change teaching and learning; and
3) the effect computer technology access and training have on teaching and learning.

In this chapter, I discuss the scholarly literature around these themes, and then I will share how my study fits into the body of research literature about teachers’ use or nonuse of computer technology in their classrooms. Later, I will share the need for my particular research study.

The role of teachers in classrooms with computer technology

The classroom teachers’ role within a teaching and learning environment that has computer technology is an area of debate. A popular view, one held by some business
leaders and those who are against the saturation of computer technology in schools, illustrates classroom teachers being positioned far removed from the physical act of teaching (Buchen, 1999; Stoll, 1999). Teachers are on the verge of being replaced by computers. Ferneding (2003) explained that “technology acts as a two-edged sword, for although it may increase effectiveness and reduce costs, technology can also promote standardization and therefore may also ‘reduce discussion,…promote centralization,…[and] drive out teachers’” (p. 64). The competence and the skills of teachers may be diminished and/or ignored because the “reliance on ‘teacher-proof’ programs or curriculum packages [turns] teachers [into] ‘delivery systems’ by following scripts or recipes and providing copies or prepared handouts to their students” (Joseph Bravmann, Windschitl, Mikel, and Green, 2000). Technology critic Stoll (1999) shared an extreme consequence of the reliance of teacher-proof computer programs: “Rather than augmenting the teachers, these machines steal limited class time and direct attention away from scholarship and toward pretty graphics” (p. 32). Another extreme consequence of increased computer technology as advanced by Frank Smith (1997) was that “social, economic, and technical developments bring new attitudes toward education, many of them not propitious for teachers. Their extinction is a distinct possibility.”

 Those in the educational community, on the other hand, push that the teachers essentially serve a far more significant role than a delivery system. Computer technology should not replace the teachers (Angers and Machtimes, 2005; Holt and Kysilka, 2006; Joseph et al., 2000). A critique of the technology’s promise to fix education suggests that [t]he replacement of teachers by structures and machines both in the classroom and at home, just like the replacement of (other) workers by robots and advanced assembly lines, is part of the appeal of this ideology.
[of technological utopianism] to those in government and business who seek simplistic—but always financially profitable—solutions to complex problems. (Ferneding, 2003, p. 241)

In the name of progress and productivity, increasing the amounts of computer technology has been publicly celebrated as that gateway to the improvement of public education—which may go as far as removing the classroom teacher. A growing myth that increased interactive and complex features always equate to a stronger education tool must be reevaluated. Instead of removing the classroom teacher, the educational research community contends that the teacher is a critical component to an effective classroom. The emergence of the new technologies and their capabilities may strengthen and supplement teaching because the
effective teachers’ utilization of technology-rich learning environments serves as a role model for the young, as well as a breeding ground for the development of creative, capable and empowered problem solvers for the future. (Rickards, 2003)

The teacher must trust their competency and pedagogical skills to verify that the computer technology is appropriate for specific learning goals and objectives (Newhouse and Rennie, 2001).

Educational technology scholar Henry J. Becker conducted studies focused on teachers, schools, and technology. In one particular study (1998), he investigated how teachers used computer technology to enhance instruction and how it enriched student learning. The response to these inquiries found the following: For computer technology to be integrated effectively, teachers and administrators must rethink instructional goals, provide clear models for how technology can be used to help attain those goals, improve teachers’ understanding about how to use technology…, and develop rational systems of jointly planning
curriculum improvements and investment in instructional resources—including but not exclusively technological. (p. 29)

Becker recognized the vital role of the classroom teachers and stated that they should not solely depend on the computer technology particularly if it is not the best learning tool. For the integration to be more effective, the teachers’ duty is to guide students to think critically and to “harness…information in positive ways through the use of complex thinking skills such as finding, retrieving, categorizing, analyzing, evaluating, and synthesizing information” (Holt and Kysilka, 2006).

When describing the impact of computer technology on teaching and learning, Kerr (1991) pointed out that

[t]o say that technology is irrelevant or inimical to humane practice in education is simply to deny that technology has always interacted with culture often in ways unforeseen by either supporters or detractors of technology. To deny a role for technology in education is to deny a place for part of the very culture that the critics would have the schools protect and propagate. Where the critics are correct is in pointing out that technology should rightly be seen as supplementing, not supplanting, the roles of schools and teachers as parts of a social institution. (p. 118)

The realization that essentially the classroom teachers play significant roles in the implementation and integration of computer technology into teaching and learning should be recognized as the educational community suggests. The teachers are vital when (re)considering the best ways to incorporate computer technology, making sure it is the best tool to accomplish a particular learning goal. The teachers’ skills, knowledge, and identity should not be overshadowed by the computer technology.

The educational research reveals the classroom teachers’ importance in advancing computer technology into teaching and learning. There is, however, disagreement of
whether computer technology changes the teaching and learning environment and processes. What follows is a brief discussion highlighting the discord within and throughout the literature.

**Computer technology does (not) change teaching and learning**

Everything in and around classrooms is complex. Lankshear, Snyder, and Green (2000) described classrooms as “self-organising, adaptive systems [which] have to arrange themselves around interactions between their various human and non-human components.” The adaptations take place in classrooms as soon as a new policy or new technology enters to produce a “compound effect”—they affect everything else in the classroom (p. 112). In summary, “[c]lassroom practices then have to reorganise themselves around this new complexity, which involves changes in roles, changes in relationships, changes in patterns of work, and changes in allocations of space in the classroom” (p. 112). This reading of the negotiations and adaptations that occur in classrooms confronts some research literature which contains assumptions that the presence of computer technology in the classroom has left the teaching and learning process relatively unchanged, for, as Cuban (2004) noted the utilization of computer technology “surely strike[s] grandparents as novel ways of learning, but the classroom routines, the teacher-centeredness of the class, and the end products the machines are used for would be recognizable” (p. 111). The disharmony within the educational community comes from how change is perceived.
Robertson (2003), who referred to the work of Stoll and Fink (1996), commented about some beliefs about teachers’ behaviors with computer technology:

Contrary to popular mythology, teachers have adapted to the changing clientele in schools. It is teachers who have learned to modify curricula, develop new teaching and assessment strategies and deal with the myriad of social problems society has dumped on schools. Teachers have made these adjustments out of their desire to serve pupils not because of political or bureaucratic mandates. (p. 325)

Classroom teachers in the midst of the constant call for change generally make instructional decisions based on resource availability and the curricular and instructional needs of their students. With regards to the opportunities afforded by computer technology, Sandholtz, Ringstaff, and Dwyer (1997) in the landmark study the *Apple Classrooms of Tomorrow* (ACOT) highlighted the possibilities of shifting teachers’ instructional practices from strictly teacher-centered to predominantly student-centered.

In 1985, Apple Computers, Inc., partnered with “two classrooms, one in Eugene, Oregon, and one in Blue Earth, Minnesota” (Fisher, Dwyer, and Yocam, 1996). Apple Computers supplied the computers and trained the participating teachers, while the school districts “in the partnership provided staffing and made physical modifications to the classrooms” (p. 2). During the early years of the study, access was the major barrier which researchers and representatives of Apple sought to overcome. Thus, considering that laptops were not available at the time, computers were placed in both the schools and homes of the teachers and students. Over the next two years, more research sites emerged: Columbus, Ohio; Cupertino, California; Houston, Texas; and Memphis and
Nashville, Tennessee. Six of the schools were elementary, and one, the school in Columbus, was secondary (p. 3).

The teachers within the ACOT classrooms over time transitioned to incorporate more student-centered instruction and changed the physical arrangement to support different styles of classroom teaching and learning. As the chart (Table 2:1) outlines, the teachers embraced a more constructivist pedagogy.

Table 2:1–Shifts Underlying New Student Competencies

<table>
<thead>
<tr>
<th>Classroom Activity</th>
<th>Instruction</th>
<th>Construction</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Teacher-Centered</td>
<td>Learner-Centered</td>
</tr>
<tr>
<td></td>
<td>Didactic</td>
<td>Interactive</td>
</tr>
<tr>
<td>Teacher Role</td>
<td>Fact Teller</td>
<td>Collaborator</td>
</tr>
<tr>
<td></td>
<td>Always Expert</td>
<td>Sometimes learner</td>
</tr>
<tr>
<td>Student Role</td>
<td>Listener</td>
<td>Collaborator</td>
</tr>
<tr>
<td></td>
<td>Always Learner</td>
<td>Sometimes Expert</td>
</tr>
<tr>
<td>Instructional Emphasis</td>
<td>Facts</td>
<td>Relationships</td>
</tr>
<tr>
<td></td>
<td>Memorization</td>
<td>Inquiry and Invention</td>
</tr>
<tr>
<td>Concept of Knowledge</td>
<td>Accumulation of Facts</td>
<td>Transformation of Facts</td>
</tr>
<tr>
<td>Demonstration of Success</td>
<td>Quantity</td>
<td>Quality of Understanding</td>
</tr>
<tr>
<td>Assessment</td>
<td>Norm-Referenced</td>
<td>Criterion-Referenced</td>
</tr>
<tr>
<td></td>
<td>Multiple-Choice Items</td>
<td>Portfolios and Performances</td>
</tr>
<tr>
<td>Technology Use</td>
<td>Drill and Practice</td>
<td>Communication, Collaboration, Information Access, Expression</td>
</tr>
</tbody>
</table>


The ACOT teachers played significant roles in the teaching and learning process within the classroom. They had to plan, organize, and implement structured cooperative learning. Almost ten years after the first ACOT classroom, these volunteer teachers had blended the new technologies and their capabilities to the “traditional” methods of the instruction; yet,

[one would] still see relatively traditional high school activities: lectures and recitations, writing assignments, and math problem sets. But [one] would also notice the differences even in those basic activities. Students deliver lectures along with their teachers, and they take notes on portable computers—with the soft clicking sounds of keyboards filling in lecturer’s pauses. (Dwyer, 1994)
The teachers’ beliefs “shape the implementation of school reform initiatives...[and] teachers will tend to use technology in ways that are consistent with their personal perspectives” (Neiderhauser and Stoddart, 2001, p. 16; see also Kerr, 1991, p. 120). The adaptations precipitated by the computer technology cannot be misconstrued as not being a change. Though the some changes, or adaptations, may not have been dramatic in all cases, they still did occur.

The ACOT study and others like it (e.g., Koszalka, 2001) have been instrumental in the discourse about the emergence of computer technology into the classroom. Each has a common link: the classroom teachers volunteered to have the new equipment in their rooms, therefore, displaying their affinity for the new technology. Teachers who actively sought to change their classroom teaching and learning with computer technology have a higher perceived value for the machinery (Becker, 1999; Dexter, Anderson, and Becker, 1999). Therefore, they, at least to some degree, welcomed having a “computer-saturated” classroom (Fisher, Dwyer, and Yocam, 1996). Similarly, Angers and Machtmes (2005) wrote that the “use of [computer] technology for curricula and professional activities requires substantial investments of time, money equipment, and most of all a personal commitment and courage to try new things.” The teacher participants in their longitudinal, ethnographic study were “exemplary technology teachers” who taught middle school science (p. 772). A published study set within my own research district site highlighted those who welcomed the computer technology and were selected by their building principals. Omitted were those, in this case mathematics and science, classroom teachers who may not have supported or embraced the laptops
(Zucker and McGhee, 2005). Therefore each study must be read through a critical lens with an awareness of this bias.

Value is placed on supporting students’ learning and achievement and it may mean performing searches for supplemental resources for lesson plan preparation, initiating student research, and publishing of student and teacher work on the web. Teachers’ ability to take advantage of computer technology “are correlated with both teacher and student use and with greater perceived value” (Becker, 1999, p. 15). Michael Johnson, Richard Schwab, and Lin Foa (1999) noted, “We have observed scores of teachers who are demonstrating that the technological revolution has the potential to provide the impetus, tools, and new structures to transform the practice, art, and meaning of teaching.” In addition, Lankshear, Snyder, and Green (2000) contended that they “do not see developments using new technologies as mere ‘add-ons’ to classroom life. By contrast, [they] see new technologies as active ‘participants’ in the system, which are as capable of forming powerful liaisons with learners as they are with teachers” (p. 113). Classroom teachers are able to experience pedagogical shifts, as well as acknowledge the manner in which their classroom changes because of the presence of computer technology. “[A]s teachers gained in confidence, a more diverse range of applications was evident,” for they started with the basic typing and drill exercises and later advanced production programs and works (Newhouse and Rennie, 2001, p. 228). In other words, the level and magnitude of change are aligned with the perceived value of the computer technology. The lower the value, the lower amount and type of use.

The position that classroom teaching and learning do not change with the introduction of computer technology has been taken up in the research literature. One
reason for this view may be due to the fact that there is no clear consensus about the teachers’ role(s) in the classroom with computer technology context. In the following section, I will discuss the issues related to this perceived lack of classroom change.

*Teaching and learning do not change with computer technology*

A stance evident in the research literature about computers technology and classroom teachers assumes that teaching has not dramatically changed. Larry Cuban’s research found that computer technology has been oversold and underused and has no significant influence on the classrooms of today (2000, 2001, and 2004). The primary reason is due to the fact that teachers use the computer technology in ways which are similar to their already established classroom practices and pedagogies. He wrote that because “teachers are gatekeepers to school and classroom improvements, their perceptions, beliefs, knowledge, attention, motivation, and skills come into place when policies [such as those involving computer technology] from state, federal, and district levels arrive at the schoolhouse steps” (2004, pp. 106-7). In other words, the teachers’ pedagogies and beliefs regulate the level and amount to which new technology influences the classroom, and Cuban found that the computers were not changing, transforming, or revolutionizing classroom teaching and learning.

Teachers’ integration or non-integration of computer technology into their classrooms largely depends on their instructional beliefs. Becker (1999) explained, “Teachers who regard education as primarily the distribution of facts and skills to students according to a fixed curriculum sequence are much less likely to exploit the Internet than more ‘constructivist’ teachers” (p. 29). Teachers who espouse this positivist
philosophy model, also known as the “banking” method (Freire, 2003), hold the pedagogical view wherein teachers dispense and deposit knowledge and information into the theoretically empty, passive minds of the students. Memorization is a major technique for instruction. In contrast, the constructivist teacher subscribes to the belief that knowledge and meaning are constructed from multiple sources or shared experiences (Hinchey, 1998).

The research literature supporting the notion that the presence and use of computer technology do not change the classroom learning environment shares illustrations of steadfast teaching and learning processes. For example, Smerdon and Cronen (2000) found computer technology use greatly depended on the teacher. Their study noted that a minority of teachers utilized computers and the Internet innovatively; instead the “[c]omputers have typically been used for traditional methods of teaching (e.g. drill and practice and computer education).” This survey data also showed that approximately half of all public school teachers surveyed incorporated computers or the Internet in classroom instruction in 1999\(^1\). When evaluating the performance of the participants, one must be reminded that the “[c]omputer technology, in itself, does not embody a student-centered paradigm” (Neiderhauser and Stoddart, 2001). The teachers’ beliefs “shape the implementation of school reform initiatives...[and] teachers will tend to use technology in ways that are consistent with their personal perspectives” (p. 16).

\(^1\) There were 2,019 teachers within Smerdon and Cronen’s study Teachers’ Tools for the 21st Century: A Report on Teachers’ Use of Technology (2000). Of those surveyed, 1,016 were elementary teachers and 1,003 were secondary/combined full time teachers. Those excluded were full-time teachers whose primary teaching responsibility was either kindergarten, bilingual education/English as a second language, special education, or vocational education (pp. B-4 – B-5).
In addition, Tiffany Koszalka (2001) noticed similar examples of no change and nonuse of computer technology based on her research in technically-equipped classrooms:

Teachers are not readily choosing to incorporate web resources into their teaching even though these new resources have been empirically shown to facilitate student interactivity…, increase mental functioning…, and promote social interaction. The plausibility of the argument that web resources are not used in classrooms because web technology is not available is quickly diminishing as web technology initiatives explode in the school systems.

Further, Koszalka hypothesized a reason for teacher rejection: The “teacher’s mental state of readiness to adopt this innovation” may block the acceptance of the new technology (para. 2). In other words, the teachers exhibited fear. Her study was based on her providing a space and structure for teachers to “discuss technology integration with peers through electronic means” (para. 3). Koszalka’s results revealed that providing a space for discussion about methods and techniques with other teachers “may be an effective mechanism for promoting positive attitudes toward the use of web resources in the classroom thereby increasing the integration of such resources into teaching and learning environments” (para. 29).

The perceived lack of change within teaching and learning with the computer technology has frustrated some educational researchers. Other than using the computer technology to support their pedagogical beliefs, teachers’ lack of change has been caused by outside mitigating circumstances, such as teachers not having adequate access to and training on the computer equipment.
The effect of computer technology access and training in the classroom

Given tensions about the role of the teachers and disagreements about classroom change, teachers seem to respond in different ways to computer initiatives. Issues relating to (lack of) access and training exacerbated and compounded upon ways in which teachers responded to computer technology in education (see Ferneding, 2003). The sections that follow briefly discuss these issues.

Access

Becker’s (1999) national survey evaluated teachers’ attitudes about the Internet. He concluded that teachers’ attitudes and Internet use ran parallel with the Digital Divide (see Hoffman and Novak, 1999 and Marriott, 2006 for more information about the Digital Divide). Again, the schools with the fewest technological resources were those in the lower socio-economic neighborhoods; schools in the wealthier communities had a higher perceived value of the Internet. More specifically, if the school contained a network (LAN), as opposed to dial-up modem, the teacher responded more positively to the value of the Internet. The speed with which to gain information proved to be extremely important; it was a significant predictor to the teachers’ intrinsic value of the Internet. Additionally the speed of the computer technology enabled teachers’ increased use to search for supplemental resources to plan and prepare lessons, to initiate student research, and to publish student and teacher work. Furthermore, Becker’s results showed that teachers who reported that their school provided them with their own computer were more likely to believe that the classroom Internet was essential to teaching and more likely to use the Internet (p. 21). Having access to the computer technology with the Internet is “the most important variable in predicting teacher’s Internet use” (p. 29).
Teachers in schools that lack the Internet-ready computers misleadingly do not value it, for they have had to resort to using other resources which do not have the computers’ capabilities and reach. The allotment of the necessary monetary and support resources to build and maintain a computer network and hardware within the disadvantaged schools were essential.

Teachers overwhelming identify access as fundamental to the incorporation of computer technology into their instructional practice (Becker, 1993, 1998, 1999; CDW-G Government, Inc., 1995; Dexter, Anderson, and Becker, 1999). In addition to the availability of the computer technology for both the teachers and students, “teachers’ preparation to use technology in the classroom is a key factor in whether or not technology is actually incorporated into curriculum and instruction” (Sandholtz and Reilley, 2004; see also Smerdon and Cronen, 2000). Thus, the following section will discuss the research literature regarding teacher training on and with the computer technology.

Training

The lack of training also has been cited for reasons that teachers choose not to use computer technology in teaching and learning. Mike (1996) explained:

The prevailing attitude has been that as long as teachers are provided with the technology, they will automatically gravitate to it and independently learn its proper use. Furthermore, it was assumed that the standard workday contained sufficient free time for teachers to master the new technology…Accordingly, if successful integration of the Internet [or computer technology in general] is to occur in schools, administrators will need to budget for training. Furthermore, teachers should be provided with some time during the school day to explore the Net; it is
unreasonable to expect that all teachers will be able to do so at home. (p. 10)

Enabling teachers to explore the capabilities of the Internet and the computer technology and to devise ways in which it can best be utilized for their students may ease apprehension both individually and collectively. Teachers who receive more training emphasizing the union of curriculum with computer technology are more likely to believe that they are prepared to utilize it within teaching and learning (Angers and Machtmes, 2005, p. 775). It potentially can narrow the “present divide between instructional technology (IT) staff and teachers using technology in schools [that] has continued to expand” (Woodbridge, 2004).

Moreover, Russell and Bradley (1997), educational scholars in Australia, conducted a survey about teachers’ anxiety and the implications for professional development on computer technology. Prior to their study, they found:

In the United Kingdom, research by the Parliamentary Office of Science and Technology…has indicated that there were insufficient numbers of teachers trained in the technology, and that teacher confidence was an important factor in explaining why computers were not being used more effectively in schools:

‘Attitudes and self-confidence are major factors, . . ., many teachers are skeptical about computers, or less than confident about their ability to use them, . . ., in 1988 only 56% of primary teachers felt confident in the use of computers.’ (Vol. 2, p. 26)

In addition, Russell and Bradley concluded:

Our findings suggest that appropriately funded and targeted professional development is desperately needed. The digital era is already here, and if the question of teachers’ confidence with computers is not directly
addressed, schools are likely to be regarded by students as out of step with their daily lives. (p. 29)

The research literature provides a consensus that the teachers both need and want training and professional development sessions on computer technology. With these, the teachers should be more apt to implementing the computer technology into their classroom teaching and learning. Even though the resulting effects of these sessions may not be evident immediately, the belief is that over time, the teachers will experience the stages which range from “entry, in which teachers are not yet comfortable with computers and choose not to use them, to invention, in which teachers are capable of creating fundamentally different learning environments in their classrooms through the use of technology (Sandholtz, et al., 1997; Windschitl and Sahl, 2002).

Conclusion and Need for the Study

This literature review suggests that the role of the teacher is unclear, that the question of whether teaching and learning change is difficult to determine, and that the access and training challenges of bringing computer technology into the classroom serve as factors which hinder teachers’ integration. My research intends to expand the research literature particularly when exploring the discourse about one-to-one computer initiatives within the U.S. public schools. In addition, I aim to fill the gap in the literature as described by Sandholtz, et al. (1997): “Technologies are described as essential tools of the teaching trade, yet research has focused almost exclusively on the impact of technology on students with little investigation of the implications for teachers” (p. 2, emphasis added).
A common thread among the literature which does seek to show the impact computer technology on the teacher is that the most descriptive and quantitative studies have described exemplary teachers who welcomed the technology, ones who volunteered to have computer technology in their classrooms. In order to expand the literature, I share the stories of teachers who have *not* volunteered to have computer technology in their classrooms, but were forced to due to administrative directives.
References


Wilhelm, J. (2000). Literacy by design: Why is all of this technology so important? Voices in the Middle, 7(3), 4-14.


Chapter 3

The Phases of a Journey: The Methodology

Through my research, I hoped to learn from DPS teachers’ perspectives how they integrated computer technology into their classrooms and whether their teaching changed as a result. I used the following questions to guide my research:

- Why do teachers in a particular school district use/ not use the laptop computers in their classroom?
- How does the computer technology change their teaching (or not)?

The result is a descriptive study that explores these questions in the context of an award-winning one-to-one computer initiative. My hope is that the first-hand accounts from classroom teachers will help me and other education stakeholders understand some of the issues and challenges computer technology brings. The purpose of this chapter is to explain the data collection and analysis.

Table 3:1—Purpose of Study Chart

<table>
<thead>
<tr>
<th>Purpose of the Study</th>
<th>Research Questions</th>
<th>Research Strategy</th>
<th>Example of Data Collection Techniques</th>
</tr>
</thead>
</table>
| To explain why teachers in a particular school district use/do not use computer technology in their instructional and planning activities | Why or why not do teachers in a particular school district use the computer technology in their classroom? | Field study       | Observation
                                                          Semi-structured interviews
                                                          Document analysis                                        |
| To describe how the computer technology has or has not changed the teachers' classroom teaching | How does the computer technology change the teachers' teaching (or not)?           | Field study       | Observation
                                                          Semi-structured interviews
                                                          Document analysis                                        |

Qualitative lens—Descriptive Studies and Interpretivism

Descriptive studies are important in cases where there is not a lot of information. The DPS one-to-one computer initiative and other districts and school with similar initiatives are gaining in popularity. Descriptions of what is happening with and to the teachers in these situations have generated interest. In their report for the National Research Council, Shavelson and Towne (2002) said that descriptive studies might be undertaken to help bring education problems or trends into sharper relief or to generate plausible theories about the underlying structure of behavior or learning. If the effects of education programs that have been implemented on a large scale are to be understood, however, investigations must be designed to test a set of causal hypotheses.

They went further to explain:

This type of work is especially important when good information about the group or setting is non-existent or scant. In this type of research, then, it is important to obtain first-hand, in-depth information from the particular focal group or site. For such purposes, selecting a random sample from the population of interest may not be the proper method of choice; rather, samples may be purposively selected to illuminate phenomena in depth. (p. 105)

Descriptive studies work en tandem with traditional scientific research.

I collected and analyzed my data using an interpretivist lens.

Interpretivism

conceives of a world where there is a multiplicity of realities. Each individual [perceives], understands, experiences and makes meaning of that reality in different ways. For this reason, research in this paradigm focuses in on studying individual lives and their [significance]. The
overall aim of this paradigm is to understand others' experiences and relate them to one's own reality assumed. (Scheurich, n.d.)

I aimed to interpret areas that may not be evident to those immersed in the situation (Hodgson, 2000). Thomas A. Schwandt (2000) asserted that one who engaged in interpretivism argue[s] that it is possible to understand the subjective meaning of action (grasping the actor’s beliefs, desires, and so on) yet do so in an objective manner. The meaning that the interpreter reproduces or reconstructs is considered the original meaning of the action. So as not to misinterpret the original meaning, interpreters must employ some kind of method that allows them to step outside their historical frames of reference.

Therefore, I used case study methodology to conduct this research project. Case study “is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances” (Stake, 1995). Case study researchers “try hard to understand how the actors [“participants”], the people being studied, see things...[Finally] the qualitative case researcher tries to preserve the multiple realities, the different and even contradictory views of what is happening” (p.12). I gathered, read, and analyzed a variety of data sources. These included semi-structured one-on-one interviews, field observations, and federal, state, and local policy documents and public statements about technology policies. Each helped me understand the DPS context. I will share the specific case study methods throughout the sections that follow.

Data Collection—Phase I

To begin, I narrowed the number of local sites to five DPS schools. The middle schools were selected because they were two of the last three middle schools built in the
district and share almost identical floor plans (they are mirror images of each other) and technological infrastructures. Most importantly, they are physically identical in every way, but they serve different socio-economic and academic populations. The high schools were selected because they are located on opposite ends of the district and have contrasting socio-economic and demographic populations. One is predominantly white, and another is approximately even in terms of white and student of color populations. The third high school, an alternative high school, was included in the study mainly because it has students of color and poor whites, many of whom have experienced social problems in the traditional secondary school.

Table 3:2-- Participating Schools’ Summary of 2005 State Standardized Test Scores

<table>
<thead>
<tr>
<th>School</th>
<th>Accreditation Rating</th>
<th>Pass Rate for Gr. 8/High School English</th>
<th>Accreditation Rating for Gr. 8/High School Math</th>
<th>Pass Rate for Gr. 8/High School History</th>
<th>Pass Rate for Gr. 8/High School Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Area High School</td>
<td>Accredited w/ Warning</td>
<td>84</td>
<td>Meets Full Accreditation</td>
<td>73</td>
<td>Meets Full Accreditation</td>
</tr>
<tr>
<td>East Middle School</td>
<td>Accredited w/ Warning</td>
<td>67</td>
<td>Warned</td>
<td>78</td>
<td>Meets Full Accreditation</td>
</tr>
<tr>
<td>North High School</td>
<td>Fully Accredited</td>
<td>92</td>
<td>Meets Full Accreditation</td>
<td>95</td>
<td>Meets Full Accreditation</td>
</tr>
<tr>
<td>West Middle School</td>
<td>Fully Accredited</td>
<td>94</td>
<td>Meets Full Accreditation</td>
<td>97</td>
<td>Meets Full Accreditation</td>
</tr>
<tr>
<td>West High School</td>
<td>Fully Accredited</td>
<td>99</td>
<td>Meets Full Accreditation</td>
<td>96</td>
<td>Meets Full Accreditation</td>
</tr>
</tbody>
</table>

Source: DPS official website

After choosing the schools, I gathered the principal participants—the secondary classroom teachers who represented a range of experiences and years in the field. The

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1 The font size within the table has been reduced in order for the table to fit on the page.
2 Teacher participants’ names have been changed to a pseudonym in order to protect their actual identity. See Table 3:3 for demographic details about the participants.
selection of participants followed a systematic sampling strategy (Miles and Huberman, 1994). As a former employee who still maintains relationships within the district, I did not have to establish a relationship through a “gatekeeper” at the district administration level. I went directly to either the building level administrators or to the classroom teachers. For example, the assistant principal at the alternative high school provided me with contact information for her teachers. She granted me freedom as to whom I could contact. From that list, I reached out to the teachers through email. After the initial email to the first group of potential participants (12) among the chosen schools was sent, individual teachers decided on their own whether they would participate. At least two potential participants from each of the five schools were contacted. The final number was participants set at 10 in order to have the gender split as balanced as possible. The final group of participants came from this first group. Follow up communications were also made through email. They received no compensation from me or from the district.

Each participant had to be a core-content or special education faculty member, who taught at least one course a day. I limited the number of teacher participants to ten due to my own time and financial constraints. I also wanted the gender split to be as even as possible. Another common characteristic of each participant was that they achieved tenured status, which means that they have successfully completed the probationary period of three years. The route to certification was not uniform among the participants. One teacher, James Smith, earned his certification through a state-sanctioned alternative licensure program. The rest of participants have matriculated through traditional four year college of education programs to obtain certification. The next chapter will describe each school and participant in greater detail.
Table 3.3—Participant Demographics

<table>
<thead>
<tr>
<th>Participant*</th>
<th>School</th>
<th>Years in Education</th>
<th>Subject and Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas Jenkins</td>
<td>East Middle School</td>
<td>5</td>
<td>History/Civics</td>
</tr>
<tr>
<td>Jane Jackson(^3)</td>
<td>Far East Middle School</td>
<td>30</td>
<td>English, 8(^{th})</td>
</tr>
<tr>
<td>Nia Davis</td>
<td>West Middle School</td>
<td>5</td>
<td>History/United State history through WWII</td>
</tr>
<tr>
<td>William Forbes</td>
<td>County Area High</td>
<td>6</td>
<td>History</td>
</tr>
<tr>
<td>Dawn Simmons</td>
<td>County Area High</td>
<td>6</td>
<td>Special Education</td>
</tr>
<tr>
<td>James Smith</td>
<td>County Area High</td>
<td>3</td>
<td>English/9(^{th})</td>
</tr>
<tr>
<td>Paul Brown</td>
<td>North High</td>
<td>15</td>
<td>Math/Geometry</td>
</tr>
<tr>
<td>Grace Peters</td>
<td>North High</td>
<td>25</td>
<td>Humanities, Philosophy, English</td>
</tr>
<tr>
<td>Kelly Taylor</td>
<td>North High</td>
<td>25</td>
<td>Math/Algebra</td>
</tr>
<tr>
<td>Joanne Stevens</td>
<td>West High</td>
<td>20</td>
<td>English/12(^{th})</td>
</tr>
</tbody>
</table>

*The participants’ real names are protected by pseudonyms.

Data Collection—Phase II

According to Creswell (2003), “The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the [qualitative] study in a natural setting” (p. 15). With Creswell’s ideas in mind, I conducted my study in a methodical and systematic manner. I describe this in what follows.

Data collection took place between May 2004 and November 2005. I employed semi-structured, one-on-one interviews, and field observations. I visited each school at least three times. Those schools which had more than one teacher participant were visited more often. I interviewed each teacher for at least an hour either during the planning period or after school. In addition, I returned to the schools to observe teachers’ classes for at least two periods. (See Appendices E and F for the interview protocol and field observation at the participating schools schedule respectively) Hodder (2000) explained that the texts (e.g., the interview transcripts) “can be used alongside other

\(^{3}\) Jane Jackson served as a district curriculum specialist and taught an eighth grade English class at a local middle school during the second half of the 2004-2005 academic year.
forms of evidence so that the particular biases of each other can be understood and compared” (p. 704); thus, the field observations and interview transcripts, as well as other written texts, were connected.

For a robust analysis of my research problem, I understood that my data “cannot be restricted to interview data. … It must also consider the material traces” (Hodder, 2000, p. 705). Field documents which illustrated DPS policies and opinions regarding the use of computer technology aided the triangulation process toward “reliability” and “validity” (Airasian, 2005). In addition, federal and state policy documents about computer technology situated the context of the study, for the policies--e.g., the Enhancing Education Through Technology plan (ED, Office of Educational Technology, 2001), the National Education Technology Plan (ED, Office of Educational Technology, 2004), and the state’s technology plan ([State] Department of Education, 2003)--certainly played a significant role in shaping the vision of the DPS laptop program. These particular written texts “give historical insight” to the climate and sentiments surrounding the use of computer technology in these schools (Hodder, 2000, p. 704). All of the data helped me to gain a fuller understanding of the DPS computer initiative.

Interview questions invited discussion of how and why the participating DPS teachers used or did not use the laptop computers in their instructional planning and activities, as well as how their teaching changed as result of the computer technology’s presence. Specifically, each interview incorporated “Tell me…”, “How do you…?” and “Describe…” probes into the participants’ decision-making process4. I purposefully left the definition of “technology” open in order to allow each participant to define it in his or her own way.

4 Again, refer to Appendix E for my interview protocol.
Next, I observed the participants’ teaching in the schools. I did not direct the teachers to teach with or without the laptops. I did, however, insist that they follow their preplanned scope-and-sequence. That way, the instructional sequence was uninterrupted as possible. My observations were as non-obtrusive as possible, yet I recognized that any new presence in the classrooms interrupts and changes their dynamic to a certain degree. While in the participants’ classrooms, I diagrammed the physical arrangement of desks/tables. I asked the participants how and if the arrangements changed due to the laptops.

Data Analysis

To analyze the data from participants, I determined the first and second level coding (Creswell, 1998, p. 148-9). The first level coding was primarily descriptive and direct. To determine these codes, I read through the interview transcripts and field notes and grouped segments of the data according to common themes. For example, larger first level themes included the following:

- Definitions of successful teaching
- Required uses of computer technology for the teacher
- Instructional ways the laptops were used
- Problems with computer technology
- Issues relating to access and training
- School and district policies and cultures regarding computer technology

Teachers revealed the impact the computers have on the social and political fabric of U.S. society. For example, Grace Peters articulated her choices for encouraging her students to use computers to engage in political and civic service by contacting governmental
officials. Also, teachers like William Forbes and Dawn Simmons noted that students benefited from using the computer technology in a multitude of ways.

The second level coding was interpretive where I sought “possible meanings and divergent perspectives, varying the frames of reference about the phenomenon, and constructing a description of how the phenomenon was experienced” (Creswell, 1998, p. 150). This level of coding required critical intertextual analysis (Fairclough, 1995; Woodside-Jiron, 2003). For example, the teachers did not specifically state that they resisted adhering to the regulations set by the administrators. I interpreted their nonuse as resistance or rejection for specific reasons. Nia Davis, who used the laptops only if they enhanced the lesson, was confronted by her administrators for not using them the entire period. While she did not reject the laptops outright, she did “resist” the prescribed uses of the laptops; she adjusted the uses of the laptops to fit her classes’ needs. Another example of my interpretation was demonstrated when teachers said that their schools did not have a policy about the use of the laptops. Instead, they described the culture of school expectations and the accountability levied via the professional growth plans. The spirit of having a policy was evident in each of the participating schools.

To check the validity and reliability of my analysis, I shared the analysis with a teacher participant. I also shared my Robert Stake (1995) encouraged that all case (descriptive) study researchers “member check” their interpretation(s) of the data. That way, the representation will be as accurate as possible. Both the administrator and the teacher participant were satisfied with my data analysis. Other teacher participants expressed confidence in my interpretation; therefore, they chose to not to read my data analysis chapters.
Benefits and limitations of the research study

The benefits of my research ultimately outweighed the limitations. The promise of anonymity enabled the participants’ freedom of response. I encouraged the participants to discuss their views of computer technology. When given the opportunity, under the guise of pseudonyms, most teachers seemed to value discussing and sharing their pedagogy, and they likewise appeared to appreciate being seen as professionals with valid opinions. The participants all expressed gratitude for the opportunity to voice their experiences and beliefs. Readers benefit from this dissertation because they are able to gain insight into the complicated lives of classroom teachers, particularly ones in computer-saturated districts.

My dissertation research is restricted to the District Public Schools (DPS) system. The DPS is the only school district in the United States which has undergone a massive deployment of computer technology—providing laptop computers to all secondary students and faculty (Taylor, personal communication, June 6, 2005). Therefore, while the results of the study may not be generalized to other districts, they may provide ideas and cautions for other districts considering similar technological choices. This study is limited to teachers’ perspectives, not those of the district’s students or the administrators. Including the students and administrators’ perceptions and their use outside of school would be beyond the scope of this dissertation.

5 Other districts in Maine and Arizona have laptop programs, but on a much different scale (ED, Office of Educational Technology, 2004; Mahoney, 2003; Department of Education for the State of Maine, 2005; Murray, 2004).
Definitions within the Study

Because each of the classroom teacher participants interpreted “technology” to mean the laptop computer, I used the term “computer technology” because it is more precise. Throughout my dissertation, “computer technology” is defined as a laptop computer deployed by the districts. It has the hardware and software to provide instructional support. The iBook, a personal laptop computer, and the Dell laptop are the specific pieces of computer technology considered in this study. In addition, each contains content specific software. Their sole purpose, as articulated by district officials, is to serve as a learning and instructional tool. The laptop computers within the DPS schools connect to the Internet via a wireless network.

Throughout this study, “secondary” means grades 6-12 in a public school setting.

Within this study “policy” is defined as the formal and authoritative articulation of an ideology, “a fairly coherent set of values and beliefs about the way the social, economic, and political systems should be organized and operated and recommendations about how these values and beliefs should be put into effect” (Fowler, 2000, pg. 123). The policies discussed may or may not be formal pieces of legislature or reports such as No Child Left Behind or the National Education Technology Plan. They may be the manifestations of the hidden curriculum of the district, school, or individual classroom.

“Resistance” is the act of “praxis: reflection and action upon the world in order to transform it” (Freire, 2003). Within the context of this dissertation, some participating teachers engaged in resistance by choosing not to utilize the laptops in the prescribed instructional ways for, according to them, the betterment of their students. While this may be characterized as “uncooperative behavior” by DPS administrators, I interpreted this as
resistance because the teachers did not completely reject the laptops. Instead, they
adjusted their uses of the laptops. This mode of contestation and struggle is evoked and
evident in most power relationships. Foucault notes, “[As] soon as there is a power
relationship, there is a possibility for resistance. We can never be ensnared by power: we
can always modify its grip in determinate conditions and according to a precise strategy”
References


46


A desire to transform teaching and learning for a 21st century society and to narrow the digital divide caused the District Public Schools (DPS) officials to seek partnerships with leading computer corporations. In 2001 they announced a four-year leasing agreement with Apple Computer, Inc. Through this corporate relationship, iBook laptop computers were distributed to all high school students, faculty, and staff, with each paying a $50 fee (and a $100 damage fee as appropriate). The fee was primarily set so that the laptops could be taken off school property. Yet if the fee was not paid, then one would not get the machine. Beginning in 2002, the Apple-DPS partnership extended to the middle schools. At the start of the 2005-2006 academic year, the DPS ceased the relationship with Apple at the high school level. The district, in turn, announced that all high school faculty, staff, and students would receive Dell laptop computers. The iBooks have remained in the middle schools. Also, at the start of the 2005-2006 academic year, the $100 damage fee was eliminated, but $50 fee remained.

The distribution of the laptops generated both national and state-wide attention as being a forerunner for the integration of computer technology into teaching and learning. Yet beyond TALI which deployed over 27,300 laptops to secondary students, faculty, and administrative staff (DPS, “Why [DPS]?,” 2005), the DPS has been a leader in student achievement, a concept which is not limited to students’ scores on standardized
tests. This chapter will describe the DPS and my study’s participating schools and teachers who have helped guide students to life-long learning.

The District Public Schools surrounds a southern U.S. mid-major city, located a short two-hour drive from the mountains and the beach. Newcomers to the area appreciate being able to take a day trip to go play wintry sports at the many ski resorts throughout the state or drive down the interstate to enjoy a day in the sun at the beach. Characterized as the “urban fringe of [a] mid-size city” (National Center for Educational Statistics [NCES], 2005), the district has over 47,000 students (DPS, 2005). The label of urban does not adequately describe the district, for it has areas which are suburban, urban, and rural. The spectrum of socio-economic demographics makes the district unique. Teacher candidates are able to find the type of school and student population with whom they would like to work. Real estate agents boast to potential buyers about the district’s students’ high test scores and tremendous growth as evidenced by the five new district schools since 2002. With the attention on the DPS, the teachers are recognized locally and nationally for their teaching talents; eight achieved National Board Certification in 2003 and 2004 ([State] Education Association, 2006). Table 4:1 summarizes the demographics of the District Public Schools.
Table 4.1—Summary of DPS demographics

<table>
<thead>
<tr>
<th>Schools</th>
<th>Students</th>
<th>Pupil/Teacher Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Schools—66</td>
<td>Total Students—47,071</td>
<td>Elementary—20.2</td>
</tr>
<tr>
<td>Elementary—43</td>
<td>Elementary—21,105</td>
<td>Middle—21.7</td>
</tr>
<tr>
<td>Middle—12</td>
<td>Middle—11,268</td>
<td>High—20.9</td>
</tr>
<tr>
<td>High—9</td>
<td>High—14,096</td>
<td></td>
</tr>
<tr>
<td>Technical Centers—2</td>
<td>Other—602</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Graduates</th>
<th>Ethnic Distribution</th>
<th>Food Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005 Graduates—2,936</td>
<td>Asian—4.9%</td>
<td>Free Lunch—31%</td>
</tr>
<tr>
<td>Continuing Education—72.8%</td>
<td>Black—35.8%</td>
<td>Reduced Price Lunch—8%</td>
</tr>
<tr>
<td>Scholarships—$12.7 Million</td>
<td>Hispanic—3.6%</td>
<td>Full Price Lunch—61%</td>
</tr>
<tr>
<td>Dropout Rate—2.61%</td>
<td>White—51.0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other—4.7%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transportation</th>
<th>Finance</th>
<th>Economic Deprivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buses—592</td>
<td>Operating Budget—$411.0 Million</td>
<td>32.1%</td>
</tr>
<tr>
<td>Special Education Buses—125</td>
<td>Per Pupil Expenditure—$7,768</td>
<td>Teachers—3,520</td>
</tr>
<tr>
<td>Drivers—469</td>
<td>Economic Deprivation—</td>
<td>Employees—6,058</td>
</tr>
<tr>
<td>Driver Aides—99</td>
<td>32.1%</td>
<td></td>
</tr>
<tr>
<td>Miles Traveled Daily—36,371</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students Transported Daily—44,243</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: District Public Schools

The state where my research took place has been ahead of the national time table with regards to infusing technology into the daily aspects of schools, and it was an early advocate for the standardized testing movement. In 1995, the state School Board recommended to the state legislature specific academic expectations for student learning and achievement in grades K-12 in the core subjects, technology, the fine arts, foreign language, health and physical education, and driver education ([State] Department of Education [SDOE], 2005). These expectations were to be tested in grades three, five, and eight in the core subjects; in addition, the end of high school level course tests started in the 1997-98 academic year. The 2005-2006 academic year marked the beginning of expanded testing to grades four, six, and seven, a stipulation of the NCLB legislation (SDOE, 2005, para. 13). In 2005, the state’s Department of Education officials presented the districts’ pass rates for the annual state end-of-year tests:

---

1 See Appendix A for the state standards. They outline the academic expectations for grades 6-12. I included the subjects and grade levels taught by the teacher participants.
In middle schools and high schools, an adjusted pass rate of at least 70 percent in all four subject areas is required for full accreditation. In elementary schools, a combined accreditation pass rate of at least 75 percent on English tests in grades 3 and 5 is required for full accreditation. Elementary schools also must achieve accreditation pass rates of at least 70 percent in mathematics, grade-5 science, and grade-5 history, and pass rates of at least 50 percent in grade-3 science and grade-3 history. (2005, October 15).

According to the state schools’ annual report card, the DPS made adequate yearly progress (AYP) at the end of the 2004-2005 academic year. Each of the 66 DPS schools--43 elementary schools, 12 middle schools, and 11 high school and technical centers--achieved full accreditation or accreditation with warning status in 2005. The DPS students scored among the top in the state’s academic achievement tests rankings.

In addition to having regular comprehensive schools, the DPS system provides alternative schools and accelerated programs at the secondary level. Students who attend the alternative schools have not been successful in the traditional schools. The principal at County Area High school, the alternative high school, described the faculty and staff’s missions:

We serve students from the entire county and offer classes and programs for students between the ages of fifteen and eighteen. Currently, our students can earn a Standard high School Diploma [sic], coursework to prepare to take the GED, and a Vocational Certificate in any one of twelve different trades… We are grounded in the fundamental philosophy that every child can learn, but are wise enough to recognize that every child does not learn the same way, the same speed, and with the same degree of motivation. We provide a different approach to
learning and act as a safety net for students who have had difficulty learning in a larger comprehensive environment. (Jones\textsuperscript{2}, n.d.)

Extending the spirit of the alternative school, the DPS system added specialty centers to each high school. The alternative school and the specialty centers share the same philosophy. The accelerated and concentrated curriculums focus on particular academic and/or professional areas. The specialty centers intensively and rigorously prepare students for post-secondary education and various career paths; the centers within the district are as follows:

- the Center for the Arts
- the Center for Communications
- the Center for Engineering
- the Center for Foreign Language Immersion
- the Center for the Humanities
- the Center for Information Technology
- the Center for Leadership, Government, and Global Economics and
- the Center for Science, Mathematics, and Technology. ("Specialty-Centers," 2005)

The district has an International Baccalaureate Program-Middle Years Program (IBMY). Students enrolled in the IBMY or a high school specialty center apply in fifth or eighth grade respectively. Students in either the IBMY or a high school specialty center remain recognized as students in the host school. In other words, they are not identified as students in the centers. They still are eligible to participate in school-sanctioned activities and events.

All of the schools within the DPS have strong technological infrastructures, even though the newer schools are more advanced. Despite this discrepancy, all of the schools

\footnote{2 This administrator’s identity is protected by a pseudonym.}
maintain websites posting information for the community such as local events, PTA
meeting reminders, building announcements, and links to the teachers’ class homepages.
The resources are standard throughout the district.

**DPS—Getting teachers ready through training and professional development**

The full integration of computer technology into daily classroom teaching and
learning has been a tall order for teachers across the United States (Cuban, 2000;
Sandholtz and Reilley, 2004). During the early days of TALI, DPS administrators and
Apple Computers, Inc., sought to ease the teachers into working in a technology-
saturated classroom. District administrators, curriculum specialists, and department
chairs insisted that teachers be equipped with strategies to incorporate the laptops into
their daily instructional pedagogy. After the laptops were distributed to the high school
faculties in the summer of 2001, reports from the district announced:

> Teachers will undergo computer training this summer…and the staff
development component is intense. It includes three hours of on-site
training for each teacher provided by Apple, a full-time technology trainer
in every high school, and a full-time tech support person in each school.
(“Laptop to transform learning for 23,000 [State] students,” June 1, 2001)

Training sessions included knowing the copyright laws, learning about the basic
fundamentals of the laptops, engaging with curricular Internet resources to supplement
academic content, and writing standards-based e-lesson plans. Teachers earned
recertification points and/or monetary compensation for completing e-lesson curriculum
writing workshops during professional development summer institutes.

These same types of training and professional development opportunities were
also held for the DPS middle school teachers when they got their iBooks. DPS
administrators had learned from the growing pains experienced during the transition to the high schools -- the sporadic student and teacher training, the capacity of the schools’ networks, and the disciplinary issues caused by inappropriate uses of the laptops\(^3\). These concerns caused the DPS administrators to rethink the distribution method and timeline of the iBooks to the middle school faculty and students. Providing more training on new equipment for both the teachers and students helped to potentially ease the laptop integration (Woodbridge, 2004). The middle school teachers received their laptops in November 2001 and took part in training sessions for the rest of that academic year. Later, the students began training on the laptops during the fall semester of 2002, but they were unable to take the laptops home. The training took place during an exploratory or gym period. They were able to take them home the second semester that first year.

Learning from the initial mistakes of the laptops in the high schools, such as network overloads and non-educational uses\(^4\) by students, the DPS officials placed greater emphasis on training at the forefront at the middle school level. My study’s participants from the middle schools described their laptop training. For example, when Nia was a teacher at West Middle School, the training was extensive. She attributed such intensity to the fact that her school was viewed as a leader in technology and to the fact that it was one of the newest DPS schools:

[West Middle School] did a good job of training teachers, and all of the students were trained before they actually got the iBooks. So the comfort level was good. And then consistently we would be trained throughout the

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\(^3\) These issues are discussed in greater detail in Chapter Six.

\(^4\) Such uses included but were not limited to downloading pornographic materials, illegal music and movie files, and instant messages during class time. How the behaviors affected the classroom and student access will be addressed in Chapter Six.
year on various programs…like we were trained with United Streaming\textsuperscript{5}. We would be trained with…different software on the computer so that we would better utilize it. (Davis, personal communication, February 1, 2005)

In a separate interview, Thomas, an East Middle School history and civics teacher, reiterated the importance of students learning the fundamentals of the laptop:

\textit{[Y]ou have 6\textsuperscript{th} graders with a $2000 laptop and it required that I teach technology skills and how to be responsible and all those things that go along with using the computer. But once that foundation was set, they were on a roll.} (Jenkins, personal communication, May 19, 2005)

Both teacher participants alluded to the rationale behind the DPS choices to train both the middle teachers and students first before allowing students to take them home—to raise the comfort level and responsibilities through learning the basics of the machine. The year-long training and professional development meetings focused on the use of computer technology in teaching and learning.

All of the teacher participants explained how their classrooms altered—beyond the physical layout of the classroom. They noted how the act of teaching changed. A common consensus of the teacher participants was that the district administrators believed the laptops to be the essential equipment for successful teaching and learning. Personal pedagogies and teaching philosophies were questioned and (re)examined.

What follows are illustrative sketches of the schools and participants. The participating teachers are comprised of four blacks and six whites. Of the ten, six of them are women. Within each school description are sketches of the participating ten teachers from the particular school.

\textsuperscript{5} United Streaming is “a digital video-on-demand service brought…by Discovery Education” (Discovery Education, 2006). With it, one gets “[t]he largest and most current K-12 digital video/video clip library available today; [t]he only standards-based video-on-demand application should increase student achievement; [and practical] teacher and student learning resources” (para. 2). It is not a free service; it is subscription accessible.
Sketches of Participating Schools and Teachers

In addition to a narrative description of the participating schools, below is a chart (Table 4:2) summarizing their socio-economic demographics.

Table 4:2-- Participating School Demographics from 2000 Census Data

<table>
<thead>
<tr>
<th>School</th>
<th>Grade Span</th>
<th>Total Students</th>
<th>Amer.Ind/Alaskan</th>
<th>Asian</th>
<th>Black</th>
<th>Hispanic</th>
<th>White</th>
<th>Male</th>
<th>Female</th>
<th>FLE</th>
<th>R-P Lunch</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Middle School</td>
<td>6-8</td>
<td>931</td>
<td>1</td>
<td>10</td>
<td>803</td>
<td>8</td>
<td>35</td>
<td>453</td>
<td>404</td>
<td>433</td>
<td>114</td>
</tr>
<tr>
<td>West Middle School</td>
<td>6-8</td>
<td>874</td>
<td>2</td>
<td>38</td>
<td>24</td>
<td>9</td>
<td>799</td>
<td>428</td>
<td>444</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>County Area High School</td>
<td>8-12</td>
<td>316</td>
<td>1</td>
<td>5</td>
<td>185</td>
<td>6</td>
<td>116</td>
<td>196</td>
<td>117</td>
<td>156</td>
<td>38</td>
</tr>
<tr>
<td>North High School</td>
<td>9-12</td>
<td>2,114</td>
<td>3</td>
<td>90</td>
<td>691</td>
<td>72</td>
<td>1214</td>
<td>1,066</td>
<td>1,004</td>
<td>43</td>
<td>57</td>
</tr>
<tr>
<td>West High School</td>
<td>9-12</td>
<td>939</td>
<td>1</td>
<td>51</td>
<td>41</td>
<td>21</td>
<td>823</td>
<td>497</td>
<td>440</td>
<td>43</td>
<td>43</td>
</tr>
</tbody>
</table>

Source: National Center for Education Statistics, [http://nces.ed.gov](http://nces.ed.gov) (Key-FLE: Free lunch eligible; R-P: lunch-reduced price lunch)

**County Area High School**

County Area High School is the district’s alternative high school and is located a ten minute drive from North High School. It contains both traditional academic and vocational education programs. The vocational curricula include cosmetology, culinary arts, electricity, marketing, horticulture, nursing, auto mechanics and auto body, business, carpentry, masonry, and printing (County Area High School, “Vocational Home Page,” n.d.). County Area High School prepares those students who will not be attending two or four year colleges to transition into the workforce upon graduation. The majority of the student population is either black or white, 59% and 37% respectively. Close to 61% of the entire student body is eligible for free or reduced-priced lunch.
The teacher participants in my study teach in the core academic subject areas in the school. Mr. James Smith, a career switcher\(^6\), has come into his own as a classroom educator. Throughout his early years as a ninth grade English teacher, he faced the same trials and tribulations as many beginning teachers—classroom management issues, control and comfort with the content, and all of the social and political aspects of teaching that reach beyond academic content (Airasian, 2005; Emmer, Evertson, and Worsham, 2005; Wong and Wong, 2004). He limited his computer technology activity to the administratively required uses—recording attendance, uploading grades, and checking and communicating through email. Fundamentally, he believes that without the distraction of the laptops, he has become a more sound and successful teacher. The behavior management issues decreased dramatically as a result of barely using the laptops. He did, however, use the laptop to plan and prepare for instruction outside of school. Yet he did view the laptops as minimally beneficial to the English curriculum, saying that they would be good for subjects (Smith, personal communication, June 7, 2005). Observing and conversing with James leads me to assert that his teaching pedagogy resembles transmission; it is highly teacher-centered with little opportunity for students to work collaboratively. Student engagement is demonstrated through students working individually and quietly. In other words, student engagement presents itself in how well James controls student behavior.

\(^6\) The state where Mr. Smith works has an alternative certification program. In 2000, the General Assembly approved and appropriated funds to “develop and pilot the first Career Switcher Program” (SDOE, “Program Background,” n.d.). Participants are “individuals who have not completed a teacher preparation curriculum but have considerable life experiences, career achievements, and academic backgrounds that are relevant for teaching in pre-K through grade 12” (para. 1). The first year of the program was limited to military personnel and later expanded to other professions. Preference was given to those individuals who would be able to teach in the critical shortage areas—mathematics, foreign language, sciences, and technology education (para. 2).
The second study participant at County Area High School was Mrs. Dawn Simmons. Each day, the special education teacher commuted for an hour and a half each way to and from school. During Dawn’s tenure with the DPS system, she experienced teaching and learning with the iBook laptop computers. She occasionally engaged in online research with and for her students. Fundamentally, Dawn tailored her use of the laptops to the needs and abilities of her students, meaning that her students required greater structure and supervision with the laptops because “they are special ed” (Simmons, personal communication, June 6, 2005). Again student engagement and learning related to teacher control. Dawn did not view the laptops as essential to her teaching due to the students’ socio-economic and academic “background,” yet she did say that knowing how to use the computers was important (Simmons, personal communication, May 26, 2005).

Lastly, Mr. William Forbes, a sixth year history teacher, was the final study participant from County Area High School. Coming from North Carolina, Mr. Forbes identified a key factor in his relocation--the DPS laptop program. He stated:

I came here last year; I decided to come into a school system where every kid did have a laptop, which made it a lot easier. Whereas there [in North Carolina,] you had to either go to the library or you know bring in a cart. Whereas here, I say, “Take out your iBook,” because they are there.

(Forbes, personal interview, June 6, 2005)

William’s enthusiasm about the laptops was evident; he characterized his use of the laptops in his classroom as a way to connect to the content and to prepare his students for the future. He enjoyed showing “actual footage or pictures, primary sources that may give them first-hand accounts of what actually went on during the time period” (personal communication, June 6, 2005). Hence, the laptops were
a tool with which he could enhance students’ motivation to learn. He believed that knowing how to utilize the laptops to problem solve is essential for today’s students.

_East Middle School_

East Middle School and West Middle School have identical floor plans and technological infrastructures. East Middle School opened its doors in September 1999 and is located in the northeastern part of the district. With 59% of the student population eligible for free or reduced-price lunch, many of the students’ families are unable to pay the mandatory $50 fee for the laptops. Teacher participant Thomas Jenkins said that his students’ parents/guardians asked, “We don’t have to pay for textbooks, then why do we need to pay for the computers” (Jenkins, personal communication, May 19, 2005).

Thomas who taught history and civics for grades six and eight respectively for five years shattered the belief that _every_ student actually had a laptop. Because few of his students had the laptops, he recognized that his teaching with technology had actually decreased, describing that it had “evolved backwards” (Jenkins, personal communication, May 19, 2005). He adjusted his teaching to the resources available in his classroom. He, like many of the teacher participants, explained that he could not do as much as he wanted technologically due to the uneven distribution of laptops.

_West Middle School_

West Middle School opened its doors in February 2000. During the first half of the school year, its students and faculty were split between two other middle schools which were located on the same western side of town. The first principal was one who celebrated the school’s latest technology; he “gently forced” the faculty to utilize and
take advantage of the computer technology available. The same is said about the current principal (Davis, personal communication, February 1, 2005). Located in the west end of the district, the school had a predominantly white (91%) and financially prosperous population (98.9% not eligible for free or reduced priced lunch).

Ms. Nia Davis, a seventh grade U.S. history teacher, had been teaching for 5 years before becoming an administrative intern and then assistant principal at East Middle School at the start of the 2005-2006 academic year. While she was at West Middle School, she was awarded the Sallie Mae Award for the DPS schools, which was given to the most outstanding first-year teacher in the district. One with a gentle spirit, Ms. Davis expressed the tension surrounding the laptops. Her building’s administration and she did not agree on their appropriate instructional uses. She used them when she felt that they had “indeed enhanced the lesson” (Davis, personal communication, February 1, 2005).

North High School

North High School is located on the northern part of the district. Its student population according to ethnicity is fairly even—40% students of color and 60% white. Of approximately 2,000 students, 4% are eligible for free or reduced priced lunch. Visitors to the school immediately see the school’s mission which is also posted in each classroom: Believe, Achieve, and Succeed. The murals on the walls throughout the building highlight “Panther Pride.” The artistic creativity of the student body demonstrates the school’s value on being a part of a community and showcases talents outside of students’ academic standardized test scores. Additionally, the school produces and distributes a monthly newsletter, which is available on the school’s website, to recognize and announce the accomplishments of the entire school community.
This school hosts both the Center for the Humanities and the [North High] Technical Center. The specialty center, modeled after St. John’s College in Annapolis, Maryland\textsuperscript{7}, requires that its students experience “[the] humanities [which] are interrelated liberal arts disciplines used for understanding the lasting contributions made to world civilizations from the ancient to the modern through the study of history, literature, philosophy, and the arts” (DPS, “Center for the Humanities,” 2005). Plus, its enrolled students receive honors credits for English, history, and the humanities elective each of the four years in the program. Grace Peters, a veteran English teacher and director of the Center for Humanities, described the students’ relationship between the regular comprehensive high school component of North High School and the Center:

> Even though they’re in the center for three of their classes-- English, history and a humanities elective, they’re still considered [North High] Panthers because they take their math, science, foreign language, you know everything else like a comprehensive high school. So they’re just taking those three classes, and our goal is to combine the two classes (English and history) through team teaching using a thematic approach so that kids see how history and literature are connected, and I think we add the color to that with the humanities. Now the humanities elective includes music, art, dance, theatre, philosophy. (Peters, personal communication, June 6, 2005)

The Center for the Humanities, as well as the other specialty centers throughout the district, provides unique curricular and professional opportunities for its students.

\textsuperscript{7} The Center for the Humanities is modeled after the academic program of St. John’s College in Annapolis, Maryland. There, the curriculum for the undergraduate students focuses on “the great books of the Western tradition” (St. John’s College, 2006). Students enrolled in a seminar format read literary works of “literature, philosophy, theology, political science, and history. The course of study is roughly chronological, beginning with the Greeks in freshman year and continuing to the 21st century in senior year” (p. 1). Aligned with St. John's College’s academic program, faculty and students boast about the fact that they read the “original” works of the literary canon.
The teacher participants in my study from North High School evolved toward increased instructional usage of the laptops. Grace Peters has taught humanities, philosophy, and English for over 25 years; she is a celebrated and dynamic educator, according to past and present professional colleagues, parents, and students. A lifelong learner, she gained greater comfort with the capabilities of the laptop as a tool for teaching, learning, and “praxis” (Freire, 2003) because she was able to extend her students’ learning to outside the classroom. She encouraged her students to become critical by exercising the political right to question their local and state representatives concerning issues that relate to them. She was an example of a teacher who guided her students to construct their own knowledge with the laptops, as students not having a laptop for financial reasons were not really an issue. Many of the Center for the Humanities students had to travel away from their neighborhood school to attend.

Next, Mrs. Kelly Taylor, mathematics department chair, serves North High School in many capacities outside of her teaching duties; she coordinates and oversees the SAT testing for the area and cosponsors the school’s student government association. A teacher for over twenty years, Mrs. Taylor played a key role in the district’s decision to switch from the iBooks to the Dell laptops in the high schools. During this process, she lobbied to eliminate the mandatory fee, but her efforts proved unsuccessful: the $50 fee remained with the Dell laptop contract (Taylor, personal interview, June 7, 2005). Mrs. Taylor continues to enjoy teaching and makes allowances for those students who do not have the laptops by directing them to the school and county public libraries and to the computer labs throughout the school. Students are able to access her website from any of the aforementioned locations.
Paul Brown is a twelve-month employee of the county. His added responsibilities focus on writing and compiling an online geometry textbook for the district. A self-professed “technology geek,” Mr. Brown epitomizes the mixture of energy, content expertise, and technological skills from which anecdotes of the “ideal” originate. During one of my extended observations at North High School, I witnessed an intricate union of computer technology, geometry content, teaching, and student learning. Mr. Brown demonstrated the “withitness,” or competency, necessary to teach with computer technology well as he navigated around his classroom full of tables, not rows of desks.

The 2005-2006 academic year marked the beginning of change within the high schools. Through the contract with Dell Computers, the DPS administrators selected a pilot classroom in each high school as “the classroom of tomorrow” (Taylor, personal interview, June 7, 2005). Mr. Brown’s room was chosen. Despite this selection, Mr. Brown remained hesitant and concerned, for he gained a level of comfort with the iBooks, created materials and texts on that platform, and had “never been a fan of Windows” (Brown, personal interview, June 7, 2005). He cautiously remained openminded:

I know something that I can’t do because there are just certain “Mac specific” things that are so wonderful that don’t exist anywhere else like iMovie. I’m sure there is some other movie thing, so I don’t know how great [it is], but I know iMovie is wonderful...iMovie talks to iTunes; iTunes talks to iPhoto. They all work together. That’s why this has been so wonderful. Of course it’s all I’ve ever known, so that’s why I think it’s so wonderful. So I don’t know about the Dell.

Even though not all of the content from his online geometry text book transferred from the iBook to the Dell laptop, Mr. Brown adjusted quite well.
West High School

I pulled into the parking lot of West High School, the newest DPS high school located in the western part of the district. Immediately awestruck by the sheer magnificence and grandeur of the building, I saw massive three story windows intricately laced with clean brick. After I parked in a visitor’s space, I went into the main office to check in and alerted the office staff and volunteers that I had a scheduled meeting and/or an observation with Joanne Stevens. I signed the visitor’s log on the computer, and a sticker announcing my name and purpose of my visit came out of the dispenser. (Immediately, I could tell that this school uses some form of computer technology for everything…even a visitor’s name tag!) On my way to Joanne’s classroom, I bumped into students as they rushed to their classes. When I entered Joanne’s classroom, the students were seated at their tables with laptops opened and eyes attentive to Mrs. Stevens.

This new comprehensive high school with bright and wide open hallways also houses the Center for Information Technology (CIT); thus, this school contains some of the district’s most advanced technology. It boasts that the CIT, which is a four-year curricular program, introduces its students to the following:

- fundamentals of information technology, including database design and management, networking, systems architecture and programming;
- application of the principles of systems design and development through partnerships with the business community;
- technology experts from the field as instructors;
- development and maintenance of web sites for nonprofit organizations;
- opportunity to earn certification in web development and Oracle; and
• internships in the [local city and surrounding counties] area (“Specialty Centers”, DPS, 2005).

Large windows and mounted television sets are in all the classrooms in both the specialty center and the regular comprehensive high school.

Mrs. Stevens transferred from North High School to join the faculty at West High School. She has been on the faculty at West since the doors opened. A favorite among her students, past and current peers, and the entire DPS community, Ms. Stevens always has a bright smile on her face. Part of the exuberance comes from the sheer joy of teaching, but it also comes from teaching with the laptops. She listed during our interview the reasons why she uses the laptop computers:

One—because it’s available and I like it. Two—because—two because of the kids. It’s what they know best and so it’s important for us to utilize that because it really does get them interested. They are used to a little bit more fast-paced world than maybe my generation, and so it kind of keeps them moving to whatever we are doing. (Stevens, personal communication, June 7, 2005)

Maintaining balance and utilizing the medium which optimizes student learning, Mrs. Stevens also turned to other platforms to be used in her classroom. The laptop is not the only piece of technology used each day.

Far East Middle School⁸

A final figure in this study is Jane Jackson who had a dual role in the DPS. Her primary position was as the secondary English and Language Arts curriculum specialist. During the second semester of the 2004-2005 academic year, she taught an eighth grade

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⁸ Because Jane Jackson was not recognized as an official faculty member of Far East Middle School, the school is not described in this section. Jackson, as noted within the text, has a dual role as both a district administrator and secondary English teacher.
English course for a teacher who was unable to complete the year and not recognized as an official faculty member. Jane taught this course at Far East Middle School, which is predominately comprised of socio-economically disadvantaged students of color. Jane’s role within this dissertation is to give the context and perspective of both a teacher and administrator, who provided additional background to the deployment of the laptops.

To summarize, this study was focused on secondary teachers who teach in a variety of schools and core content areas. Highlighting the experiences of DPS teachers who taught in diverse socio-economic realities was important when evaluating the effectiveness of the TALI program. It was quite intriguing to see how the teacher participants whose broad range of comfort with and acceptance of the laptops altered the teaching and learning within their classrooms.

The next two chapters detail the teachers’ perceptions and effects of the laptop initiative. First, I share how the computer technology does or does not support successful teaching in terms of how they are used or not used in the classroom. Finally in Chapter Six, I reveal the teachers’ realities within this district which publicizes the one-to-one computer ratio. I specifically share the curricular and instructional adjustments teachers actually make each day.
References


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Some of the direct and indirect references from the District Public Schools which were collected from the school system website have been omitted from the list of references. This was done to protect the district’s identity. Additionally, all references to the state wherein the District Public Schools is located have been removed. (This course of action was directed by the Office of Research Protection.)
Chapter 5
(Re)considering Successful Teaching

Throughout the initial days of the Teaching and Learning Initiative (TALI), the DPS position was that successful teaching heavily incorporated the laptops. It remained despite changes in the administration-- the superintendent who initiated TALI resigned and two of five members of the school board were not re-elected in 2003. Moreover, the district continued to justify its support of successful teaching with computer technology: “Research supports conclusions that the use of technology, incorporating visual and collaborative teaching practices, promotes student learning (“Instruction-Technology”, n.d)\(^1\). The investment into the laptops, according to teacher participants, led to attempts by district administration to exert more control on how teachers taught.

The DPS community has boasted about its high quality, creative teachers who are supported by the latest technology and state-of-the-art facilities. Likewise, the official website states that the school system “believes in empowering teachers by providing them with a wide variety of teaching tools and resources” (“Instruction-Technology,” n.d.). Yet instead of the publicly articulated stance of empowered teachers who are

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\(^1\) As the current superintendent assumed his post, he asked for feedback regarding the laptop initiative from teachers, students, parents, and community members through a survey conducted by the FGI Research, a private North Carolina-based marketing company. With the fate of the computer technology program initiative in limbo, feedback revealed that “parents, students and teachers [were] overwhelmingly in favor of continuing to issue laptops to each middle and high school student” (Ress, 2004). Of the 2,104 building level personnel who participated in the survey, 51 percent said that they were satisfied, whereas 34 percent expressed that they were “somewhat satisfied” (para. 13). The new superintendent, district officials, and selected teachers negotiated a new contract with Apple Computers, Inc., and Dell Computers to continue the laptop initiative. High school students and faculty will have the Dell laptop computers beginning in the 2005-2006 academic year. The iBooks will remain in the middle school during and after the 2005-2006 academic year.
welcomed to use a variety of instructional materials and strategies which may or may not require computer technology, my study’s participants voiced an opposing reality. The teacher participants revealed their perceptions of an overbearing administration seeking to direct their instructional methods.

Throughout this chapter, I discuss one of my findings. Because my teacher participants used or alluded to the goal of being “successful” in the classroom, I use this chapter to explore what it is within the context of TALI. In addition, I use explore how it does (not) fit into what the teachers perceive as their administrators’ conceptualization of it. First, I briefly share what the research literature says about successful teaching with computer technology. Then, I unpack what successful teaching looks like and means in terms of classroom control within the DPS, and finally, I share what successful teaching, from the perspective of the teachers, is--engaging students both in school and in society.

**Successful teaching: A brief look at the literature**

Successful teaching with computer technology as taken up in the research literature has a common link: the classroom teacher essentially determines the type of instruction and student engagement with the computer. He/She first should use the computer technology to help accomplish the lessons goals and objectives. Moreover, successful teaching with computer technology “should enhance the profession of teaching, not stifle it through misdirected technological optimism” (Jost, 2004). David Skinner (1997) noted that “[m]uch of the reporting on the subject [of computer use in the classroom] reflects [the] shift of emphasis from mastery of basic computer skills to using Internet capabilities along with a variety of software to create a new kind of classroom”
Thus, instead of passively delivering information via the computer, successful teaching with computer technology could “defeat monotony” (Meola, 2005).

Next, “because classrooms are situated in and inextricably linked to the broader school and systems, teachers are better able to sustain change where there are mechanisms in place at multiple levels of the system to support their efforts” (Coburn, 2003). The mechanisms to which Coburn (2003) refers rely on the teachers’ beliefs and knowledge about students’ learning and developmental processes. In other words,

> even as teachers are introduced to the massive potential of technology to create, store, and display data, they should reflect on the abilities and limitations of the human hand, heart, and mind in assimilating and synthesizing information in gargantuan amounts and the corresponding implications for children’s learning. (Jost, 2004, p. 91)

Provided that the computer technology is readily available and capable of authentic, enriching tasks, scholars caution that the computer technology should not be viewed as a replacement and/or the primary instructional tool within the classrooms (Cuban, 2004; Ferneding, 2003; Rockman, 1995):

> [The] fundamental assumption that computers make a meaningful and cost-effective difference in learning is not always supported by the research. Computers can be useful in improving learning or they can be a distraction and time filler; the choice is made in the classroom and the home, not the manufacturing facility. The real changes in learning come from interventions not from hardware. (Rockman, 1995, para. 25)

Lastly, to teach successfully with computer technology, one must employ critical decision-making when following national and state technology standards that “show little regard for the cognitive, physical, personal and moral development of the child” (Jost, 2004, p. 92). Neiderhauser and Stoddart (2001) hypothesize that “[c]urriculum reform, in
technology or any other field, is unlikely to be successful unless we understand how teachers’ beliefs influence the implementation of the innovation.” In order for teachers to be successful with computer technology within the teaching and learning process, they need to be mindful of the instructional goals, development of their students, and their own pedagogical philosophies. They all must work cohesively.

The district culture shown in the words and deeds of administrators promoted the increased engagement with the laptops, and it shaped how successful teaching would be recognized. Teacher participants voiced an opposition to what their administrators deemed as successful teaching. They felt that the focus was solely directed toward standardized test scores. In the sections that follow, I will discuss how successful teaching is identified and how it affected who and what controls the classroom.

Successful teaching: Its looks and its implications

Successful teaching could occur without the laptops present. From the perspective of the classroom teachers in this study, it depends on the levels of engagement among students of varying academic abilities and styles. Joanne succinctly described the overarching goal: “[W]e have different types of learning, learning styles, and [I am] to make sure that the child is going to be where [he or she is] the most successful” (Stevens, personal communication, June 7, 2005). The teacher participants expressed that the administrators placed great emphasis on teaching with the laptops, which at times was narrowed to the amount of time students spent on the machines. In other words, teachers

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2 Each year the DPS has county assessment tests. The district has been a leader in measuring student achievement through its yearly end-of-course test in the core and world language subjects. The DPS system is recognized as one which regularly posts tops scores on the state standards test when compared to other schools.
believed that the administration measured successful teaching by the amount of time on the laptops. An apparent disconnect between the administrators and teachers occurred. Teacher participants measured their success by the levels of student engagement and attentiveness to the educational tasks of the class.

In fact, the advocacy for the full integration of computer technology into the teachers’ pedagogy started as soon as any teacher joined a DPS faculty and was reinforced at professional development sessions. Thomas Jenkins, a teacher at East Middle School, recalled, “The specialists at central office [were] here and a part of having a successful lesson was the incorporation of technology in that lesson. So I was taught very early on in my new teacher training to use the computer as often as possible” (Jenkins, personal communication, May 19, 2005).

Some teachers, particularly when being officially observed, felt increased pressure to use the laptops. For example, Nia Davis, who taught seventh grade history at West Middle School, recalled that her school’s administrators viewed successful teaching as only involving the laptops. She explained:

Basically I felt at the school where I was that that was what was expected. When I was being observed, I felt that if I wasn’t using the computer, that I wasn’t teaching to the fullest, and I know that it’s not always about incorporating...it’s about incorporating technology, not just using the iBooks to use them. I did feel that it was important in the school that I was in. It was stressed to use the technology. (Davis, personal communication, February 1, 2005)

Nia continued:

I felt that sometimes there were other valid ways of teaching. I remember one time I was teaching using political cartoons, and I was observed. It was noted that I had not included the technology within the 30 minutes
that I was observed. I just pointed out that I did use technology within the course of the 90 minute block, but that, you know, with everything that I do, I’m not going to use...I’m just going to use technology when it enhances the lesson and because I had all of the political cartoons on paper, I did not see the need to scan them into the computer just to be using the iBooks. (Davis, personal communication, February 1, 2005)

Nia was reprimanded for not using the laptops during the entire class session. She disagreed with the administrators’ stance that they needed to be an integral piece of each lesson. Nia took a stand against her administrators’ pressures, and deliberately chose to use the laptops in ways that augmented her teaching; she maintained that successful teaching with the laptops meant using them in ways that support teaching and student learning. She exhibited resistance (Freire, 2003) by adjusting her computer technology use in ways other than the administrators’ prescribed expectations.

Nia also described building colleagues who used the computer technology for the sake of using it. She said, “I know a lot of teachers would use the iBooks just for the students to take notes, and that’s just a glorified notebook” (Davis, personal communication, February 1, 2005). Facing reprimand and disparaging remarks on (in)formal observations within this particular school, teachers had a difficult situation—comply and use the laptops to protect their careers or not use the them if they do not enhance the lesson(s).

Other teacher participants gave examples of increased pressures during administrators’ observations. East Middle School teacher, Thomas described his experiences being observed. He has taught sixth grade history and eighth grade civics and served as the history department chair.
When I first started, I was in the sixth grade, and...technology was heavily monitored. We [as teachers] always were under a lot of scrutiny if we weren’t using it. So when I first started here, I used it everyday as an organizational tool, for notes, for projects with power points or Appleworks, and [for] research. (Jenkins, personal communication, May 19, 2005)

He continued, “Oh! The scrutiny was intense. Literally...I really felt at least twice a week someone was in my room observing how I use it” (Jenkins, personal communication, May 19, 2005). Thomas’ classroom visits made by other DPS teachers, Apple executives, and educators around the country who wanted “to see how to use technology and to have a balanced discipline plan with the technology-driven classroom”(Jenkins, personal communication, May 19, 2005) became the norm prior to him becoming the department chair. Later as an eighth grade civics teacher and department chair, he explained that because he was characterized as a “good teacher” or because of his position, he was not observed often.

Teacher participants at County Area High School further illustrated the DPS expectations that the computer technology was the primary resource for teaching and learning. In an interview at County Area High School, William (a history teacher) shared the school’s (un)spoken policy, “I think the policy is to use it because it’s there. I mean, that’s the—the—the people in the county provided these [laptops]. Of course, they didn’t do it for anything. They want you to take it and make good use of the [laptop]” (Forbes, personal communication, June 6, 2005). Administrators making sure the utilization of computer technology was included in the annual professional growth plan (PGP) also was a way to hold teachers accountable and ensure that they use the laptops (Simmons,
personal communication, May 26, 2005). Denise Simmons, special education teacher, revealed:

[DPS] expects us to use it. That’s why they issued it. They expect us to use it. It’s part of our PGP as well. When we meet our administrator to discuss our PGP, that’s something [he/she asks]—you know, “What technology have we used in the classroom?” That is something we have to use. It is expected.

The professional growth plan is a tool for administrators to document teachers’ goals to improve instruction, and since TALI has been in effect, the computer technology component is vital.

The expectation to utilize computer technology goes beyond the classroom observations and the PGPs—it becomes exemplified in the schools’ mission. For example, Joanne, a veteran teacher from West High School, explained that because her school was “relatively new” and that it does have “the latest technology available,” she was expected to have her students engaged with computer technology on a regular basis. Even though the pressures may not have been explicitly articulated by her building level administrators as other teacher participants, the same spirit of increasing and advancing the use of computer technology was evident.

North High School—both its regular comprehensive school and specialty center—too contained the spirit of integrating computer technology into the daily instruction. Grace, a teacher and director of the specialty center, remembered how it was stressed. “In the beginning, they [the administration] checked. You had to turn in how many lessons you did and what not. But I think now like, I’m just, out of the loop down here, I don’t think there’s really anything” (Peters, personal communication, June 21,
2005). Even though she noted that she did not think that her school had a formal policy, her school culture levied the expectation. Grace commented:

If teachers were just lecturing and giving out their scantron tests, I think the department head would pick up on that and say, “Hey.” You know? But in social studies, there’s an online curriculum, there’s a webpage you go to get stuff, and [there’s] support for [state standards] mediation [which] is online, so I think if you weren’t doing some of those things you’d stick out like a red flag, sore thumb, or whatever you want to use, and somebody might be on that. (Peters, personal communication, June 21, 2005)

The other teacher participants at North recognized the unspoken code to which Grace referred. Moreover, Paul and Kelly, who both taught mathematics, explained that because of circumstances within their classes, they were not be able to utilize in the prescribed manner; yet they did extend the classroom materials and activities outside of the classroom wall. Paul’s geometry textbook and Kelly’s class resources were accessible from any Internet browser which students may utilize at the public library or school library. Students were to be engaged with computer technology in and out of school.

Either explicitly or implicitly, the DPS administrators both at the district and building level expected teachers to fully integrate computer technology into their daily instruction. The teachers were held accountable through PGPs and their administrative observations. The question of who controls the classroom dynamics and instruction with computer technology certainly surfaces. The space of the classroom, with which teachers could block off policy initiatives by closing the room door, seemingly was being intruded upon by overbearing administrators who would walk by and visit classrooms to check if
computers were in use. As a result, the notion of surveillance by administrators and even other teachers underscored a culture of control. Nealon and Giroux (2003) and Taylor (1998) referred to Foucault’s work about “‘panoptic’ organizations of institutional spaces…[that] instill in individual subjects a sense of being watched.” In other words, instructional control of the classroom was being contested.

Technology enthusiasts have contended that computer technology in schools enable the classroom teachers to “move from being ‘dispensers of predetermined facts’ to ‘coaches and guides.’ Specifically, the computer can assist students in their fact-finding while the teachers carefully structure the learning situation to stimulate curiosity and facilitate discourse” (Johnston and Cooley, 2001). What the literature fails to address is how such a transition, if desired, takes place or what impact the computer technology has on the structure of the classroom. The next section explores how, in the name of control, teachers changed their classrooms because of the computer technology.

Successful teaching: Controlling the classroom

To (re)assert control in a technologically saturated classroom, DPS teachers first devised ways to (re)arrange and to (re)navigate the space of the physical learning environment. Decisions were made based on gaining control in the classroom.

Changes in the physical learning environment

The presence of the laptop computers caused the teachers to rearrange the classroom structure (i.e., the routine and physical layout) (Taylor, 1998). Teachers physically repositioned themselves within the learning environment; they moved away from the front of the room. By doing so, the teachers heightened their awareness of
student behavior and engagement in the classroom, for computer-savvy students became
enticed by the capabilities of the laptops and displayed at times off-task behavior such as
surfing to unassigned screens. Joanne, a twelfth grade English teacher at West High
School cautioned:

I think [the laptop] changes the arrangement and what you can do. I think,
you know, you have to position yourself. You need to make sure you’re in
the right place to see what the students are doing. Sometimes you don’t
have to be behind a student to tell that the student is not on task. You can
just look at the eyes and if [they’ve] got the gleam or that finger’s moving
a little too quickly, then they might—they probably are not on task. And
you just pull them back to where they are supposed to be. In terms of that,
I spend a lot of time in the back, so I can see what’s going on. (Stevens,
personal communication, June 7, 2005)

Students in Joanne’s room did not sit at desks; they were grouped in fours at tables. In
fact on the day of one of my classroom visits, Joanne walked around the room while she
gave announcements and instructions for the day’s visit to the library\(^3\). Her movement
around the classroom and the library emphasized the importance of being aware of
students’ behavior and engagement throughout the class period.

Classroom management was reiterated by Dawn, an exceptional education teacher
at the alternative high school. She concurred that teacher presence is critical, particularly
within a technologically-saturated classroom, and said

\(^3\) During this visit to the library, the students were scheduled to work on their laptops in addition to
utilizing the library’s resources to research paper on possible future careers. Joanne told me she choose to
focus the research paper on careers in order to give her students a “head start” in choosing a major or future
professional path once in college. This research paper enabled the students to gain more information in
terms of prerequisite collegiate majors, years of extra schooling, and the like; for a majority of her students
will be headed to accredited four year institutions of higher learning.
Kids love using the computer. But you have to really watch them very closely because they may do things on the computer that they are not supposed to be doing. So when you give them an assignment, you really have to watch them. (James, personal communication, June 6, 2005)

Similarly, Thomas discussed the impact of the iBooks on his classroom. As a middle school teacher who was comfortable with incorporating them into his instructional practice, he further described his physical position in the classroom when all of his students brought the iBooks to class:

So it became—my classroom kinda became a technology-based classroom, which affects discipline and everything. It shifted the whole way I teach. I had to teach from the back of the class so that I could see all of the students with computers. (Jenkins, personal communication, May 19, 2005)

The repositioning and re-centering of the classroom teacher were used to minimize off-task behavior and to monitor student work on the computers. Some participants made this transition easier than others, and tension usually arose due to devoting more time to concerns outside of teaching the curriculum.

Behavior and Classroom Management Issues

The presence of the laptops brought with it unintended consequences—student misuse. The DPS received a national spotlight when incidents of inappropriate use (e.g., downloading pornographic material, using file-sharing programs, and instant messaging during class) surfaced. The DPS, in turn, to rectify these unintended uses of the computer technology required that all students turn in their laptops over summer and winter break, “so school technicians can strip away class-distraction functions…[and] install a better Internet filter” (Borja, 2002). Behaviors such as these and other violations resulted in suspensions (or expulsions depending on the severity of the infraction) and confiscations
of the laptops. The early days of TALI brought about stricter rules of access and purposes (i.e., educational only). The restrictions of access to the laptops due to student behavior will be discussed in greater detail in Chapter Six.

In reality, some classroom teachers believed that they spent more time on classroom management than teaching. For example, James, who was in his third and fourth year teaching English at the alternative high school during my second data collection phase, expressed his frustration with students’ behavior that precipitated the almost complete elimination of computer technology from his classroom instructional activities. Prior to the arrival of the Dells, James explained his evolution as a classroom teacher:

When we had it my first year here, most students had computers and [the district and school administration] were pushing us to use them, and I found I taught much less because I spent so much time on discipline…[T]he kids could go on the websites for shoes, and fashion, and cars and on and on it goes. And they load games at home and come play them, and of course the students are much smarter than I am with computers, and they would toggle back and forth with their screens. So the time I come and catch them, they’re not on their screen; they’re on mine, but I know they weren’t on mine just a second before but I can’t prove it. So I spent so much time just telling them to put their iBooks away: “We’re not using them right now,” and you know, “Put your iBooks away; we’re not using them right now.” And I put it on the board finally when the item could be used and that still didn’t work; some kids just wouldn’t…and all they’re doing is not education related. (Smith, personal communication, June 7, 2005)
Making the necessary adjustments to the classroom floor plan or even eliminating the use of the laptops, specifically the iBooks during the first four years of TALI, became common, for some teachers’ sense of control was disrupted.

The students taking advantage of the Internet and other downloaded software programs at inappropriate times frustrated the teachers. Paul, a teacher who is especially partial to using computer technology in his teaching, explained:

You turn 30 kids and put a laptop in front of everybody and say, “Alright, here we go.” And I brought this up many a time--the teacher cannot and never will be able to control what that kid is doing. And, the response I get every time is “Well, you walk around the room,” and anybody--anybody can sit there certainly and look like they’re being attentive and be looking at shoes. You know, they’re not going to necessarily, and they’re kids, why wouldn’t they? Why wouldn’t I, you know what I mean, in a class like that?

So as a teacher when it first happened, I mean as soon as we got this stuff, the teachers wanted to be able to turn the Internet off. “I don’t want you online right now.” Click. Give me a switch! Give me that you know, verbal switch to turn it off. But they [the computer technicians] can’t. Or it wasn’t convenient to do, which is why I think you find a lot of teachers who just say, “Close it,” because once you open it, [the students are] gone, and I have no control over where they’re going. Now you can throw in a lot of rules, go-- you know, “I catch you once. I’m taking it away,” and maybe that will work… I don’t blame teachers for saying, “I’m not going to use it because I can’t control the kid,” and they never will. (Brown, personal communication, June 7, 2005)

It is important to reemphasize that Paul’s classroom was chosen as one of the pilot rooms. His classroom was technologically-equipped above and beyond the other secondary classrooms. It, in addition to the Smart interactive board and remote
responders, contained “MP3 players, digital camcorders and cameras, projectors, laser printers, a Web camera, and handheld pocket PCs with Global Positioning Systems” (Meola, 2005, para. 14). As a skilled classroom teacher, he understood the innate curiosity of students and the resistance of teachers to embrace the computer technology fully, yet he realized that successful teaching may actually be disrupted by computer technology integration.

The use of computer technology within teaching and learning varied greatly throughout the district. The discourse surrounding what successful teaching looks like between DPS administrators and teachers continues to become more complicated when the teachers described how computer technology does or does not support engaging students in school.

Successful teaching: Engaging students in school

The computer technology in the classroom enabled some of my study’s participants to explore different ways to teach the material. The popularity of computer technology is described by Roblyer and Edwards (2000):

The use of technology for “traditional, teacher-delivered” instruction (applications such as [Computer Aided Instruction]) has a more established record because the completion of exercises and the taking of tests are easier to measure. However, technology can also be used for inquiry and speculation (Roblyer and Edwards, 2000 as cited in Milner and Milner, 2003, p. 41).
Deciding where and if computer technology fits into the classroom was a concern of the teachers participants. They believed that students’ engagement with educational tasks was paramount. Engaged students ranged from sitting quietly at their desks completing a worksheet individually (as James had his students doing often) to hunching over their laptops working collaboratively to solve a problem. The medium between the two extremes was evidenced by what Grace said when she shared how successful teaching with computer technology is demonstrated: “It doesn’t dominate, but it underlies everything” (Peters, personal communication, June 21, 2005).

For instance, Kelly, a veteran mathematics teacher at North High School, had her students complete “edutest” activities on a regular basis. Such activities reinforced the algebraic curriculum studied in class. During one of my school visits, Kelly’s students were scheduled to take a test, and afterwards the students who had their laptops worked on the edutest. Those who did not have their laptops completed the edutest in the library’s computer lab or waited to complete it at one of the local public libraries after school. Online programs used to undergird curricular content were also utilized at the middle school level. Another teacher, Nia, chose to use a similar program, Quia, to create online quizzes, games, and flashcards for students. She surmised that Quia was an effective resource to reinforce curricular topics and provided students immediate results:

I found it especially helpful for my collaborative students and my students that struggled. My advanced students, while they took advantage of it, already knew how to study and were pretty motivated, and they, as far as their grades, did well before and they did well after. But I saw a major improvement in students that struggled with the use of Quia. (Davis, personal communication, February 1, 2005)
The instantaneous feedback, for better or for worse, did its intended purpose—it aided the classroom teacher in planning and assessing individual students. Some teachers exploited the capabilities of the laptops with drill exercises, yet they accomplished the learning goals, were aligned with the teachers’ pedagogical philosophies, and were age appropriate for their students.

If the union of computer technology and active student engagement is a primary goal of the teachers, then Paul aligned his classroom instruction to this goal. I witnessed the vision of TALI as described by Jane:

Ideally, I think it should be a tool that enhances learning, augments the instruction, and enables the student to become a self-investigator, so that the student is given, for example, a problem—um—or a statement that he or she needs to prove or disprove and is able to go and investigate on the Internet or elsewhere for answers and then can draw conclusions. I think that is one of the best ways that students can learn—is to actually—through inquiry-based [learning]. (Jackson, personal communication, May 14, 2005)

Upon walking into Paul’s classroom, I was immediately captured by the classroom architecture. Instead of desks, tables that had laptops, binders, and writing utensils filled the room (see Appendix B for a diagram of Paul’s classroom). He gained freedom with his wireless tablet notebook that projected his handwritten notes onto the Smartboard, a tool conducive to his teaching style. Further, the technology placed in his classroom allowed him to walk around the classroom to monitor the content on the laptops and to assess the progress of each student without interruption.

Paul at North High School fused the geometry curriculum with the laptop’s resources; he could teach concepts which were more difficult to understand on a
chalkboard, such as diagramming three-dimensional figures, and saved time from creating thirty boxes to show ideas as coplanear and collinear. Paul further explored the laptop’s capabilities by creating an online geometry textbook, which was accessible to other DPS teachers. His excitement exuded as he spoke about the possibilities. Students were able to download and view videos of geometric constructions found on Paul’s class webpage; they could refer to these videos and other class notes outside of class on their own time (Brown, personal communication, June 6, 2005).

As Paul nurtured students’ enthusiasm about the mathematics content, other teachers were doing the same in their classes. The computer technology in the schools enabled teachers to create new areas for deeper inquiry. William, who came to DPS’ County Area High School because of the laptops, enjoyed the ease of research and presentation possibilities both in and out of the classroom.

When I do use [the laptops], especially for history, it’s really good, for there are so many websites that are out there that you can utilize for really any kind of project that you may want to do. But a lot of times what I’ll do is, for example-- if the concept is World War II, and I’ll tell my kids, I kind of give them the green like, kind of where I go: “The Battle of D-Day. Try some search engines and find anything you can on DDay.” And then what I’ll do after about 10 or 15 minutes is I’ll call them up and say, “What did you find?” and they’ll go, “This is what we found.” And I’ll try to correlate it back to what we had learned, and I’ll do it that way some times. Sometimes we’ll do a controlled project where I will tell them to look for a certain topic or certain person like in the Harlem Renaissance. You know a lot of times, I’ll tell them to type in “Harlem Renaissance,” and then, of course, they’ll get Langston Hughes, they’ll get Zora Neal Hurston, and they’ll get Duke Ellington, and of course the list goes on.
It’s really great for them because it’s so easy there are so many websites out there. (Forbes, personal communication, June 6, 2005)
The Internet has a wealth of information available on it. Not all of it comes from credible sources and/or is accurate. William encouraged his students to read the information from various websites critically (Clark, 2003) before reporting to the class as a whole. Modeling how to and expecting students to research, analyze, and synthesize content were ways in which the teachers used computer technology to support successful teaching.

While the laptops have been promoted as tools which will revolutionize and transform classroom teaching, the reality is that the teaching has not. The laptops were used in ways which fit the already established classroom routines. The teacher participants shared their experiences. Participants—specifically Joanne, Nia, Paul, Thomas, and Grace—addressed the advantages of the laptops which lessened the paper load, yet the amount of “paper” work did not decrease. Students would “drop box” their work and get class notes on the virtual share. Joanne explained, “[Students] give me papers that way, so I get lots of information through technology in that form” (Stevens, June 7, 2005). Even with the virtual share, the teachers still needed to supply hard copies of all classroom materials in case students did not have their laptops. Therefore, the DPS participating teachers’ overall workload had not actually streamlined but increased.

Examples of DPS teachers utilizing the laptops in ways that merged smoothly into the core content were prevalent. The scholarly literature on the use of computer technology highlighted examples of classroom teachers who fine-tuned its uses to fit their current classroom routines and instructional practices (Cuban, Kirkpatrick, and Peck, 2001; Skinner, 1997). According to East Middle School teacher Thomas, the transition to
a technology-based classroom shifted the way he taught, but in reality, the shifts were not drastic. To explain, he said:

So—any kind of work would somehow transition to using the computer. Any worksheet or graphic that I would use, rather than print it, I would just have it my share folder. [Students] can access it, fill in the blanks, etc. There was always, for me, some type of link to go to for further information. It kinda really addressed the issue of having advanced kids in your class that finish early or need more work or more challenging work. I did a lot of webquests. I created a lot of presentations and power points and presented a lot of it. (Jenkins, personal communication, May 19, 2005)

He had students go to the library to research topics using primary and secondary sources within print texts, and he engaged his students by incorporating webquests and Internet searches on the laptops. Research literature cites other examples of teachers who used the computer in ways similar to Thomas, ways in concert with already established pedagogies and instructional practices. For example, Cuban, Kirkpatrick and Peck’s (2001) study based in two high schools in the Silicon Valley, California, found that the participating teachers “noted the importance of having an additional tool to use in their customary repertoire of teaching practices. They say students’ direct access to information was a phenomenal enhancement to their teaching” (p. 824). Yet, the same basic activities—lectures, discussions, paper-based assignments, use of videos and the overhead projectors—remained, as the best tools to teach the curricular material which may or may not have required computer technology. Robertson (2003) concurred that the “most frequent use of [computer technology] did…seem to correlate with teachers’ general philosophical stance with regard to teaching and learning.”
In summary, the TALI laptop program did not dramatically alter the ways in which the DPS classrooms were run. The difficulty with making significant change in classroom, if that is the desire, focuses on the concept of the depth of scale. DPS officials with TALI intended to institute large scale change in teaching and learning. Coburn (2003) cautions that classroom change cannot be taken for granted. She explained:

Furthermore, when teachers do bring reforms to their classrooms, they do so in ways that vary, at times substantially in depth and substance…Because teachers draw on their prior knowledge [and] beliefs, they “gravitate” toward approaches that are congruent with their prior practices…, focus on surface manifestations (such as discrete activities, materials, or classroom organization) rather than deeper pedagogical practices…, [or] graft new approaches on top of existing practices without altering classroom norms or routines. (p. 4)

Overall, change, just as successful teaching, was relative to one’s own perspective. Change and classroom control were, and continue to be, interrelated.

**Successful teaching: Engaging students in society**.

In some cases, the impact of computer technology reaches far beyond the classroom walls. Grace, an English and humanities teacher, grew into her affinity toward the laptops. She found ways to use the laptops in order to extend the curriculum. By the time the fifth year of TALI came, she explained how the computer technology had a place in her classroom and school:

So, I don’t know, I just can’t imagine not having it, but when we first started it and that whole process I’m like, you know, what are we going to do with all of this, and how are we going to integrate that? But, now I
think it’s so much a part of us [that] I don’t know that we could operate without one. (Peters, personal communication, June 21, 2005)

She continued:

I just feel like--this is a personal opinion-- but I just feel like our computers here put us into the renaissance and you know, where we go it’s wide open depending on our ability to think it through rationally and reasonably and use that tool as best we can but to not have it would definitely throw us back into the dark ages. (Peters, personal communication, June 21, 2005, emphasis added)

The laptops and its accompanying software resources opened up the floodgates for curricular possibilities and responsibilities. For example, Grace’s course, as well others within the Humanities Center, utilized the Internet to get primary sources, for there was no single textbook (Peters, personal communication, June 21, 2005). Taking advantage of the possibilities afforded by the Internet is what technology enthusiasts celebrate and publicize—bringing more sophisticated technologies into the United States classroom can lead to more engaged, critical, political, and active 21st century citizens (NETP, 2005). Grace’s students read the original texts of works by Socrates and artists, speeches by politicians, and United States Supreme Court rulings. Grace had always been a teacher who wanted to expose her students to as many resources as possible. Therefore, she used the laptops in ways that were aligned with her own teaching philosophy.

In addition, the students in Grace’s classroom were engaged in social action. She noted during our interview that she had her students refer to “different websites for Congress and [to see] what bills are up…But [she] also made them learn how to write a letter to the Congressmen. [She] felt like they needed to do that” (Peters, personal communication, June 21, 2005). The extensions and connections to students’ lives
outside of the classroom and in society-at-large were the motivating factors for Grace’s computer technology use. She and her students turned to the laptops in ways which enhanced and supplemented the curriculum.

Raising the political and social awareness of the students, Grace epitomized a critical educator. Hinchey (2004) characterized such actions as “schooling for participative citizenship.” In it, the teacher’s goal is to replace efforts to cultivate a blindly patriotic citizen with efforts to nurture an actively engaged one, a citizen who sees democracy not as an impersonal, irrelevant, and distant system but as a living and accessible one that offers them hope of changing their lives. Educating such a citizen means moving away from treating students as empty receptacles to be filled with received wisdom and toward encouraging them to become significant actors who play a key role in shaping the world/s they inhabit.

(p. 122)

Grace’s purpose as an educator aligned with this description, for she deemed herself successful as a teacher because her students “can write in any direction; they can give a speech, they’ve written letters to Congress online and whatnot, and they can do just a little bit of about everything” (Peters, personal communication, June 21, 2005).

As the next chapter will explore, the one-to-one computer ratio is misleading and affects what the teacher can/not do instructionally. In other words, teachers have had to make adjustments and alterations in their teaching. They focus on students’ equitable treatment and achievement in and out of school. These teachers have had to rely upon their professional knowledge, skills, and resources to develop instructional activities and strategies which support and enhance student learning. Finally for TALI to initiate great
documented change, “an ‘internal’ reform...held by districts, schools, and [most importantly] teachers who have the capacity to sustain, spread, and deepen reforms principles themselves” (Coburn, 2003) must also confront barriers—specifically access and training. These obstacles will be discussed in the next chapter.
References


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4 Some of the direct and indirect references from the District Public Schools which were collected from the school system website have been omitted from the list of references. This was done to protect the district's identity. Additionally, all references to the state wherein the District Public Schools is located have been removed. (This course of action was directed by the Office of Research Protection.)


Chapter 6

I Want to Use the Laptop: Issues of Access

It is a few minutes after 8 a.m. at County Area High School. Mr. James Smith, a ninth grade English teacher, is readying his room for the school day. As he writes the day’s agenda and academic standards on the board, Mr. Smith sips his tea out of a styrofoam McDonald’s cup. Each day, he stops by a fast food place to pick up breakfast for two of his students. Today, he brought a sausage biscuit and a breakfast burrito. Students pop their heads into the classroom saying “Hey!” Mr. Smith has always been a popular teacher whose nicknames play off his last name. His confidence as a classroom teacher and his popularity have grown each year.

In the background, soft piano jazz music plays. James’ teacher desk is in the back of the room. That way, he will be able to see the backs of all his students from his desk. At the time of my observation, I believed this arrangement was so that he could see the laptop screens of his students, but I later discover that this arrangement has little to do with the laptop computers because his students either do not have or barely use the laptops in his class. His desk is placed in the back corner of the room, so he can survey the entire room. He sees who enters his room, what is on the board, what is showing on the television screen, and on what his students are working. His arrangement has more to
do with the overall classroom management than with the surveillance of students’ laptops. ¹

After the morning announcements and homeroom are complete, Mr. Smith’s first period class files into the room. Although nineteen desks have a literature book and dictionary placed underneath, there are three students in the class. This period, as does the next, focuses on reviewing literary terms such as plot, resolution, rising action, and climax along the “story arc line,” which would be on the semester exam. However, the first activity requires the students to correctly edit two sentences on the board—*The piaro tribe in venezuela has an interesting custom on special occasions. they roast spiders the size of dinner plates.* One student out of the three (and four out of eight in the next period) uses the laptop to complete the sentence editing exercise. It is interesting to note that the word processing program indicated where most of the errors were within the sentence.

After recording the attendance on the school’s computerized program and going over the sentence corrections in both classes, the students who had the laptops are told to put them away, for they are not necessary for the remainder of the period. (Not all of the students in the second class comply.) James, the teacher, begins to discuss the upcoming semester exam. During the review session which consisted mostly of call-response and recall exercises, the students referred to their notes in their binders. Later at the same point during second period, James immediately walks to the agenda on the board and adds “Put the laptops away now!” because two students started surfing the Internet.

Throughout my visit in James’ classroom, I noticed the laptops’ presence was minimal, yet their impact was great. Clearly, not every student has a laptop. They did,

¹ See Appendix B for a diagram of James Smith’s classroom.
however, change the classroom dynamic. This circumstance did not change James’
general sentiment about the curricular possibilities afforded by the computer technology,
as it had been for other teacher participants. In a previous interview, James noted that he
did not believe that the computer technology was beneficial to an English classroom.
James’ opinion seemed also to be influenced by maintaining control of the class (i.e.,
classroom management). The low numbers of student laptop computers had precipitated
this particular classroom to become more teacher-centered and technologically-minimal.

The District Public Schools in its efforts to increase the use of computer
technology in teaching and learning attempted to control and alleviate the common
obstacles relating to the smooth integration of computer technology into the classrooms.
Therefore, these concerns--access and training-- dominated and guided the DPS
negotiations with Apple and Dell. Unfortunately, access to the laptops computers, as
demonstrated in James’ classroom, ended up being far from one-to-one in spite of the
district’s intentions and preparation.

Within this chapter, I describe three ways (socio-economic constraints, repair
issues, and consequences of students’ misbehavior with the laptops) in which computer
technology access in the DPS is denied and may change the instructional process. First, I
share the district’s vision of access to computer technology.

The DPS vision of access to computer technology

Warren Hope (1996) listed five dominating factors which facilitate or hinder
teachers’ use of computer technology. With the support of the research literature, he
described the degree to which these factors-- ease of implementation, access to computer
technology, training, collaboration, and sufficient time—work in concert with teachers’ views and the integration of computer technology into classroom instruction (pp. 106-7). Therefore, the DPS officials through their partnerships with Apple Computer, Inc., and Dell Computers advanced the factors outlined by Hope (1996). Particularly, the DPS computer technology initiative sought to be ahead of the national trend of the number of computers in schools across the United States by enabling a wider population access to computer technology.

The percentage of public schools with access to the Internet jumped from 35 percent in 1994 to 95 percent in 1999, but schools that serve the poor still have less computing equipment and slower web connections. Public schools that serve the poorest populations average 16 children per computer, while more affluent schools average 7 students per computer” (Attewell, 2001, p. 253).

According to the Technology Counts 2006 report,

From 1999 to 2002, student access to instructional computers improved dramatically in all types of schools. The ratio of students to computers dropped from 5.7-to-1 to 3.8-to-1 during that period. The pace of improvement was somewhat faster in high-minority and high-poverty schools, a development that helped to narrow the technology-access gap between such schools and those with lower concentrations of nonwhite and economically disadvantaged students. But since 2002, the average level of access has barely budged, remaining close to four students per instructional computer. (Swanson, 2006)

The trend of creating greater access for students within public schools has expanded to more students. Through its partnership with Apple and Dell, DPS officials tried to eliminate what Henry Louis Gates described as “cyber-segregation” (Attewell, 2001). This civil rights challenge of the millennium was addressed by DPS administrators. They
explained that the “school system’s vision is to close the digital divide by providing computers and Internet access to all students” and to continue to enrich teaching and learning in preparation for a 21st century society (DPS, “Why [DPS]?,” n.d.).

Instructionally, many teachers have always been restricted by not having the one-to-one computer technology access. Prior to TALI, teachers would have to schedule visits to the computer lab. Limiting computer technology use to the space of the computer lab did not lend itself to authentic, enriching, and frequent experiences. Nia, whose sentiments were echoed by the other study participants, described her instructional planning and environment at West Middle School before the iBooks:

Well before the iBooks our school had a computer lab. And so it was a big deal to take the kids in. As a teacher I would really have to plan ahead to make sure that I had the use of the lab and then it was taking the students there and all of that. So I really didn’t use technology as much.

(Davis, personal communication, February 1, 2005)

Elsewhere, taking a class to the computer lab proved just as difficult as reserving the traveling computer carts. James at County Area High School surmised, “Certain teachers really like [the traveling cart of laptops] and it’s hard to get the carts so, because they always want them” (Smith, personal communication, June 7, 2005). This situation was common at other DPS schools (Jenkins, May 19, 2005; Simmons, personal communication, May 16, 2005). DPS officials attempted to eliminate the random and sporadic computer technological experiences and marketed TALI as a step into the educational future to the district faculties and communities. Supposedly, teachers would never have to travel to the computer lab again because all secondary students would have

2 These traveling computer carts had a “class set” of laptops on them.
personal laptops. Oftentimes, limiting computer technology use to the space of the computer lab did not support increased frequency (Becker, 1999).

**Access denied: Concerns about socio-economic status**

During the negotiation phases of the Apple and Dell partnerships, the DPS officials and the teacher representatives vocalized the need to have the laptops available to all of the secondary students at the lowest possible rate. The guiding philosophy of the partnerships aligned with the federal government’s vision for moving public education into a new dimension through computer technology: With the emergence of the Internet and other advanced technologies, geographical, socio-economic, and physical barriers have increasingly become less of a restraint to a new type of education (Lewin, Mavers, and Somekh, 2003; Quesinberry, Glickman, and Babyak, 2003). Despite economic, structural, and technological disparities among DPS schools, the district and the Bush administrations celebrated the possibilities of TALI (“Success Stories,” 2004).

North High School teacher Kelly Taylor served as a teacher representative on the planning and negotiation committee which brought the Dell laptops to the district. She described the possibilities equitable access to computer technology brings to teaching and learning and also opened up the discourse of the DPS’ socio-economic disparities. She explained:

> [When] everybody has access to the same amount of technology, …that kind of levels that playing field. So actually, we’ve seen more and more kids that couldn’t afford a computer, and this is the only way they had that opportunity. The rest of the schools [i.e., the western schools], they can buy and sell every computer we have that could fit in their hands. Probably, the eastern schools, you know, their issue is more concerned
about that $50 fee, but [the district and Dell are] going to try to figure out a way [to] maybe get funding to pay, to get some of the industry to pay that $50 for some of those kids. I don’t know if they’ll take care of it. That is my concern. But I want every kid to have one; I want to be able to use it. (Taylor, personal communication, June 7, 2005)

The district’s efforts to expand resources and access to computer technology to all secondary student populations ought to be commended. Yet, the gap, however lessened, remains.

When TALI was first introduced, the district levied a $50 rental fee and a $100 damage fee which was to be set once a laptop needs to be repaired or replaced. The truth of the matter is that not all of the students’ families and guardians were able to pay the lease fee. This caused teachers like Kelly to push their plight to the forefront. Within the schools, class struggle was manifested, as those financially disadvantaged remained behind those who had greater access to the technological resources and in spite of the elimination of the $100 damage fee per the agreement with Dell Computers.

If teachers had the desire to advance the use of the computer technology, some participants said that they were unable to do so due to the pitfalls brought about through issuance fee(s). This was a reason why the one-to-one computer ratio was not truly realized. Thomas, an East Middle School teacher said that unequal access correlated with the socio-economic stratification among the students in his classroom.

[B]ecause so many students that don’t have it—you have parents who have four kids in the county and all four owe $100, and they just opt not to get them. But if everyone did have one or if I had a classroom set or something consistent, I would use it everyday. But it’s hard to have 8 on one side using them and 16 not using them. I just kind of subsided or
minimized my use of them. (Jenkins, personal communication, May 19, 2005)

Similarly, Paul stated that he was more creative and energized as a classroom teacher with the infusion of the computer technology, yet he felt restrained because of some of his students’ financial situations. He explained:

But one reason why it’s been messy is because not everybody has had one for so many reasons. Money—um, just the fact that they break and the repairs, and they certainly have gotten better at all of these, or both of those, you know, and trying to help kids pay and fixing them quickly. But as a teacher, if not every kid has one, even if there’s one kid, but if it was a fifth, you know. I mean out of thirty— if five kids didn’t have it, how can I assign a grade to something that five kids can’t have?

For me what I’ve always wanted to do [was] that interactive, I wanted kids to create on that Sketchpad software; I wanted them to make these things, and they’re not going to talk about motivation, the greatest motivator is the grade. …The good stuff, we’ve just sort of done it. It’s been sort of trivial and then it’s back down to the worksheet. But if I could assign a grade, if everybody had it so it was fair to assign a grade, then I think it would have been a very different class for me, and for them. But we’ve never had that. (Brown, personal communication, June 7, 2005)

Circumstances both inside and outside of the classroom served as intervening variables oftentimes superseded teachers’ ability to fully utilize the laptop in the teaching and learning process. Often, a student who did not have a computer could not afford the fee.

Table 6:1 summarizes the average percentage of students, as reported by the teacher participants, without laptops each day.

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3 Refer to Table 4:2 in Chapter Four to review the schools’ demographics. See the FLE and R-P Lunch columns.

4 The percentage the average of students without laptops is compiled across the teachers’ classes.
Table 6:1—Percentage of students without laptops each day according to participants

<table>
<thead>
<tr>
<th>Participant*</th>
<th>School</th>
<th>Subject and Grade Level</th>
<th>Self-Reported Avg. % of Students Without Laptops Each Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas Jenkins</td>
<td>East Middle</td>
<td>History/Civics</td>
<td>11</td>
</tr>
<tr>
<td>Jane Jackson</td>
<td>Far East Middle School</td>
<td>English, 8th</td>
<td>10</td>
</tr>
<tr>
<td>Nia Davis</td>
<td>West Middle</td>
<td>History/United State history through WWII</td>
<td>1</td>
</tr>
<tr>
<td>William Forbes</td>
<td>County Area High</td>
<td>History</td>
<td>95</td>
</tr>
<tr>
<td>Dawn Simmons</td>
<td>County Area High</td>
<td>Special Education</td>
<td>90</td>
</tr>
<tr>
<td>James Smith</td>
<td>County Area High</td>
<td>English/9th</td>
<td>90</td>
</tr>
<tr>
<td>Paul Brown</td>
<td>North High</td>
<td>Math/Geometry</td>
<td>15</td>
</tr>
<tr>
<td>Grace Peters</td>
<td>North High</td>
<td>Humanities, Philosophy, English &lt; 1 (excluding those at the Help Desk)</td>
<td></td>
</tr>
<tr>
<td>Kelly Taylor</td>
<td>North High</td>
<td>Math/Algebra</td>
<td>8</td>
</tr>
<tr>
<td>Joanne Stevens</td>
<td>West High</td>
<td>English/12th</td>
<td>0</td>
</tr>
</tbody>
</table>

Kellner (1989) questioned “whether future technological development will benefit the majority of the people or only the ruling elites.” TALI ultimately did just that—benefit the elite. The DPS computer initiative exacerbated the divisions between the have and have nots. The elites were still able to optimize the laptops with the classroom. Teachers usually were able to create interactive online learning activities because students had laptops. However, those students without laptops due to financial constraints were denied “new possibilities for progressive social transformation and emancipation by eliciting the possibility for significant social restructuring” (p. 213). Based on the case of DPS, the uneven access to the laptops for financial reasons perpetuated the class struggle, leaving some students even further behind their peers.

Access denied: Help from the Help Desk

Computer technology is not fail safe. It breaks. Having a student tote a laptop around bustling, busy hallways and active classrooms can lead to wear and tear. As

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* Jane Jackson served as a district curriculum specialist and taught an eighth grade English class at a local middle school during the second half of the 2004-2005 academic year.
alluded by Paul, a teacher in the computer technology pilot classroom at North High School, students have had laptop maintenance issues. Students whose laptops need repair may go to a help desk which is centrally located in each school. Prior to going to the help desk, teachers and students performed a series of troubleshooting exercises. Both the middle and high schools have provided training to the faculty and students so that they will be able to navigate through technological problems (see Davis, personal communication, February 1, 2005; “[DPS] Teacher Portal,” n.d.; Jackson, personal communication, May 15, 2004). The training sessions were devoted to learning the basics of the laptops’ hardware and software. If the teachers and students are unsuccessful in fixing their laptops themselves, then other choices must be made.

Because the length of a class period varies throughout each middle and high school, leaving the computer laptop at the help desk could mean a student could quite feasibly not have his/her machine for an entire period. Teachers are then left with the task of providing additional resources that help compensate for the students who lacked the computer technology. Jane, a DPS administrator and teacher, told an anecdote about a situation in her classroom wherein a student’s laptop was being repaired at the help desk. Consequently, he did not get his computer back within the class period. She noted that this student who was to be investigating the common study novel’s author and some of the historical aspects of the novel felt helpless and out-of-sync without a laptop. Jane allowed the student to borrow her laptop for the scheduled literature circle activity. Her reflection segued into a commentary about the logistical realities of a one-to-one computer ratio:

6 See Appendix C for the schools’ regular bell schedules.
Another thing is just the technicalities of it…um…computers tend to break down more than pencils, and as a result, many students will come to the classroom and not have a computer to use. And so that it’s a paper/pencil thing, and that really is a handicap to the student. I believe, however, that when all students have it, then there is such an equality established in the classroom that it is a marvel to actually witness. So the drawbacks aren’t as overpowering as the positives. They can be overcome, but the technical aspect of it [makes it difficult]. (Jackson, personal communication, May 15, 2004)

The classroom learning activities are also affected by the help desk repairs. Students lose access to their computer technology and fall behind their classmates.

Access denied: Student misbehavior

DPS secondary students could lose their laptop access and privilege by disobeying district’s the Acceptable Use and Internet Safety Policy (2005). Appropriate behaviors and uses include making the laptops available for inspection by teachers and/or administrators upon request, using them for “school-related purposes only” during the academic day, and not attempting to override or bypass the DPS filtering software (p. 1). Once receiving the laptops and going over the policy, students and their parents/guardians must sign the contract. Violation of the policy has brought about disciplinary issues and consequences which were unheard of prior to the laptops.

The first year of TALI was filled with newspaper and national and local news reports exposing illicit student behaviors with the laptops (Borja, 2002). Critics of the initiative complained that students could not handle the freedom afforded by the laptops. Students’ lost access to the laptops (and potentially all DPS computers) affected the

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7 See Appendix D for the district’s Acceptable Use and Internet Safety Policy.
classrooms. As mentioned in Chapter Five, teachers were confronted with difficult and different classroom management situations which were compounded by the laptops. Students’ misbehavior forced some teachers either to limit or eliminate the use of the laptops all together within their classrooms.

District-wide, tightened access was precipitated by some “embarrassing incidents” (Borja, 2002; see Bowers and Meola, 2005). For example, “several dozen students were caught downloading and sharing pornographic Web sites. The high schoolers were suspended and their laptops were taken away” in order to remove the material (Borja, 2005, para. 7). Criminal behaviors, which were reported to primarily occur in the western part of the district, caused DPS administrators to install better filters and to discipline students. In December 2001, “a 16-year old allegedly hacked into teachers’ and students’ iBooks, created an interim report card for himself, and passed pirating software to other students” (para. 8). He was expelled. However, students who served the standard ten-day suspensions for having pornography on the laptops usually got their laptops back after the punishment. If the penalty was severe and the student was not expelled, he/she potentially may have lost the laptop while he/she was a student in the district.

The issue of access is complicated further. The students who violated the district’s Internet and computer technology use policy were being punished. In some cases, the laptops did not get returned. The students’ decision to use the laptops in unauthorized ways hindered their progress in class. The teachers, in fact, found it necessary to do extra work by preparing alternative activities and materials for those
students without the laptops. Instead of streamlining the teaching and learning process, the lack of laptops added more work for the teachers.

The inequitable access to computer technology contributed to the teachers’ instructional choices. Therefore, a question remains: Does a one-to-one computer initiative expand access? What follows is an unpacking of this question.

Access denied: Better in a one-to one?

The participating classroom teachers stressed the importance of fairness in terms of grading, giving assignments, and providing instructional activities. Despite the DPS administrators’ efforts and partnerships with Apple Computer, Inc. and Dell Computers, the same issues—financial constraints and unequal technological resources—continued to plague the district’s communities. Generally, the laptop computers, used or not, provided an extension of participating teachers’ pedagogy.

The choice platform for teaching and learning with the DPS may certainly seem to be cutting edge, yet a question lingers: For whom is this access to learning reserved? At one level, the answer is everyone. Again on the surface, this is a noble goal; however, the reality is that more often than not, the same population of white, middle class students capitalizes. Jennifer Grill asserted in her research that “we are increasing access, but not necessarily broadening it” (1999, p. 32). Based on the case of the DPS, I must agree.

The DPS corporate partnerships attempted to lessen the digital divide by expanding the amount of home Internet ready computers. As studies have shown (see Hoffman and Novak, 1998; Novak and Hoffman, 1999; Research Center, 2006), the digital divide, separating middle and upper class whites from people of color (usually
African-Americans, American Indians, and Hispanics), greatly depends on whether there is a computer in the home. The same could be said of economically poor whites. The divide is narrowed with digital opportunities at school but only to a small degree and for certain students. For example, DPS officials have made provisions for a reduced cost Internet Service Provider (ISP) (“Why [DPS?,” n.d.). This relatively cheaper ISP carries with it heavy assumptions about the technological infrastructure of students’ homes, for not every home has an additional phone line available for a dial-up ISP connection nor does every home have extra money for the monthly access fee. Are schools able to confront this issue? If so, how? Both issues of disparity between social class and race are obvious and have made their way into the DPS schools.

The teacher participants within my study applauded the district for making the DPS efforts and support placing a computer in the hands of its secondary students, faculty, and staff. Yes, there has been a narrowing of the digital divide within the district; however, the fact that there is a fee levied upon each student hinders the universality of the one-to-one initiative. I must reiterate a concern of Thomas and his students’ families: If there is no cost for textbooks, then why must there be a cost associated with the computer technology? Some students and families have chosen not to pay or, unfortunately, could not afford to pay the required fees. Thus, another question remains: Is more access better?

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8 DPS officials reached an agreement with a local internet provider. The following rates are only for families with students in DPS schools:
- $12.50 per month to be paid monthly. (There is an additional fee to sign up for monthly billing of $12.50.)
- $11.00 per month for a prepaid 6-month contract or $66.00.
- $9.75 per month for a prepaid 12-month contract or $117.00.
The Internet provider also offers an at home filtering system so that “objectionable” sites may be avoided. (DPS, “Why [DPS]?,” n.d.)
There is a distinct line drawn between the two halves of the district. Those in the western part of the district (i.e., Joanne and Nia) utilized the laptops in their classroom environment more regularly, for a majority of their students (excluding those whose laptops were at the help desk) had computer technology. While they did not agree with DPS administrators’ position that the laptop needed to be the primary tool for instruction, Joanne and Nia’s students used the laptops more regularly than the other participants. The programs and online resources available exposed their students to primary sources, streaming videos, webquests, and various assessments based on and expanded upon the state and district standards. Teachers who taught in the northern and eastern areas of the district were more vocal about the desire to infuse different types of active learning into their classroom environment, yet the absence of laptops halted such opportunities. Jane, Paul, William, and Kelly\(^9\) made allowances for their students who did not have the laptops. Either they surrendered their laptops, provided hard copies of the notes and/or activities, or made the class resources available on both the school and public libraries. Still, teachers’ use or nonuse of the computer technology ultimately aligned with their beliefs about teaching; their students’ emotional, physical, and mental development; and their instructional goals and objectives.

The DPS one-to-one computer initiative, TALI, had increased access to some of those who had before been unable to afford a new laptop computer. Yet, TALI did not live up to its “one laptop for all” secondary students promise. It left the teachers to make adjustments in their teaching and learning yet again.

\(^9\) Paul and Kelly taught mathematics at North High School. William taught history at County Area High School.
References


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Some of the direct and indirect references from the District Public Schools which were collected from the school system website have been omitted from the list of references. This was done to protect the district’s identity. Additionally, all references to the state wherein the District Public Schools is located have been removed. (This course of action was directed by the Office of Research Protection.)
Chapter 7
A Look Toward the Future

One-to-one computer ratios in public education have garnered attention within educational reform discourse, and more states are turning to this as a way to improve student achievement and teachers’ instruction in public schools. For example, Maine has instituted the Maine Learning Technology Initiative (MLTI) which provided laptop computers to the state’s seventh and eighth students and teachers (Mahoney, 2003; MLTI, 2005). Also, a high school outside of Tucson, Arizona, has eliminated textbooks; it is completely wireless (Murray, 2004). Both reports have transformed teaching and learning experiences. Pennsylvania Governor Ed Rendell announced in his 2006 budget speech his proposed “Classroom for the Future” initiative. His hope is that by 2009:

Every public high school classroom used to teach the four core subjects will have an Internet-equipped laptop computer on every student desk, as well as multimedia technology at the teacher desk. What’s more [the state] will invest in professional development for Pennsylvania teachers and school leaders to teach them how to use the new technology that will boost the skills and knowledge of [the] students. (2006, para. 66)

In fact, the federal Department of Education has celebrated schools and districts which have such technological resources (2004). Anecdotes about the transformation of teaching, the increase of student achievement, and the reallocation of funds were shared both in its NETP report and in the official press conference making this appear to be a
positive trend. My research took place in one of the “success” story districts, and I discovered another side to what had been publicized.

The DPS administrators proclaimed through words and deeds that the one-to-one laptop computer program leads to successful teaching. Yet their definition of successful teaching was not particularly complicated. They believed the use of the laptops in teaching and learning will aid teachers in preparing the students to 21\textsuperscript{st} century society. Therefore, DPS administrators directed training and professional development sessions for teachers toward integrating the laptops into their pedagogies and teaching. The administrator-directed position that the laptop computers were to be the primary tool for teaching and used as often as possible was prolific across the culture of the district.

Teacher participants believed that administrators believed that the laptops should be the main tool for successful teaching and learning. Paul reminded: “The whole point of technology is to be interactive, to do something that you can’t do on paper, to do something I can’t do on the blackboard. That’s the idea” (personal communication, June 7, 2005). Instead teacher participants maintained that successful teaching and learning were contingent upon the level of (increased) engagement and the enhancement of student learning. The computer technology, therefore, may or may not be necessary. For example, James Smith, a teacher at County Area High School, felt that his students were more attentive and focused on the educational tasks without the laptops. The laptops in his classroom proved to be a distraction. This idea of successful teaching (with computer technology) became further complicated as teachers explained how the computer initiative was not truly one-to-one. Reasons for the disparity included issues of social class, technical difficulties, and student behavior. Students’ families/guardians had to pay
a $50.00 fee to get a laptop; thus, the divisions of social class resonated in DPS classrooms like those in East Middle School, County Area High School, and North High School (see Table 6:1). In addition, students lost access to these laptops because of technical mishaps. Some students could potentially be without a laptop for an entire class period because it was at the help desk, or the laptop was sent back to the company for extensive repairs. Finally, students had their laptops taken by the administrators because the machines contained illegal, illicit, and/or distracting material. (Students, in most cases, were able to get them back after the material had been removed.) With these realities of one-to-one access, teachers were forced to make adjustments by providing alternative activities, making hard copies of supplemental and primary materials, or eliminating the computers completely.

Accordingly, the dialogue and controversy continue. There is still no consensus among researchers concerning how and if teaching changes with the presence of computer technology. One stance affirms that because teaching and classrooms are complex, any new human and nonhuman presence affects the dynamic of the teaching and classroom (Lankshear, et al., 2000). The teachers adjust. Classrooms’ physical arrangements change (Taylor, 1998). Specifically with the case of my participating DPS teachers, each commented that physical change happened. Each had to learn to navigate the room differently by teaching from all over the room to be able to view the students’ laptops’ screens. Classroom management techniques and strategies changed, for new problems arose which previously had not been an issue. For example, the teachers had to become savvy to detect acts of plagiarism and students surfing to a website that was not “educational related” (Smith, personal communication, June 7, 2005; The Council
Chronicle, 2005). Examples of “cut and paste” thinking (McKenzie, 2003) on class assignments became prevalent, and the teachers had to respond by checking sources more aggressively. On the other hand, a new element of curricular expression was provided by the laptops’ capabilities. Some participants such as Paul, a geometry teacher at North High School; Joanne, an English teacher at West High School; and William, a history teacher at County Area High School, were more comfortable with integrating the laptops into their content areas. Activities such as constructing geometric figures, viewing historical videos of events that situate the literary texts, and researching historical figures and events endeared them to the laptops. Prior to the laptops, these teachers expressed the feeling that they could not engage in authentic experiences.

Another standpoint found within the literature is that teaching and learning do not change with the laptops’ presence. Some researchers found that public education itself has not changed over time (Becker, 1999; Cuban, 2004; Toppo, 2006; Tyack and Cuban, 2000). In other words, they say that public education has remained constant and uniform since the turn of the 20th century. One reason is that teachers teach according to their own pedagogies and styles. In turn, if computer technology is present, it may not dramatically shift beliefs about teaching and learning; its use transitions to already established classroom behavior, pedagogies, and styles. Thomas, a participant in my study, commented that his computer technology implementation transitioned into what he had been doing before the technology initiative. He explained, for example, that students turned in papers vis-à-vis the “dropboxes” instead of in the paper basket. Additionally, lectures were supplemented with power points slides rather than overhead transparencies. Examples such as these do perpetuate the notion that teaching and learning did not
change with the presence of the computer technology. Some of the teaching tools changed.

The question of whether or not teaching and learning within the DPS has changed is complicated, for there is no concrete answer either way. The question also depends on how one defines and conceptualizes “change.” Change could be explored from both a physical and an ideological perspective. Teacher participants described how their classroom dynamic changed: furniture was rearranged and teaching took place from various areas of the room, especially in the back so that all of the computer screens could be viewed. Concerns arose regarding the most effective way to enhance student learning. There were no great or significant ideological shifts in the teacher participants with the computer technology. Those teachers who espoused a more student-centered, hands-on approach to teaching and learning continued to be so after the arrival of the laptops; those who were more teacher-centered, or positivist, remained as well. A fundamental pedagogical change did not always occur. Therefore, the meaning of “change” skews the belief of how teaching and learning are (not) affected by computer technology.

The discussion about teachers and computer technology is complex and multi-layered—just as in the classroom. The viewpoints shared through this dissertation are important, for they further complicate the socio-economic, political, technical, and pedagogical aspects of public education. In a district which has been heralded as a technological success, the identical tensions and concerns as those in districts that are not as financially prosperous arose. Expanding access and teacher training were at the top of the DPS’ priorities when deploying the laptop computers. Unfortunately, the amount of and types of experiences of the laptop computers across the secondary schools lessened
due to outside mitigating circumstances. For example, these circumstances include the following: teachers’ stress precipitated by administrative mandates for implementation of technology; increased classroom management issues resulting from technology violations; evaluative pressures to include a technological component in teachers’ professional growth plans; and increased teaching demands to accommodate students without laptops.

My hope is that various groups of stakeholders will find this dissertation helpful in initiating and continuing critical discussions about (possible) one-to-one computer ratio programs. The research community may benefit from the outcomes of my research study, particularly since it placed a primacy on moving teachers’ voices to the forefront. Teachers have not been asked to describe their pedagogy as it relates to technology and the rationale for the decisions they make. The research community will be able to engage in richer dialogue about educational reform through technology by attending to teachers’ explanations (Zehr, 2000; Zucker, 2005).

By analyzing the rationale behind teachers’ use or nonuse of technology, policymakers may be influenced to modify their policies mandating implementation. My research had come into contact with the classroom teachers who accept, adjust, or reject the many reforms that attempt to alter their teaching (Weatherly and Lipsky, 1977). Policy makers should find that this research will provide ideas that may help as they make decisions either to invest in more advanced technology or to recommend directions for the training and staff development of teachers on and with computer technology.

The novice and veteran practitioners, particularly those who are and will be in a similar one-to-one computer to students/faculty ratio, may benefit from this study. This
study may empower teachers to be more critical as they work to align their pedagogical philosophies toward the integration of technology (or not) into their curriculum and instructional planning. Questions concerning whether technology has the potential to serve as the catalyst to empower students and teachers, redefine their roles, and enable the instruction to move away from traditional print-text dependency may emerge.

As a teacher educator, I am left with questions for further consideration. They include the following:

- How is technology defined?

I was awestruck at how each of my participating DPS teachers identified technology as the laptop. Because there are various technologies like the tv/vcrs, tape recorders, cd players, and overhead projectors in the schools, I was surprised at how these other technologies were seemingly ignored by both the teachers and the administrators.

- How should I, as a teacher educator, prepare pre-service teachers to work with students of varying abilities and interests in schools with one-to-one laptop initiatives?

Teachers ought to have a repertoire to teach all students. They should also believe, just as the principal at County Area High School noted, that all students can learn but in different ways. As federal and some state officials are promoting the use of (one-to-one) computer technology into the teaching and learning process, pre-service teachers are confronted with conflicted messages once they enter into the schools. How can they do as suggested by the governmental officials if the resources are not there or if other mitigating factors exist?

- How do teacher educators aid pre-service teachers shape their philosophies of successful teaching? Should students’ standardized test score have a role in their philosophies?
A popular view as stated by administrators Hess and Brigham (2000) asserts that the “statewide assessments can provide a more solid understanding of what is successful teaching and who are the best students.” The teacher participants voiced an opposing position. Even in they were driven by the standardized test scores, they emphasized qualitative measures of student achievement. Teacher participants in my study, specifically Nia and Joanne, said that successful teaching is being able to discern on what platforms students learn the best and that they may not be reflected on the standardized tests. Nia explained that many of her students preferred having hard copies of notes and worksheets rather than completing them with their laptops (Davis, personal communication, February 1, 2005). The teachers’ instructional choices were largely influenced by their students. Even in they were driven by the standardized test scores, they emphasized qualitative measures of student achievement.

- Have the laptops caused a “sense of loss” in the teachers? Is classroom control— instructional and curricular decisions—related to teachers’ professional identity?

Since the laptop initiative was administratively directed and not teacher-directed, teachers have been placed in a precarious position, asking how best to achieve curricular goals set by the state and local standards with the computers. In some cases, the best methods to achieve do not necessitate using the laptops. Thus, teachers are confronted with the tensions of adhering to administrative demands or not and preserving their professional skills and identity.

Thinking about these lingering questions, I recall what sparked this dissertation project. A former student who was completing her pre-service teaching practicum enjoyed using technology. She created lessons which utilized and took advantage of the
capabilities of the computer technology, and her students enjoyed the flash, bells, and
whistles provided by the computer. Has classroom teaching been reduced to more
presentation than substance? I think of the DPS teachers who faced reprimand for not
using the laptops computers for reasons within and beyond their control. At the same
time, I think of those who found laptops beneficial to their students’ learning and to their
own teaching. Ideally, the administrators’ directives voice will lessen, while the teachers’
voice will resound.
References


Appendix A

Selected State Academic Standards

*Retrieved from the State Department of Education

English Academic Standards

Grade Nine

The ninth-grade student will plan, present, and critique dramatic readings of literary selections. Knowledge of literary terms and forms will be applied in the student’s own writing and in the analysis of literature. The student will be introduced to significant literary works. Increased requirements for research and reporting in all subjects will be supported by the use of print, electronic databases, online resources, and a standard style sheet method to cite reference sources. The student will distinguish between reliable and questionable Internet sources. Writing will encompass narrative, literary, expository, and informational forms, with particular attention to analysis. The student will demonstrate correct use of language, spelling, and mechanics by applying grammatical conventions in writing and speaking.

Oral Language

9.1 The student will plan, present, and critique dramatic readings of literary selections.
   a) Choose a literary form for presentation, such as a poem, monologue, scene from a play, or story.
   b) Adapt presentation techniques to fit literary form.
   c) Use verbal and nonverbal techniques for presentation.
   d) Evaluate impact of presentation.

9.2 The student will make planned oral presentations.
   a) Include definitions to increase clarity.
   b) Use relevant details to support main ideas.
   c) Illustrate main ideas through anecdotes and examples.
   d) Cite information sources.
   e) Make impromptu responses to questions about presentation.
   f) Use grammatically correct language, including vocabulary appropriate to the topic, audience, and purpose.

Reading Analysis

9.3 The student will read and analyze a variety of literature.
   a) Identify format, text structure, and main idea.
   b) Identify the characteristics that distinguish literary forms.
   c) Use literary terms in describing and analyzing selections.
d) Explain the relationships between and among elements of literature: characters, plot, setting, tone, point of view, and theme.
e) Explain the relationship between the author’s style and literary effect.
f) Describe the use of images and sounds to elicit the reader’s emotions.
g) Explain the influence of historical context on the form, style, and point of view of a written work.

9.4 The student will read and analyze a variety of informational materials (manuals, textbooks, business letters, newspapers, brochures, reports, catalogs) and nonfiction materials, including journals, essays, speeches, biographies, and autobiographies.
a) Identify a position/argument to be confirmed, disproved, or modified.
b) Evaluate clarity and accuracy of information.
c) Synthesize information from sources and apply it in written and oral presentations.
d) Identify questions not answered by a selected text.
e) Extend general and specialized vocabulary through speaking, reading, and writing.
f) Read and follow instructions to complete an assigned project or task.

9.5 The student will read dramatic selections.
a) Identify the two basic parts of drama: staging and scripting.
b) Compare and contrast the elements of character, setting, and plot in one-act plays and full-length plays.
c) Describe how stage directions help the reader understand a play’s setting, mood, characters, plot, and theme.

Writing

9.6 The student will develop narrative, expository, and informational writings to inform, explain, analyze, or entertain.
a) Generate, gather, and organize ideas for writing.
b) Plan and organize writing to address a specific audience and purpose.
c) Communicate clearly the purpose of the writing.
d) Write clear, varied sentences.
e) Use specific vocabulary and information.
f) Arrange paragraphs into a logical progression.
g) Revise writing for clarity.
h) Proofread and prepare final product for intended audience and purpose.

9.7 The student will edit writing for correct grammar, capitalization, punctuation, spelling, sentence structure, and paragraphing.
a) Use and apply rules for the parts of a sentence, including subject/verb, direct/indirect object, and predicate nominative/predicate adjective.
b) Use parallel structures across sentences and paragraphs.
c) Use appositives, main clauses, and subordinate clauses.
d) Use commas and semicolons to distinguish and divide main and subordinate clauses.
Research

9.8 The student will credit the sources of both quoted and paraphrased ideas.
   a) Define the meaning and consequences of plagiarism.
   b) Distinguish one’s own ideas from information created or discovered by others.
   c) Use a style sheet, such as that of the Modern Language Association (MLA) or the American Psychological Association (APA), for citing sources.

9.9 The student will use print, electronic databases, and online resources to access information.
   a) Identify key terms specific to research tools and processes.
   b) Narrow the focus of a search.
   c) Scan and select resources.
   d) Distinguish between reliable and questionable Internet sources and apply responsible use of technology.
Grade Ten

The tenth-grade student will become a skilled communicator in small-group learning activities. The student will read and critique literary works from a variety of eras and cultures. Attention will be given to the analysis of consumer information, such as labels, owners’ manuals, warranties, and contracts. The student will critique the writing of peers and professionals, using analysis to improve writing skills. The student will continue to build research skills by crediting sources and presenting information in a format appropriate for content. Grammar knowledge will be expanded as the student presents, writes, and edits materials, applying the conventions of language.

Oral Language

10.1 The student will participate in and report on small-group learning activities.
   a) Assume responsibility for specific group tasks.
   b) Participate in the preparation of an outline or summary of the group activity.
   c) Include all group members in oral presentation.
   d) Use grammatically correct language, including vocabulary appropriate to the topic, audience, and purpose.

10.2 The student will critique oral reports of small-group learning activities.
   a) Evaluate one’s own role in preparation and delivery of oral reports.
   b) Evaluate effectiveness of group process in preparation and delivery of oral reports.

Reading Analysis

10.3 The student will read, comprehend, and critique literary works.
   a) Identify text organization and structure.
   b) Identify main and supporting ideas.
   c) Make predictions, draw inferences, and connect prior knowledge to support reading comprehension.
   d) Explain similarities and differences of techniques and literary forms represented in the literature of different cultures and eras.
   e) Identify universal themes prevalent in the literature of different cultures.
   f) Examine a literary selection from several critical perspectives.

10.4 The student will read and interpret informational materials.
   a) Analyze and apply the information contained in warranties, contracts, job descriptions, technical descriptions, and other informational sources, including labels, warnings, manuals, directions, applications, and forms, to complete specific tasks.
   b) Skim manuals or informational sources to locate information.
   c) Compare and contrast product information contained in advertisements with that found in instruction manuals and warranties.
10.5 The student will read and analyze a variety of poetry.
   a) Compare and contrast the use of rhyme, rhythm, and sound to convey a message.
   b) Compare and contrast the ways in which poets use techniques to evoke emotion in the reader.
   c) Interpret and paraphrase the meaning of selected poems.

10.6 The student will read and critique dramatic selections.
   a) Explain the use of asides, soliloquies, and monologues in the development of a single character.
   b) Compare and contrast character development in a play to characterization in other literary forms.

Writing

10.7 The student will develop a variety of writing, with an emphasis on exposition.
   a) Generate, gather, plan, and organize ideas for writing.
   b) Elaborate ideas clearly through word choice and vivid description.
   c) Write clear, varied sentences.
   d) Organize ideas into a logical sequence.
   e) Revise writing for clarity of content and presentation.
   f) Proofread and prepare final product for intended audience and purpose.

10.8 The student will edit writing for correct grammar, capitalization, punctuation, spelling, sentence structure, and paragraphing.
   a) Use a style manual, such as that of the Modern Language Association (MLA) or the American Psychological Association (APA), to apply rules for punctuation and formatting of direct quotations.
   b) Apply rules governing use of the colon.
   c) Distinguish between active and passive voice.

10.9 The student will critique professional and peer writing.
   a) Analyze the writing of others.
   b) Describe how the author accomplishes the intended purpose of a writing.
   c) Suggest how writing might be improved.

10.10 The student will use writing to interpret, analyze, and evaluate ideas.
   a) Explain concepts contained in literature and other disciplines.
   b) Translate concepts into simpler or more easily understood terms.

Research

10.11 The student will collect, evaluate, organize, and present information.
   a) Organize information from a variety of sources.
   b) Develop the central idea or focus.
   c) Verify the accuracy and usefulness of information.
   d) Credit sources for both quoted and paraphrased ideas.
e) Present information in an appropriate format, such as an oral presentation, written report, or visual product.

f) Use technology to access information, organize ideas, and develop writing.
Grade Eleven

The eleventh-grade student will be able to make and analyze informative and persuasive oral presentations, with attention to the accuracy of evidence and the effectiveness of delivery. The study of both classic and contemporary American literature will enhance the student’s appreciation for literature. The student will be able to identify the prevalent themes and characterizations present in American literature, which are reflective of the history and culture. The student will be able to write clear and accurate personal, professional, and informational correspondence and reports for research and other applications. Grammar development will continue through the application of rules for sentence formation, usage, spelling, and mechanics. The student will develop informative and persuasive compositions by locating, evaluating, synthesizing, and citing applicable information with careful attention to organization and accuracy.

Oral Language

11.1 The student will make informative and persuasive presentations.
   a) Gather and organize evidence to support a position.
   b) Present evidence clearly and convincingly.
   c) Support and defend ideas in public forums.
   d) Use grammatically correct language, including vocabulary appropriate to the topic, audience, and purpose.

11.2 The student will analyze and evaluate informative and persuasive presentations.
   a) Critique the accuracy, relevance, and organization of evidence.
   b) Critique the clarity and effectiveness of delivery.

Reading Analysis

11.3 The student will read and analyze relationships among American literature, history, and culture.
   a) Describe contributions of different cultures to the development of American literature.
   b) Compare and contrast the development of American literature in its historical context.
   c) Discuss American literature as it reflects traditional and contemporary themes, motifs, universal characters, and genres.
   d) Describe how use of context and language structures conveys an author’s intent and viewpoint in contemporary and historical essays, speeches, and critical reviews.

11.4 The student will read and analyze a variety of informational materials.
   a) Use information from texts to clarify or refine understanding of academic concepts.
   b) Read and follow directions to complete an application for college admission, for a scholarship, or for employment.
c) Apply concepts and use vocabulary in informational and technical materials to complete a task.
d) Generalize ideas from selections to make predictions about other texts.
e) Analyze information from a text to draw conclusions.

11.5 The student will read and critique a variety of poetry.
a) Analyze the poetic elements of contemporary and traditional poems.
b) Identify the poetic elements and techniques that are most appealing and that make poetry enjoyable.
c) Compare and contrast the works of contemporary and past American poets.

11.6 The student will read and critique a variety of dramatic selections.
a) Describe the dramatic conventions or devices used by playwrights to present ideas.
b) Compare and evaluate adaptations and interpretations of a script for stage, film, or television.
c) Explain the use of verbal, situational, and dramatic irony.

Writing

11.7 The student will write in a variety of forms, with an emphasis on persuasion.
a) Generate, gather, plan, and organize ideas for writing.
b) Develop a focus for writing.
c) Evaluate and cite applicable information.
d) Organize ideas in a logical manner.
e) Elaborate ideas clearly and accurately.
f) Adapt content, vocabulary, voice, and tone to audience, purpose, and situation.
g) Revise writing for accuracy and depth of information.
h) Proofread final copy and prepare document for intended audience and purpose.

11.8 The student will edit writing for correct grammar, capitalization, punctuation, spelling, sentence structure, and paragraphing.
a) Use a style manual, such as that of the Modern Language Association (MLA) or the American Psychological Association (APA), for producing research projects.
b) Use verbals and verbal phrases to achieve sentence conciseness and variety.
c) Adjust sentence and paragraph structures for a variety of purposes and audiences.

11.9 The student will write, revise, and edit personal, professional, and informational correspondence to a standard acceptable in the workplace and higher education.
a) Apply a variety of planning strategies to generate and organize ideas.
b) Organize information to support purpose and form of writing.
c) Present information in a logical manner.
d) Revise writing for clarity.
e) Use technology to access information, organize ideas, and develop writing.

Research

11.10 The student will analyze, evaluate, synthesize, and organize information from a variety of sources to produce a research product.
   a) Narrow a topic.
   b) Develop a plan for research.
   c) Collect information to support a thesis.
   d) Evaluate quality and accuracy of information.
   e) Synthesize information in a logical sequence.
   f) Document sources of information, using a style sheet, such as that of the Modern Language Association (MLA) or the American Psychological Association (APA).
   g) Edit writing for clarity of content and effect.
   h) Edit copy for grammatically correct use of language, spelling, punctuation, and capitalization.
   i) Proofread final copy and prepare document for publication or submission.
   j) Use technology to access information, organize ideas, and develop writing.
Grade Twelve

The twelfth-grade student will use organizational skills, audience awareness, appropriate vocabulary and grammar, and both verbal and nonverbal presentation skills to plan and deliver an effective 5 to 10 minute oral presentation. The student will analyze British literature and literature of other cultures, with attention to the many classic works which may be studied. Writing will include the production of informational and expository papers, which are organized logically and contain clear and accurate ideas. The student will also produce a well-documented major research paper, using a standard method of documentation. The student will demonstrate advanced knowledge of grammatical conventions through writing, editing, and speaking.

Oral Language

12.1 The student will make a 5 to 10 minute formal oral presentation.
   a) Choose the purpose of the presentation: to defend a position, to entertain an audience, or to explain information.
   b) Use a well-structured narrative or logical argument.
   c) Use details, illustrations, statistics, comparisons, and analogies to support purposes.
   d) Use visual aids or technology to support presentation.
   e) Use grammatically correct language, including vocabulary appropriate to the topic, audience, and purpose.

12.2 The student will evaluate formal presentations.
   a) Critique relationships among purpose, audience, and content of presentations.
   b) Critique effectiveness of presentations.

Reading Analysis

12.3 The student will read and analyze the development of British literature and literature of other cultures.
   a) Recognize major literary forms and their elements.
   b) Recognize the characteristics of major chronological eras.
   c) Relate literary works and authors to major themes and issues of their eras.

12.4 The student will read and analyze a variety of informational materials, including electronic resources.
   a) Identify formats common to new publications and information resources.
   b) Recognize and apply specialized informational vocabulary.
   c) Evaluate a product based on analysis of the accompanying warranty and instruction manual.
   d) Evaluate the quality of informational and technical materials.

12.5 The student will read and critique a variety of poetry.
   a) Explain how the choice of words in a poem creates tone and voice.
b) Explain how the sound of a poem (rhyme, rhythm, onomatopoeia, repetition, alliteration, assonance, and parallelism) supports the subject and mood.

c) Explain how imagery and figures of speech (personification, simile, metaphor) appeal to the reader’s senses and experience.

d) Compare and contrast traditional and contemporary works of poets from many cultures.

12.6 The student will read and critique dramatic selections from a variety of authors.
   a) Describe the conflict, plot, climax, and setting.
   b) Compare and contrast ways in which character, scene, dialogue, and staging contribute to the theme and the dramatic effect.
   c) Identify the most effective elements of selected plays.
   d) Compare and contrast dramatic elements of plays from American, British, and other cultures.

Writing

12.7 The student will develop expository and informational writings.
   a) Generate, gather, and organize ideas for writing.
   b) Consider audience and purpose when planning for writing.
   c) Write analytically about literary, informational, and visual materials.
   d) Elaborate ideas clearly and accurately.
   e) Revise writing for depth of information and technique of presentation.
   f) Apply grammatical conventions to edit writing for correct use of language, spelling, punctuation, and capitalization.
   g) Proofread final copy and prepare document for publication or submission.

Research

12.8 The student will write documented research papers.
   a) Identify and understand the ethical issues of research and documentation.
   b) Evaluate the accuracy and usefulness of information.
   c) Synthesize information to support the thesis.
   d) Present information in a logical manner.
   e) Cite sources of information, using a standard method of documentation, such as that of the Modern Language Association (MLA) or the American Psychological Association (APA).
   f) Edit copies for correct use of language, spelling, punctuation, and capitalization.
   g) Proofread final copy and prepare document for publication or submission.
History Academic Standards

World History and Geography: 1500 A.D. to the Present

These standards enable students to cover history and geography from 1500 A.D. to the present, with emphasis on Western Europe. Geographic influences on history continue to be explored, but increasing attention is given to political boundaries that developed with the evolution of nations. Significant attention will be given to the ways in which scientific and technological revolutions created new economic conditions that in turn produced social and political changes. Noteworthy people and events of the nineteenth and twentieth centuries will be emphasized for their strong connections to contemporary issues.

The study of history rests on knowledge of dates, names, places, events and ideas. Historical understanding, however, requires students to engage in historical thinking, to raise questions and to marshal evidence in support of their answers. Students engaged in historical thinking draw upon chronological thinking, historical comprehension, historical analysis and interpretation, historical research, and decision-making. These skills are developed through the study of significant historical substance from the era or society that is being studied.

WHII.1 The student will improve skills in historical research and geographical analysis by
a) identifying, analyzing, and interpreting primary and secondary sources to make generalizations about events and life in world history since 1500 A.D.;
b) using maps, globes, artifacts, and pictures to analyze the physical and cultural landscapes of the world and to interpret the past since 1500 A.D.;
c) identifying geographic features important to the study of world history since 1500 A.D.;
d) identifying and comparing political boundaries with the location of civilizations, empires, and kingdoms from 1500 A.D. to the present;
e) analyzing trends in human migration and cultural interaction from 1500 A.D. to the present.

WHII.2 The student will demonstrate an understanding of the political, cultural, and economic conditions in the world about 1500 A.D. by
a) locating major states and empires;
b) describing artistic, literary, and intellectual ideas of the Renaissance;
c) describing the distribution of major religions;
d) analyzing major trade patterns;
e) citing major technological and scientific exchanges in the Eastern Hemisphere.

Era V: Emergence of a Global Age, 1500 to 1650 A.D.

WHII.3 The student will demonstrate knowledge of the Reformation in terms of its impact on Western civilization by
WHII.4 The student will demonstrate knowledge of the impact of the European Age of Discovery and expansion into the Americas, Africa, and Asia by
a) explaining the roles of explorers and conquistadors;
b) describing the influence of religion;
c) explaining migration, settlement patterns, cultural diffusion, and social classes in the colonized areas;
d) defining the Columbian Exchange;
e) explaining the triangular trade;
f) describing the impact of precious metal exports from the Americas.

WHII.5 The student will demonstrate knowledge of the status and impact of global trade on regional civilizations of the world after 1500 A.D. by
a) describing the location and development of the Ottoman Empire;
b) describing India, including the Mughal Empire and coastal trade;
c) describing East Asia, including China and the Japanese shogunate;
d) describing Africa and its increasing involvement in global trade;
e) describing the growth of European nations, including the Commercial Revolution and mercantilism.

Era VI: Age of Revolutions, 1650 to 1914 A.D.

WHII.6 The student will demonstrate knowledge of scientific, political, economic, and religious changes during the sixteenth, seventeenth, and eighteenth centuries by
a) describing the Scientific Revolution and its effects;
b) describing the Age of Absolutism, including the monarchies of Louis XIV, Frederick the Great, and Peter the Great;
c) assessing the impacts of the English Civil War and the Glorious Revolution on democracy;
d) explaining the political, religious, and social ideas of the Enlightenment and the ways in which they influenced the founders of the United States;
e) describing the French Revolution;
f) identifying the impact of the American and French Revolutions on Latin America;
g) describing the expansion of the arts, philosophy, literature, and new technology.

WHII.7 The student will demonstrate knowledge of political and philosophical developments in Europe during the nineteenth century by
a) assessing the impact of Napoleon and the Congress of Vienna, including changes in political boundaries in Europe after 1815;
b) describing the influence of revolutions on the expansion of political rights in Europe;
c) explaining events related to the unification of Italy and the role of Italian nationalists;
d) explaining events related to the unification of Germany and the role of Bismarck.

WHII.8 The student will demonstrate knowledge of the effects of the Industrial Revolution during the nineteenth century by
a) citing scientific, technological, and industrial developments and explaining how they brought about urbanization and social and environmental changes;
b) explaining the emergence of capitalism as a dominant economic pattern, and subsequent development of socialism and communism;
c) describing the evolution of the nature of work and the labor force, including its effects on families, the status of women and children, the slave trade, and the labor union movement;
d) explaining the rise of industrial economies and their link to imperialism and nationalism;
e) assessing the impact of European economic and military power on Asia and Africa, with emphasis on the competition for resources and the responses of colonized peoples.

Era VII: Era of Global Wars, 1914 to 1945

WHII.9 The student will demonstrate knowledge of the worldwide impact of World War I by
a) explaining economic and political causes, major events, and identifying major leaders of the war, with emphasis on Woodrow Wilson and Kaiser Wilhelm II;
b) explaining the outcomes and global effect of the war and the Treaty of Versailles;
c) citing causes and assessing the impact of the Russian Revolution.

WHII.10 The student will demonstrate knowledge of political, economic, social, and cultural developments during the Interwar Period by
a) describing the League of Nations and the mandate system;
b) citing causes and assessing the impact of worldwide depression in the 1930s;
c) examining events related to the rise, aggression, and human costs of dictatorial regimes in the Soviet Union, Germany, Italy, and Japan, and identifying their major leaders, i.e., Joseph Stalin, Adolf Hitler, Benito Mussolini, Hirohito, and Hideki Tojo.

WHII.11 The student will demonstrate knowledge of the worldwide impact of World War II by
a) explaining economic and political causes, major events, and identifying leaders of the war, with emphasis on Franklin D. Roosevelt, Harry Truman, Dwight D. Eisenhower, Douglas MacArthur, George Marshall, Winston Churchill, Joseph Stalin, Adolf Hitler, Hideki Tojo, and Hirohito;
b) examining the Holocaust and other examples of genocide in the twentieth century;
c) explaining the terms of the peace, the war crimes trials, the division of Europe, plans to rebuild Germany and Japan, and the creation of international cooperative organizations.

Era VIII: The Post War Period, 1945 to the Present

WHII.12 The student will demonstrate knowledge of major events and outcomes of the Cold War by
a) explaining key events of the Cold War, including the competition between the American and Soviet economic and political systems and the causes of the collapse of communism in the Soviet Union and Eastern Europe;
b) assessing the impact of nuclear weaponry on patterns of conflict and cooperation since 1945;
c) describing conflicts and revolutionary movements in eastern Asia, including those in China and Vietnam, and their major leaders, i.e., Mao Tse-tung (Zedong), Chiang Kai-shek, and Ho Chi Minh.

WHII.13 The student will demonstrate knowledge of political, economic, social, and cultural aspects of independence movements and development efforts by
a) describing the struggles for self-rule, including Gandhi’s leadership in India;
b) describing Africa’s achievement of independence, including Kenyatta’s leadership of Kenya;
c) describing the end of the mandate system and the creation of states in the Middle East.

WHII.14 The student will demonstrate knowledge of the influence of Judaism, Christianity, Islam, Buddhism, and Hinduism in the contemporary world by
a) describing their beliefs, sacred writings, traditions, and customs;
b) locating the geographic distribution of religions in the contemporary world.

WHII.15 The student will demonstrate knowledge of cultural, economic, and social conditions in developed and developing nations of the contemporary world by
a) identifying contemporary political issues, with emphasis on migrations of refugees and others, ethnic/religious conflicts, and the impact of technology, including chemical and biological technologies;
b) assessing the impact of economic development and global population growth on the environment and society, including an understanding of the links between economic and political freedom;
c) describing economic interdependence, including the rise of multinational corporations, international organizations, and trade agreements.
World Geography

The focus of this course is the study of the world’s peoples, places, and environments, with an emphasis on world regions. The knowledge, skills, and perspectives of the course are centered on the world’s population and cultural characteristics, landforms and climates, economic development, and migration and settlement patterns. Spatial concepts of geography will be used as a framework for studying interactions between humans and their environments. Using geographic resources, students will employ inquiry, research, and technology skills to ask and answer geographic questions. Particular emphasis is placed on students’ understanding and applying geographic concepts and skills to their daily lives.

Geographic skills provide the necessary tools and technologies for thinking geographically. These skills help people make important decisions in their daily lives, such as how to get to work and where to shop, vacation, or go to school. They also help people make reasoned political decisions and aid in the development and presentation of effective, persuasive arguments for and against matters of public policy. All of these decisions involve the ability to acquire, arrange, and use geographic information. Maps, as well as graphs, sketches, diagrams, photographs, and satellite-produced images, are essential tools of geography.

Geographic skills include
  • asking geographic questions
  • acquiring geographic information
  • organizing geographic information
  • analyzing geographic information
  • answering geographic questions.

WG.1 The student will use maps, globes, photographs, and pictures in order to
  a) obtain geographical information and apply the concepts of location, scale, and orientation;
  b) develop and refine his or her mental maps of world regions;
  c) create and compare political, physical, and thematic maps;
  d) analyze and explain how different cultures develop different perspectives on the world and its problems;
  e) recognize different map projections and explain the concept of distortion.

WG.2 The student will analyze how selected physical and ecological processes shape the Earth’s surface by
  a) identifying regional climatic patterns and weather phenomena and their effects on people and places;
  b) describing how humans influence the environment and are influenced by it;
  c) explaining how technology affects one’s ability to modify the environment and adapt to it

WG.3 The student will apply the concept of a region by
a) explaining how characteristics of regions have led to regional labels;
b) explaining how regional landscapes reflect cultural characteristics of their inhabitants;
c) analyzing how cultural characteristics, including the world’s major languages and religions, link or divide regions.

WG.4 The student will locate and analyze physical, economic, and cultural characteristics of world regions: Latin America and the Caribbean, Europe, United States and Canada, North Africa and Southwest Asia, Sub-Saharan Africa, Russia and Central Asia, South Asia, Southeast Asia, East Asia, Australia and the Pacific Islands, and Antarctica.

WG.5 The student will compare and contrast the distribution, growth rates, and characteristics of human population in terms of settlement patterns and the location of natural and capital resources.

WG.6 The student will analyze past and present trends in human migration and cultural interaction as they are influenced by social, economic, political, and environmental factors.

WG.7 The student will identify natural, human, and capital resources and explain their significance by
a) showing patterns of economic activity and land use;
b) evaluating perspectives and consequences regarding the use of resources.

WG.8 The student will distinguish between developed and developing countries and relate the level of economic development to the standard of living and quality of life.

WG.9 The student will analyze the global patterns and networks of economic interdependence by
a) identifying criteria that influence economic activities;
b) explaining comparative advantage and its relationship to international trade;
c) describing ways that economic and social interactions have changed over time;
d) describing and evaluating the formation of economic unions.

WG.10 The student will analyze how the forces of conflict and cooperation affect the division and control of the Earth’s surface by
a) explaining and analyzing reasons for the different spatial divisions at the local and regional levels;
b) explaining and analyzing the different spatial divisions at the national and international levels;
c) analyzing ways cooperation occurs to solve problems and settle disputes.

WG.11 The student will analyze the patterns of urban development by
a) applying the concepts of site and situation to major cities in each region;
b) explaining how the functions of towns and cities have changed over time;
c) describing the unique influence of urban areas and some challenges they face.

WG.12 The student will apply geography to interpret the past, understand the present, and plan for the future by
a) using geographic knowledge, skills, and perspectives to analyze problems and make decisions;
b) relating current events to the physical and human characteristics of places and regions.
[STATE] and United States History

The standards for Virginia and United States History include the historical development of American ideas and institutions from the Age of Exploration to the present. While focusing on political and economic history, the standards provide students with a basic knowledge of American culture through a chronological survey of major issues, movements, people, and events in United States and Virginia history. Students should use historical and geographical analysis skills to explore in depth the events, people, and ideas that fostered our national identity and led to our country’s prominence in world affairs.

The study of history must emphasize the intellectual skills required for responsible citizenship. Students practice these skills as they extend their understanding of the essential knowledge defined by all of the standards for history and social science.

Skills

[S]US.1 The student will demonstrate skills for historical and geographical analysis, including the ability to
a) identify, analyze, and interpret primary and secondary source documents, records, and data, including artifacts, diaries, letters, photographs, journals, newspapers, historical accounts, and art to increase understanding of events and life in the United States;
b) evaluate the authenticity, authority, and credibility of sources;
c) formulate historical questions and defend findings based on inquiry and interpretation;
d) develop perspectives of time and place, including the construction of maps and various time lines of events, periods, and personalities in American history;
e) communicate findings orally and in analytical essays and/or comprehensive papers;
f) develop skills in discussion, debate, and persuasive writing with respect to enduring issues and determine how divergent viewpoints have been addressed and reconciled;
g) apply geographic skills and reference sources to understand how relationships between humans and their environment have changed over time;
h) interpret the significance of excerpts from famous speeches and other documents.

Early America: Early Claims, Early Conflicts

[S]US.2 The student will describe how early European exploration and colonization resulted in cultural interactions among Europeans, Africans, and American Indians (First Americans).
The student will describe how the values and institutions of European economic life took root in the colonies and how slavery reshaped European and African life in the Americas.

**Revolution and the New Nation**

The student will demonstrate knowledge of events and issues of the Revolutionary Period by

a) analyzing how the political ideas of John Locke and those expressed in *Common Sense* helped shape the Declaration of Independence;

b) describing the political differences among the colonists concerning separation from Britain;

c) analyzing reasons for colonial victory in the Revolutionary War.

The student will demonstrate knowledge of the issues involved in the creation and ratification of the United States Constitution and how the principles of limited government, consent of the governed, and the social contract are embodied in it by

a) explaining the origins of the Constitution, including the Articles of Confederation;

b) identifying the major compromises necessary to produce the Constitution, and the roles of James Madison and George Washington;

c) describing the conflict over ratification, including the Bill of Rights and the arguments of the Federalists and Anti-Federalists;

d) examining the significance of the Virginia Declaration of Rights and the Virginia Statute for Religious Freedom in the framing of the Bill of Rights.

**Expansion and Reform: 1801 to 1860**

The student will demonstrate knowledge of the major events during the first half of the nineteenth century by

a) identifying the economic, political, and geographic factors that led to territorial expansion and its impact on the American Indians (First Americans);

b) describing the key features of the Jacksonian Era, with emphasis on federal banking policies;

c) describing the cultural, economic, and political issues that divided the nation, including slavery, the abolitionist and women’s suffrage movements, and the role of the states in the Union.

**Civil War and Reconstruction: 1860 to 1877**

The student will demonstrate knowledge of the Civil War and Reconstruction Era and its importance as a major turning point in American history by

a) identifying the major events and the roles of key leaders of the Civil War Era, with emphasis on Abraham Lincoln, Ulysses S. Grant, Robert E. Lee, and Frederick Douglass;
b) analyzing the significance of the Emancipation Proclamation and the principles outlined in Lincoln’s Gettysburg Address;

c) examining the political, economic, and social impact of the war and Reconstruction, including the adoption of the 13th, 14th, and 15th Amendments to the Constitution of the United States.

Reshaping the Nation and the Emergence of Modern America: 1877 to 1930s

[S]US.8 The student will demonstrate knowledge of how the nation grew and changed from the end of Reconstruction through the early twentieth century by

a) explaining the relationship among territorial expansion, westward movement of the population, new immigration, growth of cities, and the admission of new states to the Union;

b) describing the transformation of the American economy from a primarily agrarian to a modern industrial economy and identifying major inventions that improved life in the United States;

c) analyzing prejudice and discrimination during this time period, with emphasis on “Jim Crow” and the responses of Booker T. Washington and W.E.B. Du Bois;

d) identifying the impact of the Progressive Movement, including child labor and antitrust laws, the rise of labor unions, and the success of the women’s suffrage movement.

[S]US.9 The student will demonstrate knowledge of the emerging role of the United States in world affairs and key domestic events after 1890 by

a) explaining the changing policies of the United States toward Latin America and Asia and the growing influence of the United States in foreign markets;

b) evaluating United States involvement in World War I, including Wilson’s Fourteen Points, the Treaty of Versailles, and the national debate over treaty ratification and the League of Nations;

c) explaining the causes of the Great Depression, its impact on the American people, and the ways the New Deal addressed it.

Conflict: The World at War: 1939 to 1945

[S]US.10 The student will demonstrate knowledge of World War II by

a) identifying the causes and events that led to American involvement in the war, including military assistance to Britain and the Japanese attack on Pearl Harbor;

b) describing the major battles and turning points of the war in North Africa, Europe, and the Pacific, including Midway, Stalingrad, the Normandy landing (D-Day), and Truman’s decision to use the atomic bomb to force the surrender of Japan;

c) describing the role of all-minority military units, including the Tuskegee Airmen and Nisei regiments;
d) describing the Geneva Convention and the treatment of prisoners of war during World War II;
e) analyzing the Holocaust (Hitler’s “final solution”), its impact on Jews and other groups, and postwar trials of war criminals.

[S]US.11 The student will demonstrate knowledge of the effects of World War II on the home front by
a) explaining how the United States mobilized its economic, human, and military resources;
b) describing the contributions of women and minorities to the war effort;
c) explaining the internment of Japanese Americans during the war;
d) describing the role of media and communications in the war effort.

The United States since World War II

[S]US.12 The student will demonstrate knowledge of United States foreign policy since World War II by
a) describing outcomes of World War II, including political boundary changes, the formation of the United Nations, and the Marshall Plan;
b) explaining the origins of the Cold War, and describing the Truman Doctrine and the policy of containment of communism, the American role in wars in Korea and Vietnam, and the role of the North Atlantic Treaty Organization (NATO) in Europe;
c) explaining the role of America’s military and veterans in defending freedom during the Cold War;
d) explaining the collapse of communism and the end of the Cold War, including the role of Ronald Reagan.

[S]US.13 The student will demonstrate knowledge of the Civil Rights movement of the 1950s and 1960s by
a) identifying the importance of the Brown v. Board of Education decision, the roles of Thurgood Marshall and Oliver Hill, and how Virginia responded;
b) describing the importance of the National Association for the Advancement of Colored People (NAACP), the 1963 March on Washington, the Civil Rights Act of 1964, and the Voting Rights Act of 1965.

[S]US.14 The student will demonstrate knowledge of economic, social, cultural, and political developments in the contemporary United States by
a) analyzing the effects of increased participation of women in the labor force;
b) analyzing how changing patterns of immigration affect the diversity of the United States population, the reasons new immigrants choose to come to this country, and their contributions to contemporary America;
c) explaining the media influence on contemporary American culture and how scientific and technological advances affect the workplace, health care, and education.
Mathematics Academic Standards

Geometry

This course is designed for students who have successfully completed the standards for Algebra I. The course includes, among other things, properties of geometric figures, trigonometric relationships, and reasoning to justify conclusions. Methods of justification will include paragraph proofs, two-column proofs, indirect proofs, coordinate proofs, and verbal arguments. A gradual development of formal proof is encouraged. Inductive and intuitive approaches to proof as well as deductive axiomatic methods should be used.

This set of standards includes emphasis on two- and three-dimensional reasoning skills, coordinate and transformational geometry, and the use of geometric models to solve problems. A variety of applications and some general problem-solving techniques including algebraic skills, should be used to implement these standards. Calculators, computers, graphing utilities (graphing calculators or computer graphing simulators), dynamic geometry software, and other appropriate technology tools will be used to assist in teaching and learning. Any technology that will enhance student learning should be used.

G.1 The student will construct and judge the validity of a logical argument consisting of a set of premises and a conclusion. This will include
   a) identifying the converse, inverse, and contrapositive of a conditional statement;
   b) translating a short verbal argument into symbolic form;
   c) using Venn diagrams to represent set relationships; and
   d) using deductive reasoning, including the law of syllogism.

G.2 The student will use pictorial representations, including computer software, constructions, and coordinate methods, to solve problems involving symmetry and transformation. This will include
   a) investigating and using formulas for finding distance, midpoint, and slope;
   b) investigating symmetry and determining whether a figure is symmetric with respect to a line or a point; and
   c) determining whether a figure has been translated, reflected, or rotated.

G.3 The student will solve practical problems involving complementary, supplementary, and congruent angles that include vertical angles, angles formed when parallel lines are cut by a transversal, and angles in polygons.

G.4 The student will use the relationships between angles formed by two lines cut by a transversal to determine if two lines are parallel and verify, using algebraic and coordinate methods as well as deductive proofs.
The student will

a) investigate and identify congruence and similarity relationships between triangles; and
b) prove two triangles are congruent or similar, given information in the form of a figure or statement, using algebraic and coordinate as well as deductive proofs.

The student, given information concerning the lengths of sides and/or measures of angles, will apply the triangle inequality properties to determine whether a triangle exists and to order sides and angles. These concepts will be considered in the context of practical situations.

The student will solve practical problems involving right triangles by using the Pythagorean Theorem, properties of special right triangles, and right triangle trigonometry. Solutions will be expressed in radical form or as decimal approximations.

The student will

a) investigate and identify properties of quadrilaterals involving opposite sides and angles, consecutive sides and angles, and diagonals;
b) prove these properties of quadrilaterals, using algebraic and coordinate methods as well as deductive reasoning; and
c) use properties of quadrilaterals to solve practical problems.

The student will use measures of interior and exterior angles of polygons to solve problems. Tessellations and tiling problems will be used to make connections to art, construction, and nature.

The student will investigate and solve practical problems involving circles, using properties of angles, arcs, chords, tangents, and secants. Problems will include finding arc length and the area of a sector, and may be drawn from applications of architecture, art, and construction.

The student will construct a line segment congruent to a given line segment, the bisector of a line segment, a perpendicular to a given line from a point not on the line, a perpendicular to a given line at a point on the line, the bisector of a given angle, and an angle congruent to a given angle.

The student will make a model of a three-dimensional figure from a two-dimensional drawing and make a two-dimensional representation of a three-dimensional object. Models and representations will include scale drawings, perspective drawings, blueprints, or computer simulations.

The student will use formulas for surface area and volume of three-dimensional objects to solve practical problems. Calculators will be used to find decimal approximations for results.
G.14 The student will
   a) use proportional reasoning to solve practical problems, given similar
      geometric objects; and
   b) determine how changes in one dimension of an object affect area and/or
      volume of the object.
Algebra II

The standards below outline the content for a one-year course in Algebra II. Students enrolled in Algebra II are assumed to have mastered those concepts outlined in the Algebra I standards. A thorough treatment of advanced algebraic concepts is provided through the study of functions, “families of functions,” equations, inequalities, systems of equations and inequalities, polynomials, rational expressions, complex numbers, matrices, and sequences and series. Emphasis will be placed on practical applications and modeling throughout the course of study. Oral and written communication concerning the language of algebra, logic of procedures, and interpretation of results also should permeate the course.

These standards include a transformational approach to graphing functions.
Transformational graphing uses translation, reflection, dilation, and rotation to generate a “family of graphs” from a given graph and builds a strong connection between algebraic and graphic representations of functions. Students will vary the coefficients and constants of an equation, observe the changes in the graph of the equation, and make generalizations that can be applied to many graphs.

Graphing utilities (graphing calculators or computer graphing simulators), computers, spreadsheets, and other appropriate technology tools will be used to assist in teaching and learning. Graphing utilities enhance the understanding of realistic applications through mathematical modeling and aid in the investigation and study of functions. They also provide an effective tool for solving/verifying equations and inequalities. Any other available technology that will enhance student learning should be used.

AII.1 The student will identify field properties, axioms of equality and inequality, and properties of order that are valid for the set of real numbers and its subsets, complex numbers, and matrices.

AII.2 The student will add, subtract, multiply, divide, and simplify rational expressions, including complex fractions.

AII.3 The student will
   a) add, subtract, multiply, divide, and simplify radical expressions containing positive rational numbers and variables and expressions containing rational exponents; and
   b) write radical expressions as expressions containing rational exponents and vice versa.

AII.4 The student will solve absolute value equations and inequalities graphically and algebraically. Graphing calculators will be used as a primary method of solution and to verify algebraic solutions.
AII.5 The student will identify and factor completely polynomials representing the difference of squares, perfect square trinomials, the sum and difference of cubes, and general trinomials.

AII.6 The student will select, justify, and apply a technique to solve a quadratic equation over the set of complex numbers. Graphing calculators will be used for solving and for confirming the algebraic solutions.

AII.7 The student will solve equations containing rational expressions and equations containing radical expressions algebraically and graphically. Graphing calculators will be used for solving and for confirming the algebraic solutions.

AII.8 The student will recognize multiple representations of functions (linear, quadratic, absolute value, step, and exponential functions) and convert between a graph, a table, and symbolic form. A transformational approach to graphing will be employed through the use of graphing calculators.

AII.9 The student will find the domain, range, zeros, and inverse of a function; the value of a function for a given element in its domain; and the composition of multiple functions. Functions will include exponential, logarithmic, and those that have domains and ranges that are limited and/or discontinuous. The graphing calculator will be used as a tool to assist in investigation of functions.

AII.10 The student will investigate and describe through the use of graphs the relationships between the solution of an equation, zero of a function, x-intercept of a graph, and factors of a polynomial expression.

AII.11 The student will use matrix multiplication to solve practical problems. Graphing calculators or computer programs with matrix capabilities will be used to find the product.

AII.12 The student will represent problem situations with a system of linear equations and solve the system, using the inverse matrix method. Graphing calculators or computer programs with matrix capability will be used to perform computations.

AII.13 The student will solve practical problems, using systems of linear inequalities and linear programming, and describe the results both orally and in writing. A graphing calculator will be used to facilitate solutions to linear programming problems.

AII.14 The student will solve nonlinear systems of equations, including linear-quadratic and quadratic-quadratic, algebraically and graphically. The graphing calculator will be used as a tool to visualize graphs and predict the number of solutions.
AII.15 The student will recognize the general shape of polynomial, exponential, and logarithmic functions. The graphing calculator will be used as a tool to investigate the shape and behavior of these functions.

AII.16 The student will investigate and apply the properties of arithmetic and geometric sequences and series to solve practical problems, including writing the first \( n \) terms, finding the \( n^{\text{th}} \) term, and evaluating summation formulas. Notation will include \( a_n \) and \( a_n \).

AII.17 The student will perform operations on complex numbers and express the results in simplest form. Simplifying results will involve using patterns of the powers of \( i \).

AII.18 The student will identify conic sections (circle, ellipse, parabola, and hyperbola) from his/her equations. Given the equations in \( (h, k) \) form, the student will sketch graphs of conic sections, using transformations.

AII.19 The student will collect and analyze data to make predictions and solve practical problems. Graphing calculators will be used to investigate scatterplots and to determine the equation for a curve of best fit. Models will include linear, quadratic, exponential, and logarithmic functions.

AII.20 The student will identify, create, and solve practical problems involving inverse variation and a combination of direct and inverse variations.
**Trigonometry**

The standards below outline the content for a one-semester course in trigonometry. Students enrolled in trigonometry are assumed to have mastered those concepts outlined in the Algebra II standards. A thorough treatment of trigonometry is provided through the study of trigonometric definitions, applications, graphing, and solving trigonometric equations and inequalities. Emphasis should also be placed on using connections between right triangle ratios, trigonometric functions, and circular functions. In addition, applications and modeling should be included throughout the course of study. Emphasis should also be placed on oral and written communication concerning the language of mathematics, logic of procedure, and interpretation of results.

Graphing calculators, computers, and other appropriate technology tools will be used to assist in teaching and learning. Graphing utilities enhance the understanding of realistic applications through modeling and aid in the investigation of trigonometric functions and their inverses. They also provide a powerful tool for solving/verifying trigonometric equations and inequalities.

T.1 The student will use the definitions of the six trigonometric functions to find the sine, cosine, tangent, cotangent, secant, and cosecant of an angle in standard position, given a point, other than the origin, on the terminal side of the angle. Circular function definitions will be connected with trigonometric function definitions.

T.2 The student, given the value of one trigonometric function, will find the values of the other trigonometric functions. Properties of the unit circle and definitions of circular functions will be applied.

T.3 The student will find without the aid of a calculating utility the values of the trigonometric functions of the special angles and their related angles as found in the unit circle. This will include converting radians to degrees and vice versa.

T.4 The student will find with the aid of a calculator the value of any trigonometric function and inverse trigonometric function.

T.5 The student will verify basic trigonometric identities and make substitutions, using the basic identities.

T.6 The student, given one of the six trigonometric functions in standard form [e.g., $y = A \sin (Bx + C) + D$, where $A$, $B$, $C$, and $D$ are real numbers], will
a) state the domain and the range of the function;
b) determine the amplitude, period, phase shift, and vertical shift; and
c) sketch the graph of the function by using transformations for at least a one-period interval.

The graphing calculator will be used to investigate the effect of changing $A$, $B$, $C$, and $D$ on the graph of a trigonometric function.
T.7 The student will identify the domain and range of the inverse trigonometric functions and recognize the graphs of these functions. Restrictions on the domains of the inverse trigonometric functions will be included.

T.8 The student will solve trigonometric equations that include both infinite solutions and restricted domain solutions and solve basic trigonometric inequalities. Graphing utilities will be used to solve equations, check for reasonableness of results, and verify algebraic solutions.

T.9 The student will identify, create, and solve practical problems involving triangles. Techniques will include using the trigonometric functions, the Pythagorean Theorem, the Law of Sines, and the Law of Cosines.
Algebra II and Trigonometry

The standards for this combined course in Algebra II and Trigonometry include all of the standards listed for Algebra II and Trigonometry. This course is designed for advanced students who are capable of a more rigorous course at an accelerated pace. The standards listed for this course provide the foundation for students to pursue a sequence of advanced mathematical studies from Mathematical Analysis to Advanced Placement Calculus.

AII/T.1 The student will identify field properties, axioms of equality and inequality, and properties of order that are valid for the set of real numbers and its subsets, complex numbers, and matrices.

AII/T.2 The student will add, subtract, multiply, divide, and simplify rational expressions, including complex fractions.

AII/T.3 The student will
a) add, subtract, multiply, divide, and simplify radical expressions containing positive rational numbers and variables and expressions containing rational exponents; and
b) write radical expressions as expressions containing rational exponents and vice versa.

AII/T.4 The student will solve absolute value equations and inequalities graphically and algebraically. Graphing calculators will be used as a primary method of solution and to verify algebraic solutions.

AII/T.5 The student will identify and factor completely polynomials representing the difference of squares, perfect square trinomials, the sum and difference of cubes, and general trinomials.

AII/T.6 The student will select, justify, and apply a technique to solve a quadratic equation over the set of complex numbers. Graphing calculators will be used for solving and for confirming the algebraic solutions.

AII/T.7 The student will solve equations containing rational expressions and equations containing radical expressions algebraically and graphically. Graphing calculators will be used for solving and for confirming the algebraic solutions.

AII/T.8 The student will recognize multiple representations of functions (linear, quadratic, absolute value, step, and exponential functions) and convert between a graph, a table, and symbolic form. A transformational approach to graphing will be employed through the use of graphing calculators.
AII/T.9 The student will find the domain, range, zeros, and inverse of a function; the value of a function for a given element in its domain; and the composition of multiple functions. Functions will include exponential, logarithmic, and those that have domains and ranges that are limited and/or discontinuous. The graphing calculator will be used as a tool to assist in investigation of functions.

AII/T.10 The student will investigate and describe through the use of graphs the relationships between the solution of an equation, zero of a function, x-intercept of a graph, and factors of a polynomial expression.

AII/T.11 The student will use matrix multiplication to solve practical problems. Graphing calculators or computer programs with matrix capabilities will be used to find the product.

AII/T.12 The student will represent problem situations with a system of linear equations and solve the system, using the inverse matrix method. Graphing calculators or computer programs with matrix capability will be used to perform computations.

AII/T.13 The student will solve practical problems, using systems of linear inequalities and linear programming, and describe the results both orally and in writing. A graphing calculator will be used to facilitate solutions to linear programming problems.

AII/T.14 The student will solve nonlinear systems of equations, including linear-quadratic and quadratic-quadratic, algebraically and graphically. The graphing calculator will be used as a tool to visualize graphs and predict the number of solutions.

AII/T.15 The student will recognize the general shape of polynomial, exponential, and logarithmic functions. The graphing calculator will be used as a tool to investigate the shape and behavior of these functions.

AII/T.16 The student will investigate and apply the properties of arithmetic and geometric sequences and series to solve practical problems, including writing the first $n$ terms, finding the $n^{th}$ term, and evaluating summation formulas. Notation will include $\Sigma$ and $a_n$.

AII/T.17 The student will perform operations on complex numbers and express the results in simplest form. Simplifying results will involve using patterns of the powers of $i$.

AII/T.18 The student will identify conic sections (circle, ellipse, parabola, and hyperbola) from his/her equations. Given the equations in $(h, k)$ form, the student will sketch graphs of conic sections, using transformations.
AII/T.19 The student will collect and analyze data to make predictions and solve practical problems. Graphing calculators will be used to investigate scatterplots and to determine the equation for a curve of best fit. Models will include linear, quadratic, exponential, and logarithmic functions.

AII/T.20 The student will identify, create, and solve practical problems involving inverse variation and a combination of direct and inverse variations.

AII/T.21 The student will use the definitions of the six trigonometric functions to find the sine, cosine, tangent, cotangent, secant, and cosecant of an angle in standard position, given a point, other than the origin, on the terminal side of the angle. Circular function definitions will be connected with trigonometric function definitions.

AII/T.22 The student, given the value of one trigonometric function, will find the values of the other trigonometric functions. Properties of the unit circle and definitions of circular functions will be applied.

AII/T.23 The student will find without the aid of a calculating utility the values of the trigonometric functions of the special angles and their related angles as found in the unit circle. This will include converting radians to degrees and vice versa.

AII/T.24 The student will find with the aid of a calculator the value of any trigonometric function and inverse trigonometric function.

AII/T.25 The student will verify basic trigonometric identities and make substitutions, using the basic identities.

AII/T.26 The student, given one of the six trigonometric functions in standard form [e.g., \(y = A \sin (Bx + C) + D\), where \(A\), \(B\), \(C\), and \(D\) are real numbers], will

a) state the domain and the range of the function;

b) determine the amplitude, period, phase shift, and vertical shift; and

c) sketch the graph of the function by using transformations for at least a one-period interval.

The graphing calculator will be used to investigate the effect of changing \(A\), \(B\), \(C\), and \(D\) on the graph of a trigonometric function.

AII/T.27 The student will identify the domain and range of the inverse trigonometric functions and recognize the graphs of these functions. Restrictions on the domains of the inverse trigonometric functions will be included.

AII/T.28 The student will solve trigonometric equations that include both infinite solutions and restricted domain solutions and solve basic trigonometric inequalities. Graphing utilities will be used to solve equations, check for reasonableness of results, and verify algebraic solutions.
AII/T.29 The student will identify, create, and solve practical problems involving triangles. Techniques will include using the trigonometric functions, the Pythagorean Theorem, the Law of Sines, and the Law of Cosines.
Appendix B

Diagram of James Smith’s Classroom

Door

Bulletin Board

Whiteboard

Bulletin Board

Wall Mounted TV/VCR-DVD

Door

Cabinets

2 shelf bookcase

Bulletin Board

Wall with posters

Teacher’s Desk

Computer

Desk

2 File Cabinets

Windows facing the bus ramp
## Appendix C

### Regular Bell Schedules of Participating Schools

#### County Area High School

<table>
<thead>
<tr>
<th>Mondays, Tuesdays, and Thursdays</th>
<th>Study Blocks—Wednesdays and Fridays</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:25 – 8:40 Duty Time</td>
<td>8:25 – 8:40 Duty Time</td>
</tr>
<tr>
<td>8:45 – 9:40 First Period</td>
<td>8:45 – 9:35 First Period</td>
</tr>
<tr>
<td>9:45-10:40 Second Period</td>
<td>9:40-10:10 Study Block</td>
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<tr>
<td>10:45-11:10 A Lunch</td>
<td>10:15-11:00 Second Period</td>
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<tr>
<td>11:15-12:05 Third Period (A Lunch)</td>
<td>11:05-11:30 A Lunch</td>
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<tr>
<td>10:45-11:40 Third Period (B Lunch)</td>
<td>11:35-12:20 Third Period (A Lunch)</td>
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<tr>
<td>11:40-12:05 B Lunch</td>
<td>11:05-11:50 Third Period (B Lunch)</td>
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<tr>
<td>12:10-1:00 Fourth Period</td>
<td>11:55-12:20 B Lunch</td>
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<tr>
<td>1:05-1:55 Fifth Period</td>
<td>12:25-1:10 Fourth Period</td>
</tr>
<tr>
<td>2:00-2:50 Sixth Period</td>
<td>1:15-2:00 Fifth Period</td>
</tr>
<tr>
<td>2:55-3:45 Seventh Period</td>
<td>2:05-2:50 Sixth Period</td>
</tr>
<tr>
<td>(Planning)</td>
<td>2:55-3:45 Seventh Period</td>
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<tr>
<td>4:30 Administration Dismissed</td>
<td>(Planning/Meetings)</td>
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### Sixth Grade

<table>
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<tbody>
<tr>
<td>Period 1</td>
<td>8:30-9:15</td>
<td>Period 1</td>
<td>Period 1</td>
</tr>
<tr>
<td>Period 2</td>
<td>9:17-10:02</td>
<td>Period 2</td>
<td>Period 1</td>
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<tr>
<td>Period 3</td>
<td>10:04-10:49</td>
<td>Period 3</td>
<td>Period 3</td>
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<tr>
<td>Period 4</td>
<td>10:51-12:04</td>
<td>Period 4</td>
<td>Period 3</td>
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<tr>
<td>Period 5</td>
<td>12:06-12:51</td>
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<td>Period 6</td>
<td>12:25-1:40</td>
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<td>Period 5</td>
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<tr>
<td>Period 7</td>
<td>1:40-2:26</td>
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<tr>
<td>Period 8</td>
<td>2:28-3:15</td>
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<td>Period 7</td>
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Lunch 1: 10:51-11:15

Lunch 2: 11:18-11:42

### Seventh Grade

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<td>Period 6</td>
<td>12:53-1:38</td>
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<td>Period 7</td>
<td>1:40-2:26</td>
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<td>Period 8</td>
<td>2:28-3:15</td>
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<td>Period 7</td>
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Lunch 3: 11:45-12:09

Lunch 4: 12:14-12:40

### Eighth Grade

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<tr>
<td>Period 2</td>
<td>9:17-10:02</td>
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<tr>
<td>Period 3</td>
<td>10:04-10:49</td>
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<tr>
<td>Period 4</td>
<td>10:51-11:36</td>
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<td>Period 6</td>
<td>12:25-1:40</td>
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<td>Period 5</td>
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<tr>
<td>Period 7</td>
<td>1:42-2:26</td>
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<td>Period 8</td>
<td>2:28-3:15</td>
<td>Period 8</td>
<td>Period 7</td>
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Lunch 5: 12:25-1:09

Lunch 6: 1:14-1:38
North High School

**Monday**
- First Period  8:45-9:29
- Second Period  9:34-10:17
- Third Period  10:22-11:06
- Fourth Period  11:11-11:54
- Fifth Period  11:59-12:29
- A Lunch  11:59-12:29
- B Lunch  12:34-1:04
- C Lunch  1:09-1:39
- Directed Study  1:44-2:10
- Sixth Period  2:15-2:58
- Seventh Period  3:03-3:45

**Tuesday –Friday**
- Block 1 or 2  8:45-10:10
- Block 3 or 4  10:16-11:41
- Block 5  11:47-2:14
- A Lunch  11:47-12:17
- B Lunch  12:22-12:52
- C Lunch  12:57-1:27
- Directed Study  1:32-2:14
- Block 6 or 7  2:20-3:45

West High School

**Monday**
- Block 1  8:45-9:35
- Block 2  9:40-10:25
- Block 3  10:30-11:15
- Block 4  11:20-12:05
- Block 5/Lunch  12:10-12:35
- A Lunch  12:40-1:35
- Block 5  12:40-1:35
- B Lunch  12:25-12:50
- Block 5  12:25-12:50
- C Lunch  12:55-1:20
- Block 5  12:55-1:20
- Extended Study  1:25-2:10
- Block 7  2:15-3:45
- Advisory  1:40-2:05
- Block 6  2:10-2:55
- Block 7  3:00-3:45

**Tuesday/Thursday**
- Block 1  8:45-10:15
- Block 3/Lunch  10:20-11:50
- Block 5  10:55-1:20
- A Lunch  11:55-12:20
- Block 5  11:55-12:20
- B Lunch  12:55-1:20
- Block 5  12:55-1:20
- C Lunch  12:55-1:20

**Wednesday/Friday**
- Block 2  8:45-10:15
- Block 4  10:20-11:50
- Block 5/Lunch  11:55-1:20
- A Lunch  11:55-12:20
- Block 5  11:55-12:20
- Block 5  11:55-12:20
- Block 5  11:55-12:20
- Block 6  2:15-3:45
- Block 7  2:15-3:45
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<th>8th Grade Bell Schedule</th>
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<tr>
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<td>Homeroom 8:10 - 8:25</td>
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<td>Class</td>
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<td>11:05 – 11:30 Lunch</td>
<td>11:40 – 12:05 Lunch</td>
<td>12:15 – 12:40 Lunch</td>
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<td>11:35 – 12:05 Class</td>
<td>C/G Block: 12:10 – 1:40</td>
<td>12:45 – 1:40 Class</td>
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<tr>
<td>C/G Block: 12:10 – 1:40</td>
<td>D/H Block: 1:45 – 3:15</td>
<td>D/H Block: 1:45 – 3:15</td>
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Appendix D

ACCEPTABLE USE AND INTERNET SAFETY POLICY
(in accordance with Children’s Internet Protection Act [CIPA])

PURPOSE: District County Public Schools provides all students access to the Internet, and also in some cases laptop computers, as a means to enhance their education. The purpose of this policy is to assure that students recognize the limitations that the school imposes on their use of these resources. In addition to this policy, the use of any school computer, including laptop computers, also requires students to abide by the District County Public Schools Computer use Guidelines as stated in Chapter 12 of the Code of Student Conduct. During the course of the school year, additional rules regarding Internet safety may be added. If this occurs, any new rule will become a part of this policy.

TERMS OF THE ACCEPTABLE USE AND INTERNET SAFETY POLICY

Specifically, the student:
Should use the resources available through the Internet and other electronic media to supplement material available through the classroom, media center or through any other resource provided by the school.

Should adhere to guidelines each time the Internet is used at home and school.

Should make available for inspection by an administrator or teacher upon request any messages or files sent or received at any Internet location.

Should use appropriate language in all communications. The student should not use profanity or obscenity and should avoid offensive or inflammatory speech. The student should not participate in “Cyber Bullying” such as personal attacks and/or threats on/against anyone using these resources. The student should report to responsible school personnel any personal electronically transmitted attacks in any form made by others over the Internet or Local Area Network (LAN) observed while using school-owned technology.

Should abide by copyright laws and should only download/import music or other files to a school-owned computer, including laptop, that he/she is authorized or legally permitted to reproduce, or for which he/she has the copyright.

Should use his or her real name in all educational activities that incorporate technology or the Internet (e.g., distance learning, online distance learning, etc.).

Should respect the privacy of others. The student should re-post (to make appear online again) communications only after obtaining the original author’s prior consent.

Should use technology for school-related purposes only during the instructional day.
Should not make use of material (files) or attempt to locate material (files) that are unacceptable in a school setting. This includes, but is not limited to, pornographic, obscene, graphically violent, or vulgar images, sounds, music, language, video or other materials (files). The criteria for acceptability is demonstrated in the types of material made available to students by administrators, teachers, and the school media center. Specifically, all school-owned computers should be free at all times of any pornographic, obscene, graphically violent, or vulgar images, sounds, music, language, video or other materials (files).

Should not access or attempt to access instant messages, chat rooms, forums, e-mail, message boards, or host personal web pages, except school-approved, teacher-supervised filtered Internet communication, during the instructional day.

Should not attempt to discover passwords or to control access to the Internet or the computer network.

Should not change or attempt to change the configuration of the software that controls access to the Internet or any other electronic media.

Should not download any programs, files, or games from the Internet or other sources that can be run or launched on the computer as a stand-alone program. These programs or files are sometimes called “executable files.”

Should not use this resource for any illegal activity. This includes, but is not limited to, tampering with computer hardware or software, unauthorized entry into computers, and vandalism or destruction of computer files.

Should not knowingly introduce or knowingly allow the introduction of any computer virus to any DPS computer.

Should not connect a personal, non-school-district-owned desktop computer, laptop computer, wireless personal digital assistant (PDA), or any other network (wireless or directly plugged) device to any part of the DPS network (local area network “LAN,” wide area network “WAN,” or metropolitan area network “MAN”).

Should not share passwords with anyone for any reason and should make every effort to keep all passwords secure and private.

Should not play games, including Internet-based games, except school-approved, teacher-supervised educational games, during the instructional day.

Should not download, upload, import or view files or websites that purport the use of illegal drugs, alcohol or illegal and/or violent behavior except school-approved, teacher-supervised digital media.

Should not bypass or attempt to bypass DPS filtering software.
I understand that should I fail to honor all the terms of this Policy, future Internet and other electronic media accessibility may be denied. Furthermore, I may be subject to disciplinary action and, if applicable, my Laptop computer may be recalled.

By signing below, I give permission for the school to allow my son or daughter to have access to the Internet under the conditions set forth above.

_______________________________         _______ ________________________
Student Name (Please Print)           Parent or Guarding Name (Please Print)

_______________________________         _______________________________
Student Signature            Parent or Guardian Signature

_______________________________         ________________________________
Date              Date

**The name of the district has been replaced with the pseudonym.**
Appendix E

Interview Questions

- Please tell me your name, how long you’ve been teaching, and what subject and grade you teach here at ________________.
- Do you use technology in your instructional planning and activities?
- Tell me what your ideal vision for the use of technology in the secondary classroom is.
- How could technology use be improved? What is wrong with technology?
- Describe your school’s technology policy.
### Formal Interview/Field Observation Schedule

*(Does not include informal visits or email correspondence)*

<table>
<thead>
<tr>
<th>Date</th>
<th>Participant</th>
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<tbody>
<tr>
<td>May 14, 2004</td>
<td>Jane Jackson</td>
</tr>
<tr>
<td>May 26, 2004</td>
<td>Dawn Simmons</td>
</tr>
<tr>
<td>June 7, 2004</td>
<td>Diane King, architect of the National Education Technology Plan</td>
</tr>
<tr>
<td>June 8, 2004</td>
<td>David Martin, architect of the National Education Technology Plan</td>
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<td>June 10, 2004</td>
<td>Gina Smith, head of the state’s Office of Education Technology</td>
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<tr>
<td>February 1, 2005</td>
<td>Nia Davis</td>
</tr>
<tr>
<td>May 19, 2005</td>
<td>Thomas Jenkins</td>
</tr>
<tr>
<td>June 6, 2005</td>
<td>William Forbes, Dawn Simmons</td>
</tr>
<tr>
<td>June 7, 2005</td>
<td>Kelly Taylor, Paul Brown, Joanne Stevens</td>
</tr>
<tr>
<td>June 10, 2005</td>
<td>Joanne Stevens</td>
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<tr>
<td>June 13, 2005</td>
<td>James Smith</td>
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<tr>
<td>June 21, 2005</td>
<td>Grace Peters</td>
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<td>October 24, 2005</td>
<td>James Smith</td>
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<tr>
<td>November 1, 2005</td>
<td>Kelly Taylor, Paul Brown, Joanne Stevens</td>
</tr>
</tbody>
</table>
Shanetia Pertrelle Clark  
spc170@psu.edu
Vita

<table>
<thead>
<tr>
<th><strong>Office Address</strong></th>
<th><strong>Home Address</strong></th>
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<tbody>
<tr>
<td>258 Chambers</td>
<td>2089 Mary Ellen Lane</td>
</tr>
<tr>
<td>Pennsylvania State University</td>
<td>State College, PA 16803</td>
</tr>
<tr>
<td>University Park, PA 16802</td>
<td>(814) 238-7428</td>
</tr>
<tr>
<td>(814) 865-2161</td>
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<tr>
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<tr>
<td>Curriculum and Instruction with an emphasis in Language and Literacy Education</td>
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<tr>
<td>Pennsylvania State University, University Park, Pennsylvania</td>
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| **Masters of Arts in Teaching**, May 1999 |
| Elementary Education |
| University of Virginia, Charlottesville, Virginia |

| **Bachelors of Arts**, May 1999 |
| English |
| University of Virginia, Charlottesville, Virginia |

<table>
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<tbody>
<tr>
<td>Bunton-Waller Scholar, Pennsylvania State University; Pi Lambda Theta—Alpha Chapter, National Education Honor Society, Pennsylvania State University, Inducted April 2003; Phi Delta Kappa, National Education Honor Society, Inducted April 2005; Outstanding Graduate Assistant Teaching Award, April 2005; Dean’s List, University of Virginia; Award for Academic Achievement, Office of African-American Affairs, University of Virginia</td>
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<tr>
<td>Seventh Grade English Teacher</td>
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<td><em>Recipient of the 2004 PERA Distinguished Paper Award</em></td>
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<td>Clark, S.P. (2005). Teachers and Technology: Unpacking Power and Motivation. Awarded $600 from Pennsylvania State University’s Alumni Society Graduate Student Research Initiation Grant</td>
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