School internet grading programs

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SCHOOL INTERNET GRADING PROGRAMS

By
Michael Grossman

A Master's Thesis
Submitted in partial fulfillment of the requirement of the
Master of Arts Degree in the Graduate School of
Rowan University
12/1/01

Approved by ____________________________

Date Approved Dec., 2001
Abstract

The purpose of this study was to analyze the effects of implementing a software program that would allow classroom teachers to post student grades and assignments on the Internet. This study measured the improvement in the grades of the students who used this Internet program. The research was limited to four physical science classes at Camden County Technical Schools (CCTS). Ninety-four students participated in this study. Fifty students were given access to their grades and assignments on the Internet and forty-four students were not given access to their grades and assignments on the Internet. The research data was generated by using two tools: student and teacher surveys; and student pre-tests and post-tests. The surveys provided the necessary background information needed to implement this type of program. The percentage of students and teachers having access to the Internet, and the support levels this program would have from students and staff was obtained by analyzing the surveys. The results from pre-test and post-test were used to measure student academic achievement. The results of the surveys indicated that the majority of students and staff would use and support the implementation of this type of program because both groups believed that it would improve student grades. The post-test scores indicated that using this type of program improved student academic performance.
Abstract (Mini-Abstract)

The purpose of the study is to analyze the effects of implementing a software program that would allow classroom teachers to post student grades and assignments on the Internet. The study measured the academic achievement of the students who used this Internet program. The results of the research indicated that the majority of students and staff would use and support the implementation of this type of program. In addition, the research indicated that using this type of program has the potential to improve academic performance.
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Chapter 1

Introduction: Focus of the Study

The demand for accountability, strong leadership and academic standards in our schools has never been higher. Many educators and parents believe that the educational system in this country is at a critical stage. The reputation of the professional educator has been tarnished to some degree. There are numerous reports and articles attesting to the belief by parents and community that the educational system is failing our students. However, at this pivotal time in our school's history, new technologies are coming to the aid of our schools to raise student performance.

Many educational software Web-based technology companies are addressing this demand by creating opportunities for schools to manage student information better and increasing lines of communication between administrators, teachers, students and parents. These technologies are improving the efficiency and effectiveness of many school operations. These technologies are enabling teachers, administrators, parents, and students to communicate with one another in real time using computers. These innovative technologies are allowing educators to do what they do and love to do best, educate our students.

There is an increasing number of schools within New Jersey and throughout the country that have taken advantage of this new technology that allows teachers to communicate with parents online. This new approach is beginning to replace the traditional, older methods such as the phone call and letter sent home. These traditional forms of communication have
always had several inherent problems. Current economic conditions have forced many parents to work longer hours, often with both parents working. Teachers often have trouble reaching parents by phone. In many cases, teachers and parents play phone tag for several days before they are able to speak on the child’s behalf. Traditional letters sent home create a time lag before the teacher receives a response.

Camden County Technical Schools (CCTS) was interested in incorporating a software package that would allow its teachers, students and parents to access homework and class assignments from the school’s home Web page. The ratio of students completing homework assignments and projects on a daily basis is below district expectations. The district wanted to increase student participation in daily homework assignments. The district believed that this type of program could aid in increasing student academic performance.

Providing parents or guardians with a way of keeping up to date with their children’s assignments and progress would allow them to have a greater influence on the academic performance of the student. This program could increase the lines of communication between the school and parents. The vast numbers of students attending Camden County Technical Schools had computer skills and showed a strong interest in using computers. Strong student interest in using computers, which allow access to their grades and assignments on a daily basis, would increase the chances that the students will check for their missing assignments and work. In addition, computer access gives the students an additional method of keeping track of their performance during the marking
periods. Increased access for checking assignments and grades should lead to increased academic performance.

Purpose of the Study

The purpose of the study was to answer the following questions: Would the faculty and students at Camden County Technical Schools voluntarily support a program that gave students access to student grades and assignments on the Internet? Did the implementation of this type Internet program improve student grades? The intern measured the percentage of students and teachers who were willing to use the Internet to check student grades and assignments by analyzing student and teacher survey responses. The intern measured academic achievement on a small sampling of students from CCTS who were given access to this Internet program by analyzing pre- and post-test scores.

The overview questions that the intern focused on during this study were the following: How effective was the implementation of a software package allowing students to access homework assignments and projects through the Internet in increasing student responsibility for their own academic success? Did this program motivate students to check for missing assignments when absent from class, or to complete a higher percentage of their work? How effective was increasing student participation by checking their assignments and grades on a regular basis from the Internet in improving academic performance?

The sub-questions are: How many students and parents have access to computers and the Internet at home? How many parents and students have the necessary computer skills to access this information? What percentage of students and parents would take advantage of
this type of software program? If the percentage of students and parents who have access to
the Internet from their primary residence is relatively low, would it be more beneficial for
the district to create a phone service or hotline that the parents could use to check grades and
assignments? What would be the support from the teaching staff at CCTS to implement such
as program? Would this system lead to increased student involvement that would ultimately
translate into better academic performance?

Definitions

Advanced Placement Test (APT) is a voluntary test sponsored by the College Board that
allows students to qualify for college credit and/or advanced placement in college. Scores
are not shown for high schools in which 3 or fewer students took the exam.

Enrollment is the count of full-time and shared-time students “on-roll” by grade in October
of each school year. For the purposes of this report, both full-time and shared-time students
were counted as a whole number (“1”).

Graduation Data is the percent of students enrolled in Grade 12 in October 1998 who
graduated with their class by August 1999. Percents are provided for your school and the
state. This percent does not represent a four-year “graduation rate” for this class.

Graduation Type is the percentage of students in each graduating class who met or otherwise
satisfied state testing requirement for graduation. Such requirements include passing the
HSPT, HSPA, or successful completion of the Special Review Assessment (SRA).

High School Proficiency Assessment (HSPA) is the new modified HSPA test given to 11
grade students. In addition to reading, writing, and mathematics this new test will include
one new content area each year until the full complement of knowledge and skills in the New Jersey Content Standards are addressed.

High School Proficiency Test (HSPT) is given to New Jersey 11 grade students in the fall and spring. The test consists of three sections: reading, writing, and mathematics. A student must pass each section of the test, as it is one of the requirements for a high school diploma. Instructional Time is defined as the amount of time per day students are engaged in instructional activities reported in hours and minutes. Time for homeroom may be counted where this time is used for structural activities under supervision of a certified teacher which may include activities such as viewing specialized information television programming (e.g., Channel One), guidance activities, or student information activities. Language Diversity refers to the language spoken at the student’s home. Length of School Day is the amount of time per day school is in session (i.e., students are present) on a normal school day reported in hours and minutes for both day and evening sessions. Typically, a day session includes students full-time and shared-time in grades 9 through 12 and special education programs and evening session include post-secondary adults. It does not include the time expended for extracurricular activities or athletics. Limited English Proficient refers to the number of students who speak limited English. Post-Secondary Institution is a school that provides shop classes and a trade for high school graduates that does not involve college classes. Scholastic Assessment Test (SAT) is a voluntary test sponsored by the College Board to measure a student’s development of verbal and mathematical abilities important for success
in college, particularly in the first year.

**Special Review Assessment (SRA)** is a process designed to provide an alternative assessment for Grade 12 students who have met all graduation requirements with the exception of passing all sections of the HSPT or HSPA.

**Student Attendance Rate** is the average percent of students present each day in the school. These percentages are calculated by dividing the daily student attendance (ADA) or “days present for your school” by the average daily student enrollment (ADE) or “possible days for your school.”

**Student/Faculty Ratio** is calculated by dividing the reported October school enrollment in each school year by the reported number of classroom teachers and educational support services personnel (e.g., guidance counselors, librarians, etc.) assigned to the school in October. Then total school enrollment is based on a headcount of full-time and shared-time students.

**The Student/Administrator Ratio** is calculated by dividing the reported October school enrollment of each school year by the reported number of administrators in school in October. This ratio will reflect one administrator for schools served by a part-time administrator. The total school enrollment is based on a headcount of full-time and shared time students.

**Computer Vocabulary**

**Address:** A location in the computer memory where a particular unit of data is stored. The address may be in the form of an identifying label, name, or number.
Browser: Software that is used to navigate through the World Wide Web.

Document: A file created with an application and stored; can be retrieved, modified, printed, E-mailed.

Download: Defined as copying a file or document to your computer from another computer at a remote location.

Electronic Mail (E-mail): Messages, usually text, sent from one address to another via the computer. E-mail can also be sent simultaneously to a large number of addresses and also be sent automatically.

File: A collection of related information stored as a unit. On the Web, graphic and multimedia files can be large and may take a while to display or download.

File Transfer Protocol (FTP): Defined as the Internet standard for moving files between two computers.

Homepage: The first page (screen) in a Web page.

Hyper Text Markup Language (HTML): A language using codes called “tag” for creating a Web page.


Internet: The vast collection of interconnected networks that all use TC/IP protocols. The Internet connects independent networks in a global network of networks.

Networks: Two or more computers connected for the purpose of sharing information.

There is no limit to the number of computers that can be connected. All the computers at both campuses at CCTS are connected to a network.
**Online:** Connected to a network. To connect to the Internet, you need an ISP, modem and phone line, and certain TCP/IP software.

**Protocol:** Standards observed to exchange information; most widely known in Internet transactions.

**Save:** To store data you do not want to lose to a disk or other medium.

**Server:** A computer or software package that provides a specific service to client software running on other computers. The term can refer to a particular piece of software, such as a Web server, also known as a host.

**Software:** Digital information that makes a computer perform various tasks.

**World Wide Web (WWW):** A global browsing and searching system based on the concept of hypertext and hypermedia that connects “pages” with hyperlinks. It is constantly changing and expanding and is accessed through hypertext servers.

**Limitations of the Study**

The study was limited by several factors. The research focused on only one of the two high school buildings within the district, the Pennsauken campus. Furthermore, the study was limited to one academic subject, four physical science classes. These classes consisted mainly of sophomores, with a small number of juniors and seniors. There were no freshman registered in these physical science classes.

The research involved a small percentage of the student population. Only 50 students were given Internet access to their grades out of a population of approximately 700 students at the Pennsauken campus. The data collection was limited to only two methods of collection.
Surveys were used to collect bulk data such as number of students that have Internet access at home. A pre- and post-test were used to evaluate academic progress after the implementation of this program.

Another limitation of the study was the short duration. The length of the study was only six weeks, one full marking period. Studies of this nature would ultimately provide more fruitful information if conducted over a period of a year or two. However, for this research, the time period is not afforded.

Setting of the Study

Camden County Technical Schools comprises a small district, containing only two high school buildings located approximately 20 miles apart. There are no elementary or middle schools existing within the district. The high schools are Vocational, containing academic and shop grades 9 through 12. The student population is very similar on both campuses. The students present in the intern’s physical science classes, six classes consisting of approximately 140 students, represent a reasonable random sampling of the students present within the district.

Camden County Technical Schools is a public, non-profit secondary and post-secondary institution. Since 1928, CCTS has offered occupational and career education to thousands of Camden County residents. Camden County Technical Schools is the largest vocational-technical school in the state of New Jersey, and one of the largest and most comprehensive in the nation (New Jersey Report Card Vocational/Technical Specialized High School [NJSRVC], 1998-2000).
According to the mission statement found in the 2000/2001 student and teacher handbooks, the foremost of mission of CCTS is to demonstrate excellence and innovation in public education and to graduate skilled workers. The district strives to maintain an atmosphere of inquiry, continuous learning and interaction, which enables students of all aspirations and abilities to develop to their fullest potential.

Camden County Technical Schools recognizes a responsibility not only to transmit received ideas, but also to participate in the development of new ideas. Accordingly, CCTS encourages the personal and professional development of the employees and provides them with a stimulating and supportive work environment. Camden County Technical Schools also strives to foster strong partnerships between the home, the school and the community and to teach an appreciation for the value of every individual.

Many of the CCTS students come from a single-parent home, often living with a grandparent or relative. There is a relatively large number of female students who leave school for periods of time on homebound instruction, due to pregnancy. Discipline is very strictly maintained at the Pennsauken campus, therefore an additional high percentage of both male and female students lose instructional time due internal and external suspensions.

Since the Camden County Technical Schools district is a public vocational high school, the Board of Education is selected by the Camden County Freeholders and not elected by the township community members. This means that appointments to the board of education and administration are often politically motivated. Since the board members are selected
and not voted upon by the parents, parents typically have less of an influence on educational matters within the district.

Although registration is open to all students in Camden County, 95 percent of the students at the Pennsauken Campus live in the city of Camden, New Jersey. Camden is an economically challenged city located within Southern New Jersey and just outside of Philadelphia, Pennsylvania. Camden City schools are listed among the Abbott special needs schools. There are two regular high schools located within the city, Camden High School and Woodrow Wilson High School. In a national survey conducted in 1999 by The School Report, the Camden Schools received a 4 out of 5 rating in school performance, with 5 being the worst. The study analyzed three criteria, Scholastic Performance (35%), Curriculum (40%) and Family Friendly (25%) (NJSRCV, 1998-2000).

Scholastic Performance included SAT and ACT scores adjusted by the percentage of students who take the test and the percentage who go to college, with 4- year schools weighted over 2- year schools. Curriculum, included the following factors: total number of advanced placement courses offered; total number of languages offered; total number of fine arts programs offered; and the total number of Interscholastic sports programs. Family Friendly included programs such as before school daycare, after school daycare, after school busing, and the number of extracurricular activities (per 100 students). The scores were slightly adjusted for the number of computers in the classroom, and the number of merit scholars (NJSRCV, 1998-2000).

The environment in which most of the students grew up was very harsh. There was a
high degree of crime and drugs to which the students were exposed daily. Daily survival became a top priority for many students. A national survey conducted by Monster Daata.com rated the Camden City crime risk a 5 out of 5, with 5 being the worst score and 1 being the best score. The survey analyzed aggregate reported crimes of homicide, rape, robbery, aggravated assault, burglary, larceny, and auto theft on a per-capita basis (Monster Daata.com [MDC], 2000).

More specifically, the crime rate was analyzed by comparing Camden City’s zip code relative to other zip codes throughout the country. A value of 100 on this scale meant that the city was exactly the national average. A score of 50 on this scale meant that the city had half the crime rate as the national average. A score of 200 on this scale meant that the city had a crime rate double the national average. The Violent Crime rating for Camden City was 566 and the Non-violent Crime rating was 340. Unfortunately, education was not usually a top priority for students or parents (MDC, 2000).

The average cost of a home in Camden City is $36,598 dollars. The national average for a home in 1999 was $70,000 dollars. The average age of a home in the city of Camden is 63 years. The average square footage of these homes is only 1594 square feet. These data were calculated using MLS (Multiple Listing Service) data over a rolling six-month period. Results included the features of the home that had sold during that period as well as homes currently for sale (Realtor.Com, 2000).

The Demographic Profiles for specific segments of the population were: 48.02% of the population’s median age was 30.6 years and the average family size was 3.56; 32.72% of the
population’s median age was 26.0 years, with more than 40% under 20 years of age; 13.68% of the population’s median age was 37.9 years, with half the householders over the age of 65, and more than 60% living alone (MDC, 2000).

The Socioeconomic Profiles for specific segments of the population of Camden City were: 48.02% of the population’s median household income is $21,900 dollars. This figure represents 1.2% of the 1999 U.S. households. Unemployment and poverty are twice the national average. Slightly less than half the adults (age 25 and over) have completed high school. Housing is apartments, very often in high-rise buildings (Realtor.Com, 2000).

The median household income for 32.72% of the population is $14,400 dollars. This figure represents 1.1% of the 1999 U.S. households. Nearly 60% of those employed work only part-time. Employment is found mainly within the service industry. More than 40% of the housing are multi-unit buildings (Realtor.Com, 2000).

The median household income for 13.68% of the population is $18,000 dollars. This figure represents 1.0% of the 1999 U.S. households. More than half receive Social Security payments. This segment is comprised mainly of renters (Realtor.Com, 2000).

The following statistical information was obtained from the New Jersey Report Card Vocational/Technical Specialized High School Report. During the 1998-1999 school year, 643 students were enrolled at the Pennsauken Campus High School Division. Students spent half of their days in career training shops, and the other half in academic classes. The following career programs were offered: Allied Health Careers, Carpentry, Culinary Arts, Drafting, Electric, Ornamental Horticulture, Printing, Graphic Arts, Automotive
Technology, and Welding. A number of career training programs are certified: Electronics by the Consumer Electronics Manufactures Association, Welding by the American Welding Society, and the Drafting by the American Design Drafting Association. Students graduating from these programs receive a certificate stating that they have met the national requirements in the industry and are ready for employment (NJSRCV, 1998-2000).

School enrollments for the 1998-1999 school year as of October 15, 1999, were as follows: Grade 9 students numbered 196, Grade 10 students numbered 187, Grade 11 students numbered 142 and Grade 12 students numbered 118, for a total of 643 students enrolled at the Pennsauken campus. The overall district numbers were determined by grade, race, and sex (NJSRCV, 1998-2000).

The number of 9th grade students enrolled at both campuses is 402. Of that number, 217 students were male and 185 were female. There were 71 White male and 33 White female students. There were 70 Black male students and 71 Black female students. There were 73 Hispanic male students and 78 female Hispanic students. There were 3 male and female Asian Pacific students enrolled. There were no American Indian or Alaskan Native ninth grade students at either campus (NJSRCV, 1998-2000).

The number of 10th grade students enrolled at both campuses is 324. Of that number, 162 were male students and 162 were female. There were 53 White male and 40 White female students. There were 48 Black male students and 62 Black female students. There were 56 Hispanic male students and 59 female Hispanic students. There were 3 male and 0 female Asian Pacific students enrolled. There was 1 female American Indian or Alaskan
Native 9th grade student (NJSRCV, 1998-2000).

The number of 11th grade students enrolled at both campuses is 285. Of that number, 145 were male students and 140 were female. There were 57 White male and 25 White female students. There were 40 Black male students and 46 Black female students. There were 46 Hispanic male students and 63 Hispanic female students. There were 2 male and 6 female Asian Pacific students enrolled. There were no American Indian or Alaskan Native 9th grade students at either campus (NJSRCV, 1998-2000).

The number of 12th grade students enrolled at both campuses is 240. Of that number, 134 were male students and 106 were female. There were 48 White male and 17 White female students. There were 45 Black male students and 38 Black female students. There were 38 Hispanic male students and 51 female Hispanic students. There were 3 male and 0 female Asian Pacific students enrolled. There were no American Indian or Alaskan Native 9th grade students at either campus (NJSRCV, 1998-2000).

There were no Special Education students enrolled at the Pennsauken campus. However, there were a total of 633 special education students enrolled at the Gloucester campus; 406 were male students and 227 were female. There were 189 White male and 72 White female students throughout all the grade levels. There were 126 Black male students and 106 Black female students. There were 88 Hispanic male students and 48 female Hispanic students. There were 14 male and 10 female Asian Pacific students enrolled. There was 1 female American Indian or Alaskan Native student (NJSRCV, 1998-2000).

The student attendance rate was 92.7% with the state average 92.6%. The percentage of
students who spoke English as a first language was 71%, with 29% of the students speaking another language as a primary language. The percentage of Limited English Proficient students (LEP) was 0.0% (NJSRCV, 1998-2000).

There were 118 students enrolled in Grade 12 for the October enrollment. The number of students who graduated in the class of 1999 by August 1999 was 93.2% compared with the state average of 108.0%. Of these graduates, 89.1% graduated by passing the HSPT and 10.9% graduated via the SRA process (NJSRCV, 1998-2000).

The percentage of students in grades 9-12 who dropped out of CCTS during the school year was 0.5%. The student mobility rate was 14.2%, with the state average, 13.4%. The length of the school day was 6 hours and 51 minutes, with the state average was 6 hours and 28 minutes. Instructional time was 5 hours and 36 minutes, with the state average 5 hours and 27 minutes. Instructional time did not include activities such as homeroom, lunch, or changing of classes (NJSRCV, 1998-2000).

Student to faculty ratio was 11.3 to 1, with the state average 12.5 to 1. The faculty had an attendance rate of 96.1%; the state average was 96.6%. The faculty credentials were: 74% had a BA/BS, 24% had an MA/MS, and 2% had a Ph.D./Ed.D. Student to Administrator ratio was 128.6 to 1; the state average was 168.3 to 1 (NJSRCV, 1998-2000).

Statewide assessment results for the High School Proficiency Test (HSPT) 1998-1999 school year, for CCTS 11th grade students were as follows: 31.9% of the 138 students passed all sections of the test in October and another 21% passed in April for a total of 52.9% passing all sections of the test. This compares to the state average of 76.8%
passing in October and another 8.3% passing in April, for a total of 85.1% passing all sections of the HSPT. For the reading sections, 59.4% of CCTS students passed compared to the state average of 89.4%. CCTS students fared slightly better with the mathematics and reading portions of the test. For the mathematics section, 79.7% CCTS students passed compared to the state average of 92.0%. For the writing section, 70.3% passed compared to state average of 93.1% (NJSRCV, 1998-2000).

For the 1999-2000 school year the results on the HSPT were much improved after two test administrations. At the Pennsauken campus, 82.1% of the students passed the reading portion of the exam, with 83.2% passing at the Gloucester campus. Overall, 82.6% of the total students at both campuses passed this section. At the Pennsauken campus, 92.9% of the students passed the mathematics section, with 89.9% passing at the Gloucester campus. Overall, 91.5% of the students at both campuses passed the math section of the test. Finally, 91.5% passed the writing section at the Pennsauken campus, with 88.2% passing at the Gloucester campus. Overall, 90.0% of the students at both campuses passed the writing section. Clearly, there was a vast improvement in the student’s HSPT scores, from the 1998-1999 test to the 1999-2000 tests (NJSRCV, 1998-2000).

There were 40 students who took the Scholastic Assessment Test (SAT) compared with 52,264 students within the state. Therefore, only 34% of eligible seniors took the test as compared with the state average of 78%. This is expected, since a lower percentage of students continued their higher education at a vocational high school than within a typical public high school. The average math score was 418 as compared with the state average of
18. The average verbal score was 392 as compared to the state average of 496. None of the students took any advanced placement test (NJSRCV, 1998-2000).

It is very clear from these results that a smaller percentage of CCTS students attend college after graduation, than traditional high schools. This would be considered very typical of a vocational high school. The majority of students plan on entering into a trade following graduation. A better indication of the quality of education at CCTS would be to look at the scores for the National Occupational Competency Testing Institute (NOCTI) scores (NJSRCV, 1998-2000).

For the Business and Information Process shops, 84.4% passed the performance portion, as compared to 79.3% of New State Vocational High schools. There were no written portions of this test. For the Carpentry shops, 69.2% and 89.0% passed the written and performance sections of the test respectively, compared to 68.3% and 81.0% for the state. For Commercial Foods, 73.2% and 99.4% passed the written and performance sections respectively, compared to 70.8% and 90.7% for the state. The drafting shop had no performance section on the test. However, 58.3% passed the written portion, compared to 55.5% for the state average. Welding shop had 53.8% and 96.6% pass the written and performance sections respectively; there were no state figures available (NJSRCV, 1998-2000).

Within the Electronics shop, 56.8% and 52.4% pass the written and performance sections respectively, compared to 52.4% and 78.5% for the state. General Drafting and Design had 74.1% and 54.5% passed the written and performance sections respectively;
compared to 78.2% and 66.1% for the state. Graphic Communications Technology had 44.7% and 90.8% pass respectively; there were no state numbers to compare with.

Horticulture-Floriculture had 91.8% pass the written; there were no records on the performance section of the test. This compares with 51.6% and 84.8% respectively for the state. Finally, there were only 4 students who took the Horticulture-Landscaping test; none passed either section. The state average was 59.2% and 68.8% respectively (NJSRCV, 1998-2000).

I believe that data shows that CCTS compares favorably to the other vocational high schools within New Jersey in terms of preparing students to enter a trade directly following high school. Although some students plan to attend higher education after high school, most students do enter a trade directly after their graduation from CCTS. Therefore, the typical vocational high school student is somewhat different than the typical regular high school student.

Camden County Technical Schools has 25 administrators employed as compared to the state average of 12.6. However, the number of students per administrator is 118.7 to 1, as compared to the state average of 107.2 to 1. The number of faculty per administrator is 8.2 to 1, compared to 8.5 to 1 for the state. The number of schools within the district is 2, compared to an average of 2.8 for the state (NJSRCV, 1998-2000).

The median salary for an administrator at CCTS was $85,859 in 1998-1999, compared to the state average of $78,345 for the state. The average years of service were 27 years compared to the state average of 23 years of service. The average teacher salary for CCTS
was only $41,918, compared to the state average of $48,100. The average years of service were 14 years of service compared to the state average of 13 years. There seems to be a higher rate of pay for administrators but a much lower rate of pay for teachers when comparing state averages. This can and often does lead to tension among teachers and administrators (NJSRCV, 1998-2000).

For the 1999-2000 school year, the Total Comparative Cost Per Pupil for CCTS was $9,500 compared to the state average of $12,086. The Total Cost Per Pupil was $10,245 compared to the state average of $13,082. Costs included in the total cost not included in the comparative cost were items such as transportation, lease purchase interest, judgments against the school district, equipment, facilities/acquisition costs, and restricted expenses less nonpublic services and adult schools. The one area of cost that I would like to focus is on classroom costs (NJSRCV, 1998-2000).

Classroom cost for salaries and benefits were only $3,938 per student as compared to the state average of $5,391. General supplies/textbooks was $453 per student as compared to $513 for the state. Finally, purchased services and others were $7 compared to the state average of $188. These costs are below the state averages. There appears to be a cost-cutting schedule by the CCTS board of education (NJSRCV, 1998-2000).

The faculty credentials will be expressed as a percentage of individuals possessing a Bachelor, Master, or Doctoral degree. During the 1998-1999 school year, 74% of the faculty held at least a BA/BS degree. Faculty possessing an MA/MS degree was 24%. Only 2% of the faculty held a Ph.D./Ed.D. degree. The averages for all schools within the state
were not available. For the 1998-1999 school years, the faculty attendance rate was 96.1%, as opposed to the state average of 96.6% (NJSCCV, 1998-2000).

I believe that this can be a very important study for the CCTS district. The relative numbers and percentage of students at CCTS who do homework on a regular basis is low. I have been a teacher in this district for five years and have experienced this first hand. In addition, talking with colleagues in an informal and formal basis, they have expressed similar experiences.

Significance of the Study

There were several reasons for the low participation rates. First, many of the students live in a harsh environment and doing homework is not always a top priority. I realize that this software package will probably have little effect in changing this. However, there are several additional reasons for a low percentage of students doing homework that this study might help to improve.

Camden County Technical Schools has a large percentage of students who miss significant school time because of medical and homebound instructional reasons. For example, many female students are placed on homebound instruction because of pregnancy. Having easier access to assignments might make it easier for these students to complete their assignments. Discipline is a top priority with the administration, therefore, a large number of students receive external and internal suspensions. Having easy access to obtaining homework assignments might improve the number of students doing their assignments. Finally, many of the student's parent(s), and or guardians, have to work many hours. It was
difficult for them to follow up on current assignments and daily progress of their children.
Once again, having an easy form of access to their children’s assignments might make it
easier for them to ensure that the student completes assignments on a daily basis.

Organization of the Study

Chapter 2 analyzes the current literature on using school Web pages that allow students
and parents to view homework and daily assignments from home. Since this is a relatively
new approach with school districts, the literature available seemed to be somewhat limited.
The literature review relied mainly on articles and actual research studies the conducted by
the Internet software companies. In addition, the intern contacted several of the schools
within New Jersey using this technology, to see if they had conducted any research.

Chapter 3 describes the design of the study. The research consisted of providing the
district with an evaluation and recommendation report on the available software programs
that allow teachers to post grades and assignments on the Internet. The intern used and
worked with the various software packages to determine which program would be the best
fit for the district. Chapter 3 research includes a review on each of the different Internet
Grading programs available. The software programs were be evaluated by the intern. The
intern obtained the software programs and practiced using each. The main criteria were
features and ease of use.

Surveys were used to determine several key questions. The surveys attempted to
determine the percentage of students at CCTS who had computers at home and able to
access information from the Internet. The surveys measured how many of the students did
not have computers at home, had some accessibility to the Internet other than at home or school. In addition, the surveys analyzed the extent of in-house teacher support this new program would receive. For example, what percentage of teachers would be willing to spend a few minutes at the end of a busy day to post assignments and update student grades.

Chapter 4 presents the finding of the research. The research focused on survey data and pre-test/post-test scores. The surveys were given to all the students in the different science classes. Since the HSPA included science on the test, all of the students enrolled in CCTS had some level of science class. Therefore, the most efficient process to ensure that the surveys were not duplicated was to focus on distributing them in one subject concentration. The intern measured the percentage of students with computers and Internet access at home or other places outside of school. The research analyzed for the administration, the percentage of staff members who used and supported this new technology. In addition, the research attempted to analyze the percentage of teachers who would require being trained in order to use this technology.

Chapter 5 discusses the research data presented in chapter 4 of this thesis. The implications of the student and teacher surveys and are discussed. The research indicated that there was significant academic improvement in the students that used the Internet to check their grades and assignments, as measured by the pre- and post-tests. The results of this research indicated that the students and staff at CCTS would benefit by incorporating an Internet program such as Thinkwave.com. in the classrooms. This program would allow teachers at CCTS to communicate with parents and students using the Internet to post
marking period grades and assignments. The intern presented the research findings to the administration at CCTS and recommended that the teaching staff be allowed to use Thinkwave.com or a similar type of Internet grading program, allowing teachers to post student grades and assignments on the Web. In addition, recommendations for further study and research are analyzed in this last chapter.
Chapter 2

Not too long ago parents had to wait in line at a teacher-parent conference, or a back to school night just to get a few minutes to find out how their son or daughter was doing in school. These events usually would only occur a few times a year. However, with the invention of the Internet, this is beginning to change in a few districts within the state.

In an article published in Education World, Sherril Steele-Carlin, interviewed educators who have been posting grades online for several years. Martha Crook, director of technology for the Park City Schools in Utah, discussed this kind of Internet technology that has been incorporated for several years at the Park City Schools. “We get a lot of feedback,” Crook explained. “The parent component is really positive, parents and students can get attendance reports, final grades, and those kinds of things. The communication between the school and home has increased dramatically, and the parents absolutely love it. Between 50% and 70% of the families in the district use the service,” (Crook, 2000, p.3).

More and more teachers are posting student grades to class Web pages. It’s a growing trend, made easy by software packages and special online communities. According to the National Center for Educational Statistics, between fall 1994 and fall 1998, Internet access in public schools increased from 35% to 89%. Additionally, more and more homes are joining the online revolution too, providing parents with easy access to student grades (National Center for Education Statistics [NCES], 2000).

*Educational World* points out that posting grades online helps parents keep in touch 25.
with how their kids are doing in school. According to the National Coalition for Parent Involvement in Education (NCPIE), this has a positive influence. The studies point out that when families are more involved in their child’s education, the children perform better in schools. Additionally, this improves the schools as well (National Coalition for Parent Involvement in Education [NCPIE], 2000).

Most research surveys point out that parents and teachers view this technology very favorably. According to an online grades poll conducted by SeattleInsider.com, 91% of the parents said they think online grading is a “great tool to help track my child’s performance.” Martha Crook explains that it helps students improve their grades because, “it increases accountability and makes the student more responsible” (Martha Crook, 2000, pp.7,8).

One negative aspect of posting grades online is that they might not be available to parents who do not have computers or Internet access, either at home or work. However, there are a number of ways that school districts can address this problem. First, some programs offer a phone service, which allows parents to call and get grades, attendance, and other information over the phone. Many school districts provide computers with Internet access in their classrooms and school libraries. In addition, districts can set up computer rooms that the parents can use to access this information. Furthermore, many public libraries offer free access to the Internet (Steele-Carlin, S., 2000, October 10).

School districts that want to utilize this technology have plenty of options to choose from. Most companies offer online services directed at school administrators and teachers. They host online grading, administrative reporting, and many other options. Most of these
services are stored in the software company's server; therefore schools do not have to purchase additional hardware. This is a bonus for cash poor schools that cannot afford to upgrade their computing resources (Steele-Carlin, 2000).

According to Educational World, if teachers we talked with are good indicators, posting grades online will get easier and more commonplace in the months and years ahead. This tool for connecting kids, teachers, and parents online can open up the lines of communication between school and home and can help keep kids on their toes. It's a tool whose time has come! (Steele-Carlin, 2000).

Joyce Epstein, director of the Center of School, Family, and the Community Partnerships at Johns Hopkins University, has identified six types of parent behavior that online grading programs can improve. She has identified them as Epstein's Six Types of Involvement, which she considers essential for developing and maintaining effective parent partnerships with schools. Epstein's six types of parent involvement can be promoted by using online grading programs. The following paragraphs discuss these parent behavior types and how online grading sites can help parents (Starr, L., 2000, February 14).

Parenting: Assist families with parenting and child-rearing skills, understanding child and adolescent development, and setting home conditions that support children as students. The majority of the online grading sites have links to sites that provide tips on such topics. Additionally, many of these programs include tips on testing and parent-teacher conferences (Starr, 2000).

Communicating: Inform families about school programs and events. Provide a vehicle
for communicating with the school and individual teacher. Provide e-mail addresses of
teachers and administrators, and post a calendar of upcoming events and daily schedules.
Additionally, these sites can be used to post school rules and procedures. Furthermore, many
of these package programs can be set up to automatically e-mail parents on a weekly basis
proving progress reports on their child (Starr, 2000).

Volunteering: Improve recruitment, training, work, and scheduling to involve
families as volunteers and audiences at the school or in other locations to support students
and school programs. Schools could invite parents with technology expertise to train
teachers and install software and hardware. These grading sites could be used to send
messages to parents, inviting them to recruit, train, work, and volunteer for school programs
(Starr, 2000).

Learning at home: Involve families with children’s learning activities at home,
including homework and other curriculum-linked activities and decisions. These grading
programs often have link sites to homework help sites, informational resources, lessons, and
activities that reinforce classroom materials. These grading sites can be used to provide
actual activities and a reading list (Starr, 2000).

Making decisions: Include families as participants in school decisions, governance, and
advocacy through PTA/PTO, school councils, committees, and other parent organizations.
These software packages can link to online bulletin boards, chats, or listservs that encourage
parent and community input on educational issues (Starr, 2000).

Collaborating with community: Coordinates resources and services for families,
students, and the school with businesses, agencies, and other groups that provide services to
the community. Additionally, these online grading sites can provide links to local resources
and community agencies (Starr, 2000).

There is no question that the Internet sites that provide student grades online can benefit
students and parents in partnering with the school. However, choosing the right software
program can be difficult because there are many different software programs available to
choose from. Grading Software: Sorting Through the Choices, by Sherril Steele-Carlin
discusses the advantages and disadvantages of many of these programs. She includes a brief
synopsis of more than 20 software programs that include software that runs on Windows,
Mac/Apple, and Dos platforms. The article provides tips on how to choose the best program
to fit the individual needs of the teacher and students. A link to all of these software sites is
provided (Steele-Carlin, S., 2000, June 7).

Educational research over the past 20 years has analyzed the characteristics of
"effective schools" (McKenzie, 2000, p.3). One common thread has shown that these
schools have a high degree of community involvement ranging from parents, volunteers, and
business and educational professionals. Often, involvement is achieved by inviting
community members to participate in showcase activities such as open house or back to
school night, family programs, fairs and festivals, and seasonal celebrations. However, for
many reasons, a large segment of the community never attends such events and therefore
remains uninvolved in the day-to-day working of their children's school's (McKenzie, W.,
2000, February 14).
However, with the new technological advances, local community members no longer have to be lured into an actual school building to be involved in the life of the school. Using the World Wide Web, schools can proactively reach out to embrace students, parents, prospective families, alumni, businesses, and the voter who may never set foot in a school but has input in the funding of school programs. The only requirement for this new approach is a bona fide Web presence, a truly inactive Web presence that allows the larger community to feel an investment in their school’s educational programs (McKenzie, 2000).

Presently, there are many Internet grading software programs available for schools to choose from. For example, Schoolnotes.com is a free service that allows teachers to set up a customized Web presence in their classrooms. No FTP protocol is required to upload or download files. No HTML coding complicates the formatting of text and graphics. No lengthy URL addresses make it difficult to access the site (McKenzie, 2000).

Teachers can update their pages as often as they like by simply going to the site and entering their names and password. Most sites offer a wide range of options. Teachers can customize fonts and backgrounds, post announcements, create flash cards, offer a cache of bookmarks, and even allow visitors to e-mail them directly. Most of these programs have been running since 1997. More and more teachers have discovered the existence of these programs, many of them free, and have dabbled in the art of building Web pages. The literature provides hundreds of examples of teachers advocating the use of these types of programs (McKenzie, 2000).

Some local school districts, such as Delsea Regional High School, have created an
online system where parents can check their child’s grades, class assignments, and attendance reports from the comfort of their own home. Several parents who were interviewed remarked that this system made it a lot easier for parents to keep track of their children’s progress. Gone are the days of skipping classes, ducking homework, and letting the grades slide without being held instantly accountable for it by family (Shralow, B., 2000, November 6, “I” for instant, “f” for feedback. The Courier Post, pp.1B, 2B).

Although colleges have been posting their academic information online for years for their students, only recently have secondary schools nationwide followed the trend. Educational-technology companies have realized this and are beginning to create a variety of software packages to accommodate the schools. Some companies have developed systems that can cater to a single class (PowerSchool.com, 2000).

In 1982, Greg Porter was a 17-year-old student at Sunnyvale High School in California, where teachers had trouble recording attendance. The school used a clunky “scantron” system that often fouled up and frustrated school administrators. Porter and a friend used their knowledge in computers to devise a new electronic program that solved the school’s problems. They sold it to the district for $3,000.00 dollars. No one would have guessed that this program would be the beginning of a number of Internet grading software companies (Young, E., 2000, April 7).

However, the real money came this year when his Folsom-based company, Power School Inc. received $31.5 million to continue to develop software programs that allow teachers to post grades, assignments, and attendance figures on the Internet. Using a Power
School program, a parent can check to see if their child turned in last night’s homework, an administrator can use it to check on a student’s attendance. The individual student can even check to see what grade they received on a test or assignment. PowerSchool and a number of other companies are trying to use the Internet to shed more light on what is happening in education (Young, 2000).

The PowerSchool Company began slowly, installing one test system in a middle school in Salt Lake City in 1997. Today, PowerSchool is installed in about 500 schools around the country. There are already a number of schools in New Jersey currently using this system from PowerSchool. PowerSchool provides the district with software, upgrades, training and support (Young, 2000).

In Provo, Utah, the Alpine School District began using the Power School program in July 1999. The 46,000-student district wanted a system that would allow parents to have access to more information than the quarterly reports could provide. David Walton, the technology director for Alpine commented, “Prior to the Power School program, students had a vague understanding of how they were doing on a day-to-day basis. And there were parent-teacher conferences twice a year and that was the most that many parents knew about how their student was doing. Power School lets parents and students and teachers look at how a student is doing on a minute-by-minute basis” (Young, 2000).

The PowerSchool system works on simple principles. Teachers and Administrators electronically enter information, attendance, grades and other comments about students on computers that use the PowerSchool software. That information is then stored on a server
computer, usually housed within the school. Each school has a server that communicates with a database that operates out of Alpine’s district headquarters. When the parents or students want to check their records, they log onto the PowerSchool Web site using a confidential password and user identification (Young, 2000).

The Alpine district considers this program a wise investment. At Lakeridge Junior High School, one of Alpine’s first junior schools to advertise the service, the service was used 5,281 times by parents the first month of operation. At Timpangos High School, parents made 2,580 connections the first month. The other schools within this large district have seen similar results (Young, 2000).

The Web-based nature of PowerSchool student information systems has helped improve student records management for numerous schools. The PowerSchool program is designed to decrease the hardware and maintenance costs associated with other products by allowing districts to run the entire system for all of their schools on a single server. Having fewer servers, means less up-front investment in hardware cost and less ongoing maintenance for hardware for the district (http://www.PowerSchool.com).

Administrators have also found these types of Internet-based communication systems very useful. Dr. John Purvis, Assistant Superintendent at the Clay Center School District in Kansas explains how PowerSchool’s Web-based architecture and browser interface address administrator’s needs. He says, “Because my district covers 800 square miles, I love the idea of being able to sit at my desk and have easy access to all the school’s records within seconds” (Purvis, 2000, p.4). Administrators no longer need to run from classroom to
classroom to search from file to file to get the information they need, as the system provides instant access to all student records with a simple point and click (http://www.PowerSchool.com).

Teachers also benefit from using these types of Internet grading programs; they have their class roll waiting on the system at the beginning of the semester. These can be accessed from their classroom or from home. Attendance, grades, and assignment due dates can be instantly recorded. This information is communicated to a server where administrators can instantly access whatever information they need. Teachers no longer have to fill out additional paperwork or duplicate their efforts. This frees up time that can be devoted to lesson planning and working with the students (http://www.PowerSchool.com).

Steve Bacharach, a teacher at a private K-12 school in Northern California notes that the system has dramatically reduced the amount of paperwork he needs to do. “I used to have to worry about filling out scan forms and taking them to the office. The PowerSchool attendance screen facilitates quick and easy recording and allows me to move on to instructional activities. Attendance information is then instantly available to administrative personnel” (Bacharach, 2000, p.5).

However, many teachers are worried about new technology, especially when it involves computers and the Internet. Jane Erickson, a computer teacher in Rock Springs, Wyoming, comments on this issue. “It took three hours of training and I was able to use it. A few weeks ago I realized that I had seven students who were failing my class. I contacted the parents and had them pull up PowerSchool online while I was on the phone
with them. I was able to show them exactly why their child was doing poorly and what assignments were missing. It was a great visual aid in explaining to the parents what needed to be done” (Erickson, 2000, p.3).

Andy Gibson, a vice principal and teacher in Northern California says, “When parents come to meet with me, they are usually aware of the student’s progress because of their Internet access. Thanks to this, we can discuss solutions instead of making announcements.” This type of program allows administrators and parents the luxury of devoting their time more efficiently, designing solutions rather than time spent discussing individual assignments and grades (http://www.PowerSchool.com).

PowerSchool and similar programs have incorporated resources and features designed to help build an online community around the school. Their Web portals provide links to some of the best education and information sites on the Internet. Students can search the Web by the subject guides, links to parent organizations, and general parenting tips. Educators can browse online lesson plans and other resources (http://www.PowerSchool.com).

Within Southern New Jersey, Power School Inc. created the system that Delsea Regional High School uses. Currently, 440 districts use their software package, but an estimated 2,000 districts will buy into the system by year’s end. This particular system can only be installed school-wide or district wide (Shralow, 2000).

Denise Ciocco is a parent of a student who attended Delsea Regional High School. When she wanted to know how her son John was doing, all she had was to do log onto the
Internet, type a few keystrokes and click the mouse. She could find her son’s grades, as well as class-by-class attendance and a variety of other information. Ciocco said, “It’s nice to be able to go in and check and find out what you need to know”. “It’s sometimes hard to get information out of the children about what assignments or activities are coming up, or how they did on tests and other work” (Ciocco, 2000, p.2B).

There are companies that have created systems that can cater to a single classroom. Several schools within Philadelphia, Pennsylvania, use a system created by ThinkWave.com. This system has two huge advantages. First, it is designed to cater to an entire district or a single classroom. Secondly, the system is free. The one drawback is that along with grades and assignments, the user is subjected to advertisements. ThinkWave.com has attracted 500,000 nationwide users (parents, teachers, and students) since it went online August 1999 (Shralow, 2000).

Ann Flynn, director of Education Technology Partnerships for the National School Boards Association, believes that some kind of online system can be very effective. “Anything one can do to re-engage the family, parents, and community back at work is a step in the right direction” (Flynn, 2000, p.2B). In addition, teachers who have been involved with an online system, say that the results are noticeable (Shralow, 2000).

Steve Innamarato, social studies teacher at Olney High School in Philadelphia, Pennsylvania, said, “I’m definitely seeing an increase in scores. The students feel the pressure of the constant feedback. It keeps them on their toes” (Innamarto, 2000, p.1). Innamarato brought ThinkWave.com into the classroom to increase communication with the
parents (School Board News, 2000, March 21, Online grades lead to better parent-teacher communication. p.1).

Many of these parents were single and difficult to reach because of their long work hours. The social and environmental conditions that students at Olney High School in Philadelphia, Pennsylvania, are exposed to is comparable to the student population at CCTS. Even though only about 10 percent of the student population has access to the Internet at home, every week he printed out a report for each student to take home, and every month he mailed one to parents. The administration was so impressed, that he was asked to present the system to the entire staff (School Board News, 2000).

While systems offer slightly different features, they operate in much the same way. Teachers enter the information into a computer, typically at the end of the school day. When many of their colleagues at other schools are updating their grade and assignment books by hand, teachers such as Innamarato do the same with an online system. With one click, the information is instantly uploaded to a secure site. From there, parents and students can access the site with a password handed out by the school. The password ensures that no one will see anything he or she should not.

With one of these systems, parents can click on a grade, and all the assignments contributing to it will appear on the screen. If parents or guardians are unhappy with a grade, they can ask the teacher questions at anytime via e-mail. Parents can also request to receive weekly e-mails charting their child's progress. If a student is struggling with something, parents do not have to wait until mid-term reports to find out about it. This gives the parents
a chance to deal with the situation before it becomes too late.

It would be easy to assume that only parents and educators would be in favor of this check up system. However, many students also love the system. Gypsy Disbrow, a student teacher at University City High School in Philadelphia, said, “The students love it. Every day when I come in, at least one student is checking their grades” (Disbrow, 2000, p.2B). Disbrow discovered Thinkwave.com while surfing the Internet to find a more effective grading system and passed it along to other teachers at the school (Shralow, 2000).

It would also be easy to assume that many teachers would be against this idea for fear of the additional responsibility and work that it might create for them. However, educators said quite the opposite is true. Many teachers found that it cut down on the cumbersome paperwork in the end. Innamarato said that the end of the grading period used to be a nightmare. “Now with ThinkWave.com, I simply print out the report, sit back, and watch the Phillies” (Disbrow, 2000, p.2B).

However, there were some people not thrilled with this new technology. Not all of the parents were Internet savvy, or had access to the Internet. Some students were worried that this system would increase friction between them and their parents. Others worried that people would gain access to their grades, possibly leading to other students making fun of them. Still other parents and students suggested that setting up a phone line offering much the same information might be more practicable and accessible (Shralow, 2000).

John Polucktov, a spokesman for ThinkWave.com, said it is possible for parents to know more than their children about what is going on in the classroom. Thousands of
teachers across the nation are using such Internet postings, and they are changing relationships among students, teachers and parents in radical ways. Surprises about grades and performance that once caused friction are minimized. Parents and teachers can communicate by e-mail at anytime, instead of waiting for formal conferences (USA Today Tech Report, 2000, June 6).

Polucktov said, "Every where we go, we find users that say that this has changed the way their classroom works, especially for students. There are no excuses about not knowing about an assignment was due. There are no excuses about not knowing where you stand in a class" (Polucktov, 2000, p.10).

Most available programs link a teacher’s electronic grade book to a Web site designed by a company to assimilate the information into a database that a parent can access with a password. Parents simply enter their child’s name and their password, look at a class schedule, and click for the individual details (USA Today Tech Report, 2000, June 7).

In addition to information about the grades and daily assignments, many of the programs allow teachers to post comments on a student’s behavior, attentiveness and attendance. Most schools rely on the teacher making a phone call to reach the parent. However, many parents today work long hours and are not always accessible. Therefore, a teacher is often forced to send home a behavior report about the student, which can take several days for the parent to receive. Online systems solve this problem because the parent can easily access this information, anywhere and at any time.

The word seems to be spreading rapidly among the academic community.
ThinkWave.com has 215,000 teacher, student and parent accounts. Although they are one of the larger producers of Internet grading software, there are many other companies following suit (USA Today Tech Report, 2000, June 7).

Since the literature is very limited, I spoke with several schools in New Jersey using Thinkwave.com or PowerSchool.com online grading programs. In general, all of the reports I received from these schools were favorable. Although none of the schools had documented research or evidence of participation and academic achievement, most were able to give estimates of the effects the program had on the students and parents. The following paragraphs list the schools that I contacted and a summary of the information on these grading programs.

Delsea Regional High School, located in Gloucester County, New Jersey, was among the schools using a grading program called PowerSchool. Delsea High School began using the PowerSchool program in July of 1999. I spoke with Robin Quinn, who is the head of Delsea’s PowerSchool coordinator. She told me that there were no problems associated with the performance of the software. In addition, there were no reported problems or complaints from the faculty, parents, or students. Mrs. Quinn estimated that at least one-third of the student population used this program to check grades and assignments on a regular basis. The program was well received by the faculty and the district continued to use the program during the 2000/2001 school year (Robin Quinn, personal communication, 2000, September 9).

From the start of school in September until the beginning of November, the records of
894 students had been accessed remotely, with a total of 5,655 hits, according to Robin Quinn. There are a total of 1,830 students in Delsea middle and high school. Therefore, approximately 49 percent of all students in these schools had their parents using this technology to keep track of their educational progress (Robin Quinn, personal communication, 2000, September 9).

The Salem County Vocational High School, SCVHS, is another school district located within Southern New Jersey that is planning to implement the PowerSchool program. Helen Hoffman, a representative from SCVHS, informed me of the current state of the operations. The district was currently using the program for attendance only. They had targeted January 2001 as the start-up date to post grades, attendance and assignments online for the parents and students to view. “The teachers and guidance counselors love the idea” (Hoffman, personal communication, 2000, September 22). Salem City is a comparable environment to Camden City. Many parents and students do not have access to the Internet from home. The additional feature that Salem Vocational High School thought would benefit the parents and students is the power link system. This link allowed the school to post student grade information online as well as using a phone line system to post grades (Helen Hoffman, 2000).

Closer to CCTS, Collingswood School district had plans to implement the PowerSchool system as early as September 2001. I spoke with, Debbie Iannuzzi, a representative from the district. Twelve teachers had volunteered to run the program in their classes on a trial basis. Parents and students would not be given access to the grades until
next September 2001. Debbie explained that most of the parents were not aware of the program at that time. However, she saw no problem or complaints because the information is secure. Only the proper password can access sensitive information. The Collingswood faculty supported the program. In addition, they believed that this program would benefit the students, parents, and eventually save the teachers valuable time. Collingswood was not seeking the approval from the parents to begin this program (Debbie Jannuzzi, personal communication, 2000, September 23).

Pennsville Regional High School was also planning to implement the PowerSchool program. However, their approach was slightly different than the other schools mentioned. Pennsville was proceeding much slower than the other schools. John Harland, a representative from the school, explained that the parents were confused about the program and did not understand the details. Therefore, they are going to take more time to present this program to the parents and the community before implementing it. However, the response from the faculty had been favorable and Mr. Harland believed that the parents would also be in favor of the program after they better understood it. The school planed to begin the program in 2001 (John Harland, personal communication, 2000, September 20).

The Cumberland Regional School district is another school located in Southern New Jersey planning to implement an online grading program. Tony Riccutti, a representative from this district, informed me of Cumberland Regional High Schools progress. The program they selected to implement is Thinkwave.com. They presented the software package to the teachers during workshops. Although the teachers had some concerns over
security issues, the overall response was very positive. The district planned to proceed with
presenting the program to the parents and community, targeting the start-up date to be
during the 2001/2002 school years. The program would be optional for the teachers to use
during the first year (Tony Riccutti, personal communication, 2000, September 27).

One major concern that the parents expressed throughout the literature was of their
children’s privacy rights. The Federal Government addressed this issue by implementing the
Children’s Online Privacy Act of 1998 (COPPA). The main goal of this act is to protect the
privacy of children using the Internet. This act means that as of April 21, 2000, certain
commercial Web sites must obtain parental consent before collecting, using, or disclosing
personal information from children under 12 (Federal Trade Commission, 2000, November 20).

On October 21, 1998, COPPA was signed into law. This law addresses issues such as
verifiable parental consent, privacy notification of the Web site, parental choice regarding
disclosures to third parties, online activities in which parental consent is not needed, role of
schools in obtaining consent for students, and enforcement of this law. In general, COPPA
requires commercial Web sites and online services directed at children 12 and under, or
which collect information about age, to provide parents with notice of their information
practices and obtain parental consent prior to the collection of personal information from
children. It requires such sites to provide parents with the ability to review and correct
information about their children collected by such services. In addition to protecting
children’s privacy, this Act seeks to ensure a child’s ability to speak, seek out information,
and publish would not be adversely effected (Center For Democracy & Technology (CDT), 2000, November 17).

Additional security and protection of children’s rights online can be found within Children’s Advertising Review Unit (CARA). This department is a branch of the Council of Better Business Bureau. CARA reviews advertising of material online for children. When the material is found to be misleading, inaccurate, or inconsistent with CARA’S Self-Regulating Guidelines for Advertising, CARA seeks to change through the voluntary cooperation of advertisers (Better Business Bureau, 2000, November 17).

CARA’S guidelines are subjective, going beyond the issues of truthfulness and accuracy to take into account the uniquely impressionable and vulnerable child audience. Recognizing that the special nature and needs of this youthful audience require particular care and diligence on the part of the advertisers, CARA performs an extensive monitoring caseload. In 1998, CARA monitored more than 11,700 television commercials and CARA reviewed an even larger number of advertisements on the Web. Although CARA does not have official authority, it can report violators who refuse to amend their practices to governmental agencies, press, and the public (CARA, 2000).

The Digest of Education Statistics published a report on Learning Resources and technology. This report shows the percent of schools and school classrooms having access to the Internet from 1994-1998. The report includes all public schools, which are then sub-categorized by instructional level, enrollment size, and metropolitan status (Digest of Education Statistics [DES], 2000, October 13).
This report shows that there has been a significant increase in the percent of poor city schools that have Internet access. In 1994, only 40% of the city schools had Internet access. By 1998, 92% of the city schools had Internet access. It would be reasonable to assume that this number has further increased as time has passed. The percent of instructional classroom having Internet access has drastically increased. In 1994, an estimated 4% of the classrooms had Internet access. This number had ballooned to 47% by 1998 (DES, 1999).

At CCTS, every classroom has a minimum of 3 or 4 computers with Internet access for students' use. Every teacher has a computer with Internet access at his or her desk. In addition, the new media center has more than 30 computers with Internet access for student use during lunch periods and after school. According to the survey information provided by the students, 61% percent of the students have computers at home. 46% of these students currently have Internet access from home.

The current data suggest that even in low economic high schools in which a significant number of students do not have access to the Internet from home, schools provide Internet access that would be accessible to the students to check their grades and assignments via the Internet. In addition, most public libraries provide free Internet access for students to use.

The situation at CCTS is currently favorable for the school to post assignments and grades online. Currently, more than half the students have computers at home and more than half of the students have the potential to have Internet access associated with these computers. The decline in computer prices and the increased availability of computers should lead to an even greater increase in the number of students who have computers at
home. In addition, all students at CCTS have Internet access available to them from their instructional classroom and media center. Therefore, I do not feel that implementing a program at CCTS that would allow students and parents Internet access to assignments and grades would have accessibility issues associated with it.
Chapter 3

The instructional design of the research consisted of four general phases. The research model chosen for this research used the following criteria in the design: Analytic Phase, Design/Development Phase, Implementation Phase, and the Evaluation Phase. Although these phases sometimes were interrelated and overlapped, this type of model provides a dynamic, flexible guideline for developing an effective and efficient source of data collection (Braxton, S., 1995 Instructional Design Models, George Washington University, Washington, D.C.).

The Analytic phase was the foundation for all the other phases of this research design. This phase defined the research problem, identified the source of the problem, and determined the possible solutions. This phase identified the tools that were used for the thesis research and also included the instructional goals of the research.

As previously stated, the research problem was the low level of CCTS student participation in completing homework and other assignments on a regular basis. In addition, parent involvement and communication between the school and parents are relatively low. A major cause of this problem can be attributed to many parents and guardians having to work long hours to survive in today's economy. These parents are not always around the students to check to see if student assignments are completed. In addition, parents having time to keep the lines of communication open with the student's teachers can be limited.

One solution to this lack of communication with parents and the school is to provide access to grades and assignments that parents and students can access from the Internet,
twenty-four hours a day. The only tool that would be needed to access this information is a computer with Internet access. The software programs required to use these programs are often free and can be downloaded onto any computer. The instructional goal of the research was to show that increasing access to assignments and grades through the Internet would lead to improved academic performance.

The second phase in this model was the Design/Development phase. This phase involved using the outputs from the Analyze phase to plan a strategy for developing the research. Some of these elements included describing the target population, designing a system of measurement of the data, and selecting a delivery system.

The research focused on analyzing the effects that posting grades online had on student performance. Student performance was measured in two areas. The intern measured the percent change in the number of homework assignments completed and turned in after the implementation of this Internet program. Secondly, the intern measured the academic performance of the students after this program was implemented. Academic performance was measured by comparing student pre- and post-test scores.

There were 705 students enrolled at the Pennsauken campus at the time this research was started. Every student at CCTS was required to take a science course for the 2000/2001 school years. To avoid duplication of the surveys, the intern decided it would be best to target one specific academic area in which to have the surveys distributed. Since the intern is a science teacher, and every student enrolled at CCTS is required to take a science course, it
was logical to choose the science courses to distribute the surveys.

The intern hand-delivered the surveys to the science teachers and asked them to distribute the surveys at the beginning of class. There were six science teachers employed at the Pennsauken campus. The science courses offered were physical science, life science, general science, biology, physics, and environmental science. Although only 50 students were given access to check their grades online, every student at CCTS was surveyed to obtain the base information of the research.

To begin the research, all of the academic and shop teachers were surveyed to determine the basic information needed for the research. Vital information, such as the percentage of teachers who had Internet access at home, were calculated. Also included in the survey were questions to measure teacher support for a software package that allowed the posting of grades and assignments on the Internet. Additionally, teachers were surveyed to determine how effective they thought that this kind of grading package would be (see Appendix A for Student and Teacher Surveys).

The Implementation phase referred to the actual delivery of the research portion of the study. The purpose of this phase was to promote the effective and efficient delivery of the tools used to evaluate the research questions. This phase ensured that the research tools were presented in the most effective manner.

The intern hand-delivered the surveys to all of the teaching staff, including academic and shop teachers. There were 30 academic teachers and 30 shop teachers at the Pennsauken campus during the 2000/2001 school years. The reason for hand-delivering the surveys to
the teachers were two-fold. This gave the intern an opportunity to meet with each of the teachers and explain what the intern research thesis was all about and provide information on Thinkwave.com. The intern believed that there would be a greater chance of receiving a response on these surveys after the surveys were personally delivered, as opposed to mass distribution of the surveys. The small number of teachers at CCTS allowed the intern to distribute the surveys in this fashion.

Both surveys, teacher and student, were initially submitted to a random sampling of 5% of the teacher and student population to determine any flaws or incongruencies were contained within the surveys. These pilot surveys were analyzed and the appropriate changes were addressed. The surveys were then distributed to the remaining student and teacher populations with the addressed changes.

The design of the study is described in the following passages. The intern limited the study to his own science classes. The intern taught six classes, two general science classes and four physical science classes. The general science classes consisted mainly of juniors, with a small number of seniors. The physical science classes consisted mainly of sophomores, with a small number of juniors and seniors.

There were a total of 243 freshman, 197 sophomores, 132 juniors, and 136 seniors enrolled at the Pennsauken campus when the surveys were distributed. The intern had a total of 141 students in 6 science classes at the beginning of the study. There were 97 physical science students and 44 general science students. There were 8 seniors, 9 juniors, 80 sophomores and 0 freshman enrolled in the physical science classes. The 97 physical
science students were distributed between four different class periods.

The intern selected to use the physical science classes in the study and not the general science classes. The number of students registered in the physical classes are more than double the number of students registered in general science classes. Most of these students had not taken the HSPT; therefore, the results of the study would be more meaningful for CCTS. In addition, CCTS administration planned to eliminate the general science classes from the curriculum within two years. The intern decided that with many variables inherent to this type of study, it would be more meaningful to limit the study to one group of students.

As per district procedures, the intern developed a letter to send home to the parents asking permission to enroll their child in the study. The letter explained the concept of the intern's research and included the technical aspects of the project. The letter explained to the parents the breadth and scope of the project. This letter was reviewed and approved by the Assistant Superintendent and Principal before being sent home to the parents. The letter was sent home with each student in the physical science classes instead of being mailed home. The intern believed that there was a more favorable response by proceeding in this manner because the parents or guardians would not have to go through the inconvenience of mailing back the permission slips. All the parents had to do was sign the permission slip and send it back with their child (see Appendix B for the Permission Letter).

To measure academic performance, the intern designed a pre- and post-test that was distributed in all four of the physical science classes. The pre-test consisted of physical
science questions from chapters not as yet covered in the course. The same test was given to
the same classes after one marking period. The percentage increases in the post-test scores
were measured and compared between students that had Internet access and students that did
not have access. The pre- and post-tests were used to measure academic performance (see
Appendix C for the Pre-Test and Post-Test).

These tests consisted of only subjective questions such as multiple choices, true and
false and matching questions, rather than objective questions such as essay questions. The
intern believed that including only these types of questions decreased the chance of the
intern having bias for the study. By not including essay questions, there was less of a
chance that the intern would grade the post-tests differently the second time around, because
of any research expectations.

Fifty students in the four physical science classes, the variable group, were given access
to their grades and assignments that were posted on the Internet site “Thinkwave.com.”
Forty-four students in the four physical science classes were not given Internet access to
their grades. These students comprised the control group. At the end of the study, a Post-
Test was given to all four physical science classes. The intern measured the increase in
scores between the pre-test and post-test for both groups. The intern theorized that there
would be a higher percentage increase in scores for the group that was given access to their
grades and assignments.

The students participated in this study by using a Thinkwave.com software program,
which students were able to download for free from the Thinkwave.com home page.
Students were required to view their grades and assignments a minimum of three times per week. The intern measured the frequency that the students checked their individual information by leaving a personalized code word each day that the intern entered new information into the Web site grade book. The students were required to submit a sheet at the end of the week, showing the dates and times that they viewed their information. Additionally, the code words for each particular day was required to be entered next to the date and time on their weekly summary sheets to prove that the student checked the site on that particular date.

There were several factors motivating the students’ participation in this study using the Thinkwave.com Web site. There was an intrinsic motivation for the students and parents. If the students and parents used this site, they would have a direct line to knowing their grades and assignments at any time. The intern argues that this would lead to better academic performance. There was an extrinsic motivating factor as well. Students who followed the guidelines for checking and using this Web site were given extra credit for their participation in the research.

Since there were a number of inherent variables in study, the intern attempted to limit some of these variables by not distributing the private password to the parents unless they specifically asked for it. None of the parents of students who participated in this study asked for Internet access. If the parents had been given Internet access to their child’s grades, they might have put extra pressure on their child to perform. This might have led to an increase in the academic performance of these students. Although, ultimately, this is part of the power
of these Internet grading programs, the scope of the study was limited to the
effects that the Internet grading program had on the student use alone, without parental
influence. It was beyond the scope of this study to measure the increase in student academic
performance based on student and parental usage of the Internet grading program.
Therefore, it was not necessary for the intern to measure parental use of this Internet grading
program. However, this might be a beneficial study for future research.

The last phase of the research was the Evaluation phase. This phase measured the
effectiveness and efficiency of the Internet grading program in increasing academic
performance and student participation. Normally there are two types of evaluation,
formative and summative. This study will include both types of evaluations during the
process of evaluation.

Formative evaluation was ongoing during and between phases. The purpose of this
phase was to measure student participation before the final evaluation was completed. The
Formative evaluation was measured by checking the number of times per week the students
logged onto the Internet to check their grades and assignments. Requiring the students to
check their information a minimum of three times per week served several purposes. This
ensured that the students were consistently aware of all assignments, even if they missed
class time due to absences. In addition, this ensured that the students were aware of their
grade point average consistently throughout the marking period.

Summative evaluation occurred after the study was completed. This type of evaluation
accessed the overall effectiveness of the Internet grading program. Data from the summative
evaluation was used to make a decision on the effectiveness of the Internet grading program and to answer the two following questions: What evidence was there to indicate that using this type of program increased student academic performance? Did the use of this type of program increase student participation and accountability for their own performance?

Academic performance for the summative evaluation was measured by comparing the mean scores of the pre- and post-test scores of the control group and the variable group. The percentage increases of both groups were compared. The pre-test was given at the beginning of the study. The post-test was administered at the conclusion of the study, which was six weeks after the students started checking their assignments and grades on the Internet. Additionally the frequency of students checking their grades were recorded and analyzed.
Chapter 4

The statistical data presented in this chapter was obtained by analyzing student and staff surveys, distributed at the beginning of the research, and pre-test and post-test scores. Fifty teachers at the Pennsauken campus were given surveys and asked to return them within two weeks, 39 teachers (78%) returned their surveys. In addition, 628 students from the Pennsauken campus were surveyed. The second type of data presented in this chapter was obtained by analyzing pre-test and post-test scores given to a random sample of the intern’s students in four different physical science classes.

The following background information was obtained from analyzing the survey information. The responses from the teachers and students were not separated from those individuals who had Internet access and did not have Internet access. The responses were counted collectively from both teachers and students (see Tables 1, 2, 3, 4).

Two hundred and eighteen students (35%) were freshman, 176 students (28%) were sophomores, 119 (19%) were juniors, and 115 (18%) were seniors (see Figure 1). Three hundred and thirty-six students (54%) were females and 292 students (46%) were males (see Figure 2). Five hundred and thirty-three students (85%) lived in the city of Camden, 64 students (10%) lived in the city of Pennsauken, which borders Camden City, 30 students (5%) lived in other places, and one student (less than 1%) lived in the city of Merchantville (see Figure 3).

The first question that the research addressed was the percentage of students and
### TABLE 1
TEACHER SURVEY DATA QUESTIONS

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Have a computer at home</td>
</tr>
<tr>
<td>2.</td>
<td>Internet accessability with computer at home</td>
</tr>
<tr>
<td>3.</td>
<td>Internet accessability besides home/school</td>
</tr>
<tr>
<td>4.</td>
<td>Library with Internet access within walking distance</td>
</tr>
<tr>
<td>5.</td>
<td>Ever used Internet for school or personal use</td>
</tr>
<tr>
<td>6.</td>
<td>Use Internet for school lessons</td>
</tr>
<tr>
<td>7.</td>
<td>Feel comfortable using computers and Internet</td>
</tr>
<tr>
<td>8.</td>
<td>Willing to attend In-service training for Internet grading program</td>
</tr>
<tr>
<td>9.</td>
<td>Willing to use Internet grading program in class</td>
</tr>
<tr>
<td>10.</td>
<td>Willing to spend the time on a daily basis to this type of program</td>
</tr>
<tr>
<td>11.</td>
<td>Would support an Internet grading program</td>
</tr>
<tr>
<td>Question #</td>
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</tr>
<tr>
<td>------------</td>
<td>----</td>
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</tr>
<tr>
<td>TOTAL</td>
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TABLE 3

STUDENT SURVEY DATA QUESTIONS
1. Academic Year
2. Gender
3. Primary Residence
4. Computer Located at Primary Residence
5. Internet Access with Computer at Primary Residence
6. Access to Internet besides School and Primary Residence
7. Public Library with Internet Access within Walking Distance
8. Parents or Guardian with Internet Access from Work
9. Often use Internet for School or Personal Use
10. Feel Comfortable Using Computers and the Internet
11. Parents or Guardians Feel Comfortable Using Computers
12. When Absent from Class, Have an Easy Time Receiving Assignments
13. Receive Missing Work When Absent in a Timely Manner
14. Constantly Aware of Grades Throughout the Marking Periods
15. Would Support an Internet Grading Program
16. Would Support Internet Grading Program if Parents did not Have Access
Table 4

STUDENT SURVEY DATA RESULTS

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<td>57</td>
<td>47</td>
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FIGURE 1

*Students: Academic Year*

- **Freshman**: 35%
- **Sophomore**: 28%
- **Junior**: 19%
- **Senior**: 18%
FIGURE 2

*Students: Gender*

- Male: 46%
- Female: 54%
FIGURE 3

Students: Place of Residence

Pennsauken 10%
Merchantville 0%
Other 5%
Camden 85%
teaching staff at CCTS who had access to computers and the Internet at home. According to
the data collected from staff and student surveys, the following numbers and percentages
were calculated. The vast majority of students and staff had computers at home. Thirty-six
out of 39 teachers (92%) reported that they had computers at home and only three out of 39
(8%) reported that they had no computers at home (see Figure 4). Three hundred and
eighty-three out of 628 (61%) students reported that they had computers at their primary
residence (see Figure 5).

This is an important starting point for the research because teachers and students needed
to have access to computers to be able to utilize this type of grading program. Having access
to a computer at home would increase the chances that students and staff would use this
program. Teachers and students would be more inclined to use this program on a regular
basis if it were very convenient, such as having access from home. Based on the above
collected data, the numbers of staff and students with computers at home are sufficient for a
large percentage of students to benefit from this type of program.

Thirty-two of the teachers (82%) also had Internet access associated with their computer
at home (see Figure 6). Two hundred and eighty-seven students (46%) also had Internet
access associated with their computer at home (see Figure 7). These numbers indicate that a
large percentage of students at CCTS could access their grades and assignments from home.
In addition, there are a number of companies that offer free Internet access to people with
computers but no Internet Service Provider. Therefore, there is the potential for an increase
in the number of students and teachers with Internet access beyond the current numbers. In
FIGURE 4

Teachers: Computer at Home

Do Not Have a Computer at Home
8%

Have a Computer at Home
92%
FIGURE 5

Students: Computer Located at Residence
FIGURE 6

Teachers: Have Internet Access at Home

- No Internet Access But Have a Computer at Home: 10%
- Not Applicable: 8%
- Have Internet Access: 82%
FIGURE 7

*Students: Internet Access at Residence*

*Does Not Apply*

24%

30%

*Yes*

46%

No
addition, 31 teachers (79%) had Internet access besides home and school (see Figure 8). Four hundred and fifty-seven students (72%) had Internet access at places besides school and home (see Figure 9). These numbers show that the vast majority of the students and staff at the Pennsauken campus would have had access to their programs and grades even if they were unable to access this information from home.

Furthermore, 17 teachers (44%) reported that they had access to computers and the Internet at a local library within walking distance from their home (see Figure 10). This number represents almost half of the teachers. Two hundred and seventy six students (44%) reported that they also had a library within walking distance that had computers and the Internet that they could use for free (see Figure 11). In addition, 234 students (38%) reported that their parents had access to the Internet from their work place. Another 209 students said that they were not sure, but that their parents might have access to the Internet from their work place (see Figure 12).

The second obstacle the research attempted to address was the percentage of students and staff that were skilled enough with computers to fully utilize this type of grading program. Thirty-eight teachers (97%) responded that they had used the Internet for school and or personal use (see Figure 13). Thirty-seven of the teachers (95%) reported that they used the Internet in their classrooms as part of their lesson plans. Only two teachers responded by claiming that they did not use the Internet in their classrooms as part of their lesson plans (see Figure 14).

Four hundred and eighty four students (77%) responded that they believed the Internet
FIGURE 8

Teachers: Internet Access Besides Home and School

No Access

21%

Have Access

79%
FIGURE 9

Students: Internet Access Besides Residence and School

- No: 25%
- Does Not Apply: 3%
- Yes: 72%
FIGURE 10

*Teachers: Access at Local Library*

- **56%** Have Access
- **44%** No Access
FIGURE 11

Students: Internet Access at Local Library

Does Not Apply

- 3%
- 53%

Yes

No

- 44%
FIGURE 12

Students: Parent or Guardian Access at Work

Do Not Know
- 29%

YES
- 38%

NO
- 33%
FIGURE 13

Teachers: Used Internet

- 97% Have Used
- 3% Never Used
FIGURE 14

Teachers: Use the Internet in Classroom

Do Not Use In Classroom Instruction

5%

95%
Use In Classroom Instruction
was important for school and personal usage. Only 143 students (23%) stated that they did not use the Internet for school or personal usage (see Figure 15). These numbers strongly suggest that the faculty and students strongly believed that the Internet is important for school and their daily lives, which corresponded with district goals.

As part of the Goals 2000 objectives for schools throughout the country to become more advanced technologically, CCTS developed a plan for the faculty and students to become more comfortable using computers and technology. Many teachers are required to use computers and technology as part of their lesson plans in the classroom. Based on the above data, it appears that these goals are being met for students and staff. Therefore, it appears that this type of technology could be a great benefit to the students and staff at CCTS.

Thirty-three teachers (85%) responded to the survey that they felt comfortable using the Internet and computers (see Figure 16). Five hundred and seventy-three students (91%) responded by saying that they were comfortable using the Internet and computers (see Figure 17). In addition, the students responded to the survey by indicating that 440 students (70%) believed that their parents were comfortable using computers and the Internet (see Figure 18). These numbers are not surprising; children and young adults are usually interested in technology, enjoy using it and are comfortable using it. It appears from these numbers that the students and teachers are adequately comfortable using the technology that a grading program of this nature would require.

The third obstacle this kind of program would encounter would be to determine the percentage of teachers and students who would be willing to learn how to use this program
FIGURE 15

*Students: Use Internet For School or Personal Use*

- Strongly Agree: 25%
- Strongly Disagree: 9%
- Disagree: 14%
- Agree: 52%
FIGURE 16

Teachers: Feel Comfortable Using Computers and the Internet

No: 8%
Not Sure: 8%
Yes: 84%
FIGURE 17

Students: Feeling Comfortable Using Computers and Internet

- **Strongly Agree**
  - 51%

- **Strongly Disagree**
  - 5%

- **Disagree**
  - 4%

- **Agree**
  - 40%
FIGURE 18

Students: Parents or Guardians Feeling Comfortable Using Computers and Internet

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
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<tbody>
<tr>
<td>23%</td>
<td>8%</td>
<td>22%</td>
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<td>47%</td>
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and to determine if there would be sufficient interest in using this program. Thirty-two teachers (82%) responded by saying they would be willing to attend in-service training on how to use an Internet grading program. Another five teachers (13%) said they might be willing to attend an in-service training program. Only two teachers out of 39 responded that they were not willing to attend any in-service training on this type of program (see Figure 19).

Twenty-five teachers (64%) stated on the surveys that they would be willing to use a grading program that allows them to post grades and assignments in their classrooms. Six more teachers (15.5%) stated that they might be willing to use a grading program after they learned more about it. Only eight teachers (20.5%) stated at this point, they would not voluntarily choose to use a grading program (see Figure 20). These numbers suggest that the majority of teachers would voluntarily use an Internet grading program in their classrooms.

Assuming that their parents had access to their grades and assignments, 471 students (75%) stated that they would still be willing to use this type of program to check their grades on a regular basis. Only 151 one students (25%) stated that they would have no interest in using this technology (see Figure 21). Assuming that only the student and not their parents had access to this information, the numbers increased. Five hundred and twenty-four students (84%) stated they would be willing to use the program and 104 students (16%) stated that they still would not be willing to use this grading program (see Figure 22).

From the above data, it seems clear that there is strong interest from both teachers and students in using an Internet grading program. Even if the students parents were
FIGURE 19

Teachers: Willing To Attend In-Service Training for an Internet Grading Program

- Yes: 82%
- Not Sure: 5%
- No: 13%
FIGURE 20

Teachers: Willing To Use an Internet Grading Program

- No: 64%
- Yes: 36%
- Not Sure: 21%
- Other: 15%
FIGURE 21

Students: Would be Willing to Use a Grading Program

- Strongly Agree: 37%
- Strongly Disagree: 12%
- Disagree: 13%
- Agree: 38%
FIGURE 22

Students: Willing To Use Grading Program if Parents Had No Access

- Strongly Agree: 57%
- Disagree: 27%
- Strongly Disagree: 9%
- 7%
given access to their grades, three quarters of the students would still be willing to participate in this program. More than three quarters of the teachers would be willing to use an Internet grading program.

Twenty-three teachers (59%) stated that they would be willing to spend the time needed to use an Internet grading program on a daily basis before and or after school. Another eight teachers (20.5%) said that they might be willing to invest their time in using this type of program after they learned more about the software and program. Only eight teachers (20.5%) stated at this time that they would prefer not to spend the time needed to use this type of program (see Figure 23). Therefore, 80% of the teachers surveyed would be willing to or would consider spending the time necessary to implement the use of an Internet grading program in their classroom.

Twenty-seven teachers (69%) responded that they would support the use of an Internet grading program. An additional five teachers (13%) stated that they might support this program in the future. Only seven teachers (18%) said that at this point, they would not support this type of program (see Figure 24). Once again the data seems to indicate that there is strong initial support among the Pennsauken faculty for the use of this type of program. Furthermore, with an increased knowledge and training in the use of an Internet grading program, teacher support could increase.

One of the reasons for investigating this type of Internet grading program is (besides providing students information on their grades from the Internet), this type of program can also post assignments and messages for students using the Internet. Four hundred and eight
FIGURE 23
Teachers: Willing To Spend the Time To Use the Program

Not Sure

21%

No

21%

Yes

58%
FIGURE 24

Teachers: Willing To Support Posting Grades and Assignments on the Internet

- Yes: 69%
- No: 13%
- Not Sure: 18%
students (65%) indicated that they did not receive their homework and assignments in a timely manner when they were absent from school. Only 228 students (35%) indicated that they received their assignments in a reasonable time when absent from school (see Figure 25).

Two hundred and fifty eight students (41%) indicated that they had a difficult time receiving their homework and assignments when they are absent from school. This means that almost half of the students believed that it was difficult to receive work from their teachers when absent from school (see Figure 26). This was obviously a problem that the school district must investigate.

There are many reasons for this dilemma. The guidance department had to contact all the students' teachers and get them to fill out an assignment sheet. After all these sheets were returned to the guidance department, the assignment sheets then had to be mailed out to the students at home. This whole process can take a number of days to complete. It is not surprising that over half the students at the Pennsauken campus indicated that they would like to receive their assignments and homework in a shorter amount of time. This type of program could solve this problem. The student could retrieve this information in five minutes, rather than a couple of days.

It is important for students to be continuously aware of how they doing in their academic classes. The more feedback a student has on their progress, the better off the student and teacher will be. Three hundred and one students indicated (48%) that they were not aware of their grade point average and how they were doing in their classes during the
FIGURE 25

Students: Receive Homework from School in a Timely Manner if Absent from School

- Strongly Agree: 9%
- Agree: 26%
- Disagree: 40%
- Strongly Disagree: 25%
FIGURE 26

Students: Have Easy Time Receiving Homework and Assignments When Absent from School

- Strongly Agree: 14%
- Strongly Disagree: 13%
- Agree: 45%
- Disagree: 28%
marking period (see Figure 27). Once again, almost half of the students were not aware of their academic progress throughout the marking periods.

As part of the research data the intern tracked the frequency of homework assignments that were turned in by the students in the four physical science classes participating in the study. A total of 94 students participated in the research. Homework assignments were given four times per week for the first and second marking periods. Each marking period lasted six weeks. The numbers shown are the averages for the two marking periods, for a total of twelve weeks (see Table 5).

During the first marking period, students were not given Internet access to their grades and assignments. All 94 students participating in the research were lumped into two general groups, “complete homework assignments consistently,” and “complete homework assignments inconsistently.” For purposes of this research, “completing homework assignments consistently,” meant that a student completed 75% or more of the assignments for the week. “Completes inconsistently,” meant that the students completed less than 75% of the assignments for the week. During the second marking period, 50 students were given Internet access to their grades and 44 students were not given access to their grades. Therefore, during this marking period, the students are separated into four groups: “Internet group completes consistently,” “Internet group completes inconsistently,” “non-Internet group completes consistently,” and “non-Internet group completes inconsistently.”

During the first marking period, 55 students (58.5%) turned in their homework assignments at least 75% of the time, 39 students (41.5%) turned their homework
FIGURE 27

*Students: Aware of Grade Point Average Throughout the Marking Period*

- Strongly Agree: 38%
- Agree: 14%
- Disagree: 32%
- Strongly Disagree: 16%
### TABLE 5
PERCENTAGE OF STUDENTS COMPLETING HOMEWORK ASSIGNMENTS

1st Marking Period (Includes all students: 94 students)

<table>
<thead>
<tr>
<th>Completes Consistently</th>
<th>Completes Inconsistently</th>
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</thead>
<tbody>
<tr>
<td>55 (58.5%)</td>
<td>39 (41.5%)</td>
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</table>

2nd Marking Period (Groups separated: 50/44)

<table>
<thead>
<tr>
<th>Internet Group</th>
<th>Non-Internet Group</th>
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<tbody>
<tr>
<td>Completes Consistently</td>
<td>Completes Consistently</td>
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<tr>
<td>Completes Inconsistently</td>
<td>Completes Inconsistently</td>
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<tr>
<td>42 (84.0%)</td>
<td>8 (16.0%)</td>
</tr>
<tr>
<td>28 (63.6%)</td>
<td>16 (36.4%)</td>
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</tbody>
</table>

* Homework assignments given 4 times per week
* Completes consistently means student completes at least 75% of assignments for the week
* Numbers shown are the averages for the six-week marking periods
assignments less than 75% of the time on average for each of the six weeks. Although these numbers appear low, this is consistent with the other academic disciplines. There are a number of reasons for the low student homework participation rate, which has been discussed in earlier chapters (see Table 5).

During the second marking period, the overall rate at which students turned in homework assignments consistently increased for both groups. This is expected because many students get off to a slow start during the first marking period of school year. It usually takes a little time for students to adjust to being back in school and a new teacher. However, when the individual groups are analyzed, there are some differences between the Internet access group and non-Internet access group.

For the group of students who were given Internet access to their grades and assignments, the numbers were well above the averages. Forty-two students (84%) in the Internet group turned in their homework assignments on a consistent basis. Only 8 students (16%) did not turn in their assignments on a regular basis. For the non-Internet group, the numbers also increased but not as substantially. Twenty-eight students (63.6%) in this group turned in their homework assignments on a consistent basis, and 16 students (36.4%) did not turn in their assignments on a regular basis.

The Internet group turned in their homework assignments on average 84% of the time, which was an increase of 25.5% from the overall assignments turned in during the first marking period. The non-Internet group turned in their homework assignments on average 63.6% of the time, which was an increase of only 5.1% from the overall assignments turned
in during the first marking period. Therefore, it appears from this data that the Internet group was more motivated to turn in their homework on a regular basis than the non-Internet group was.

There are a number of possible reasons for the difference between the two groups. First of all, most of the students liked using the grading program and were motivated to check their grades and assignments on a regular basis. If they were absent from school or failed to write down their homework assignment, they had an easy and convenient way to find out what the assignment was. Therefore, increasing the accessibility to their assignments could motivate students to do the assignment.

Secondly, having an easy and convenient way to check their assignments increased the student's own responsibility for completing the assignments. It would be harder for a student to use the typical excuses for not doing homework. For example, a student could not say that they forgot the assignment, or had no one to call to find out what the assignment was, or even that they were absent from school. All these excuses become mute when all they would have to do is take five minutes to log on to the Web site to check the assignment themselves.

Thirdly, I believe that most of these students appreciated the fact that the teacher would take the time to provide them with continuous access to their grades and assignments. Students might have seen this as an opportunity to improve their homework grades and ultimately improve their test scores and marking period grades. I believe that if you provide students with a convenient and interesting way to help them academically, that a large number of students will take advantage of it.
Academic performance was measured by analyzing the pre-test and post-test scores given to both the Internet group and non-Internet group. Fifty students were given Internet access to their grades and assignments (Internet group) and 44 students were not given Internet access to their grades and assignments (non-Internet group). The pre-test was given at the beginning of the second marking period before any student received Internet access and the post-test was administered at the end of the second marking period. The scores are based on a 100-point scale.

The following are the results for the pre-test scores of both groups. There were 15 students in first period in the Internet group and the average scores of these students totaled 39.2 points. There were 10 students in first period in the non-Internet group and the average scores of these students totaled 37.0 points. There were 13 students in fifth period in the Internet group and the average scores of these students totaled 39.0 points. There were 9 students in fifth period in the non-Internet group and the average scores of these students totaled 37.4 points. There were 11 students in seventh period in the Internet group and the average scores of these students totaled 39.1 points. There were 10 students in seventh period in the non-Internet group and the average scores of these students totaled 31.7 points. There were 11 students in ninth period in the Internet group and the average scores of these students totaled 33.6 points. There were 15 students in ninth period in the non-Internet group and the average scores of these students totaled 37.2 points (see Table 6).

The overall average for all four classes in the Internet Group was 37.9 points. The overall average for all four classes in the non-Internet group was 35.98 points. These scores
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<td>35 31.7</td>
<td>35 31.7</td>
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are very similar with only a 5% difference in the scores. In addition, these scores were low for both groups because some of the test material included materials not as yet covered in this course. However, the purpose of using the test scores was not to measure the actual scores but rather to measure the percent increases in the test scores and compare the increases in scores between the two groups, Internet group and the non-Internet group.

The following are the results for the post-test scores of both groups. There were 15 students in first period in the Internet group and the average scores of these students totaled 49.2 points. There were 10 students in first period in the non-Internet group and the average scores of these students totaled 40.8 points. There were 13 students in fifth period in the Internet group and the average scores of these students totaled 50.8 points. There were 9 students in fifth period in the non-Internet group and the average scores of these students totaled 44.9 points. There were 11 students in seventh period in the Internet group and the average scores of these students totaled 52.7 points. There were 10 students in seventh period in the non-Internet group and the average scores of these students totaled 35.0 points. There were 11 students in ninth period in the Internet group and the average scores of these students totaled 44.1 points. There were 15 students in ninth period in the non-Internet group and the average scores of these students totaled 40.9 points (see Table 7).

The overall average for all four classes in the Internet group was 49.3 points. The overall average for all four classes in the non-Internet group was 40.3 points. Both sets of groups improved their scores in the post-test. The results were expected because each group improved their knowledge in science as more chapters were covered. However, when the
### TABLE 7

<table>
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<th>Post-Test Scores</th>
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<td>58 Period Average: 44.09</td>
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<td>31, 46, 45, 21, 39, 49, 55, 45</td>
<td>44 Period Average: 40.87</td>
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percentage of increased scores from the pre-test was compared to the post-test, there was a significant difference between the two groups.

The Internet group originally scored 37.9 points on the pre-test and scored 49.3 points on the post-test. On average, this group improved by 11.4 points leading to a 23.1% improvement on the post-test. The non-Internet group originally scored 35.9 points on the pre-test and scored 40.3 points on the post-test. On average, this group only improved 4.4 points leading to a 10.9% improvement on the post-test. Therefore, the Internet group improved by a margin of 12.2% higher on the post-test than the non-Internet group did. Therefore, the Internet group appeared to significantly improve their academic performance on the post-test when compared to the non-Internet group.

There are several possible reasons for the significant improvement in the test scores of the students who were given Internet access compared with the students not given Internet access. First, the students who had Internet access to their homework assignments completed the assignments on a more regular basis than those who did not have access. Completing the homework regularly improved the student’s understanding of the science concepts, which lead to improved test scores.

Secondly, as with human nature, success tends to breed success. As the students completed the homework and monitored their grades, they were probably more motivated to continue to work hard to maintain their success. There were probably fewer students who felt helpless and frustrated with their progress. If a student was doing poorly, they were aware of this sooner and felt that they could change their grades before it was too late in the
marking period.

Thirdly, students felt a greater sense of responsibility for their own success. They realized that they had no excuse for not turning in work or knowing what their grade point average was during the marking period. In a sense, this program empowered the students with their own academic success. They could even ask for extra work or extra credit via the e-mail feature. Several of these students e-mailed me during the research and asked for extra credit to improve their grades. Some of these students mentioned in the message that they were unaware that their grade point average was lower that they had thought.
Chapter 5

The first research question of the study was to determine if implementing a software program that would allow teachers to post the student's grades and homework assignments on the Internet using the Web site, “Thinkwave.com” would be feasible and blend well with the current CCTS school environment. The first part of this process was to determine if there would be enough support from the teaching staff at the Pennsauken campus at CCTS to make the program viable. Based on the teacher responses on the surveys, it appears that the majority of the teachers would voluntarily support such a program. All of the teachers have computers on their desks and a large number of teachers have access to computers and the Internet at home. Therefore, teacher use of this type of program would be feasible with the available tools currently held by the teaching staff at CCTS.

The second part of this question was to determine if enough students had access to computers to take advantage of this program and to determine if they would be willing to use this program. As previously noted, there were at least three computers in every classroom and more than 20 computers available for the students to use in the new media center during lunch periods and after school. In addition, more than half of the student population had computers available for them to use at home, and almost half had Internet access available with these computers. Once again, the question of availability of computers and the Internet was not a limiting factor for the implementation and usage of this grading program for the students at CCTS.

The question remained as to if the students would be willing to use and take advantage...
of such a program if it were made available for their use. Almost three-quarters of the students agreed that they did not receive assignments from school when they were absent in a timely and efficient manner. Almost one-half of the students stated that they had a difficult time even receiving their assignments at all. Slightly less than one-half of the students noted that they were unaware of their grade point average throughout most of the marking period. As a result of these survey responses, it was not surprising to see that three-quarters of the student population said that they would support and use this type of program even if it meant that their parents had access to this information as well.

It seems very clear from the research that both the student population and teaching staff at CCTS would support and be in favor of implementing a software program that allows grades and assignments to be posted on the Internet. In addition, it appears equally as clear that there is a need for such a program and that this type of program could benefit the students.

The research addressed the question as to if there were any evidence that the implementation of this kind of Internet program could lead to improved academic performance. According to the data collected and analyzed from the pre-test and post-test, there was reason to believe that this program enhanced student academic performance. The group of students who were given Internet access to use this program significantly increased the percentage of their test scores over the group that did not use this program. The group given Internet access improved their percentage scores more than 12% higher than the non-Internet group. Although this study was limited because of the small population size, it
does suggest that using this program can improve academic performance of the students. Furthermore, all of the school districts that I spoke with expressed similar results. Although there were no official studies or documentation as of yet, each school representative informed me that they believed there was no question that the students who used this program improved their grades.

During this research and study, I personally benefited in a number of different aspects in my development as a school leader. To begin with, the research improved my ability to effectively communicate with members of the school community. I needed to speak effectively and work with many components such as the school administrators, teaching staff, students, parents, and even the faculty at Rowan University. Although a struggle at times, I learned to be an effective communicator to many different groups, by learning to become a good listener and be willing to be flexible in communication styles. The one constant for each of these groups was that each group, whether a student or administrator, wanted to feel important and that their opinion was being heard and taken in to consideration.

As a leader, I believe that this study pointed out the necessity of knowing that you need the help and cooperation of many individuals and groups to accomplish your goals. A good leader needs the support and help from many groups in order to accomplish the education goals of the school. Without the support and help of each of the school’s key groups, students, teachers, administrators, and parents, I would not have been able to accomplish my research. I needed the support and approval of the administration to implement the study; I
needed the support of the students and parents to actually do the research; and I needed the support of the teaching staff to help me by answering the survey questions and helping to distribute and administer the surveys to the students. The key point is that as an educational leader, or any good leader, you need to seek out the key players and find a way to enlist their support and help.

As an individual classroom teacher, you tend to lead an isolated educational experience. There is very little time or opportunity to share ideas and experiences with fellow colleagues. I was aware that a large number of my students did not turn in homework or assignments on a regular basis. However, in my isolated classroom, I was unaware that part of the reason was because the students found it difficult to receive assignments when absent from class or that they were unaware of their grades until the end of the marking period. I believe this study pointed out the need for the school district to better serve its student population by improving the way teachers communicate with students and parents.

This research provides the school with an opportunity to better serve its student population. This educational tool provides an effective way to improve the communication between teacher, student, parent, and administrator. The Internet places more of the responsibility for academic awareness (knowing assignments and grades) on the student and parent. In essence, it forms more of a partnership of communication between the teachers, parents, and students. The Internet provides a convenient forum of communication for the parents who are unable to talk with or reach teachers during regular school hours.

In addition, this research brought to the attention of the Assistant Superintendent, Dr.
Susan Smith, the need to improve our delivery of homework and assignments to students when they were absent. She was very surprised by the survey responses from the students regarding the extra time that it took to receive assignments and homework when absent from school or class. She informed me that the district would look into this matter and attempt to improve this situation.

Furthermore, this research brought to the district’s attention the number of students that had computers and Internet access at home. Dr. Smith was also surprised by the survey data, which indicated the number of students who had the ability to access information from the Web at home. The district had estimated these numbers to be much lower. The district is now aware that this type of grading program could be effective in helping students and parents communicate with teacher’s information over the Internet at the present time.

Although the school district decided to use a grading program other than “Thinkwave.com” I believe this study did address the need for the district to review its policy on technology. The school realized that because it is one of the most technologically advanced schools in South Jersey (the school even has its own Educational Training Center), it needed to take advantage of this technology. The school decided, at a great cost, to build its own intra-network, which would allow teachers grade-books to be accessed by administrators and teachers through the computer network. The school’s major concern was that it wanted all of the data to be stored within the school’s own servers rather than on some company servers. However, I do believe this research pointed out the need for the district to better utilize the schools advanced technology tools.
Although the results of the surveys and tests were very favorable, the nature of the small numbers of participants limited the study being considered universal. Further research should include larger numbers of students and more sophisticated instruments to measure academic improvement. In addition, the time length of the study should be increased from one marking period to at least one academic year.

In addition, because of the nature of the research and limited time frame, most parents did not participate in viewing assignments and grades with the Internet Group students. Further studies should include a comparison that includes Internet Group students that also have parents who have Internet access, along with Internet Group students whose parents do not have Internet access to the grades and assignments. It would be extremely interesting and beneficial to measure the increased effect on academic achievement that parents can have when they are included in the process. I would hypothesize that parental influence can vastly improve the power of this type of program.

In summary, future studies should be expanded to include three groups, the control group (Non-Internet Access Students), and the two variable groups, (Internet Access Students and Parents), (Internet Access Only Students). The influence that parents could exert on their child or children not performing well academically would increase the power of this Internet grading program. The improvement academically in the two Internet group of students should be measured and compared to the non-Internet group of students. In addition, the tools used to measure academic improvement should be expanded to include more than one type of test.
The research should be expanded to include a greater number of students from a wide variety of districts. The effect of this Internet grading program should be compared in school districts that range from wealthy to special needs. The research time frame should be expanded to include at least one academic year. Increasing the time frame would provide information on the effect the program had over time.


Effective Internet Use in the Classroom. (2000, October 12). *ShellTech Software*.


International Society for Technology in Education. (2000, September 13). *National Education Technology Standards*.


Online grades lead to better parent-teacher communication. (2000, March 21). *School Board News.*


Steele-Carlin, S. (2000, June 8). Posting students' grades online keeps parents in touch and kids on their toes! *Education World.*


Appendix A

Permission Letter to the Parents
Dear Parent(s) or Guardian(s),

I am your son’s or daughter’s physical science teacher at Camden County Technical School. Currently, I am working on a master’s degree in secondary administration at Rowan University. My master’s thesis involves analyzing software programs that would allow teachers to post attendance, grades, homework and other assignments on the Internet. **This sensitive information would be held strictly confidential and only you and your child would have access to this information posted.**

The online grading software package I have chosen to use allows me to enter a student’s attendance, homework, assignments, and grades online. **You and your child would have access to this information, 24 hours a day, 7 days a week.** You would not need to purchase or install any type of software programs. You would need to be able to go on the Internet. All CCTS school classrooms, shops, and the school library have Internet access available to our students. In addition, many city and county libraries make the Internet available.

I have included the technical information about the grading program and the design of the study on the following page for you. **Participation in this research is optional.** However, by signing your name on this letter, I believe that you will be helping improve the educational process through the use of new technology. In addition, this program affords you an opportunity to participate in the educational process at your own convenience.

There are a number of schools throughout the country and New Jersey using similar online grading packages. I have spoken with representatives from these schools in New Jersey and have received favorable reports. I believe that this advancement could be of great benefit to the students and parents of CCTS. **In accordance with district procedure, I would need your permission and signature to enroll your child in the study.** If you have any questions, please feel free to contact me at 856-663-1040. Thank you for your cooperation. I hope to receive a favorable reply.

Respectfully yours,

Michael Grossman

**Permission Slip For Student Participation in The Internet Grading Program**

Student Name __________________________________________

I give permission for my child to participate: *(Please Print and Provide Signature)*

_________________________________________ (Print)

_________________________________________ (Signature)
TECHNICAL INFORMATION FOR THE ONLINE GRADING SOFTWARE

PROCEDURE:
To carry out my study, I would enter the student’s information, (assignments, grades, attendance), online with “Thinkwave.com.” Students and parents would be able to access this information by accessing the Internet and going to “Thinkwave.com.” Entering a secured password would provide access to student information. During the study, students would be required to check their own information several times a week. The study would run for one or two marking periods for students involved in the study. At the completion of the study, all student information would be deleted from “Thinkwave.com.”

SECURITY:
Sensitive information about your child would be held strictly confidential. Thinkwave.com uses Secure Socket Layer (SSL) encryption technology to ensure privacy. This is the same type of protection technology that major financial institutions use to protect the accounts of their clients. Furthermore, Thinkwave.com is compliant with the Child’s Online Privacy Protection Act (COPPA).
In addition, Thinkwave.com uses security encrypted protected passwords. Both you and your child would initially receive a password that would allow you to view the student information. These passwords can be changed at any time to increase password security. Additionally, I would require the students to sign an agreement whereby they would not reveal their private passwords.

ACCESS:
Student and parents can only view their own information. Only the teacher would have access to the entire class information. Only the teacher could change class information, not the students or the parents. Students and parents could not view any other student’s sensitive information. However, all participants would have access to important class announcements such as assignments, homework, and projects.

FURTHER INFORMATION:
For further information about this grading software, you can contact:
http://www.Thinkwave.com
Appendix B

Internet Surveys for Teachers and Students
Internet Survey: For Teachers at Camden County Technical High School

This survey is being conducted as part of a master's thesis on Educational Internet Grading Software Programs available to schools. The responses given in the survey will remain confidential and private. The responses will be used only to generate statistical data to be used in the research section of the thesis. Your assistance in answering these questions will be very beneficial for this study. Participation is optional. Thank you in advance for your time and participation.

Name ________________________________ (optional)
1. Is there a computer located at your primary residence?
   
   YES    NO

2. Is there Internet accessibility associated with the computer?
   
   YES    NO    NA

3. Not including school, do you have access to the Internet in other places besides your primary residence (for example, a relative’s house or a friend’s house)?
   
   YES    NO    NOT SURE

4. Do you have a local public library within walking distance from your primary residence, that has free Internet access that you can use?
   
   YES    NO    NOT SURE

5. Have you ever used the Internet for school or personal use?
   
   YES    NO

6. Do you use the Internet for any kind of student activity in your lessons?
   
   YES    NO

7. Do you feel comfortable using computers and the Internet?
   
   YES    NO    NOT SURE

8. Would you be willing to attend an in-servicing for training teachers how to use the Internet Grading Software to post assignments and grades on the Internet?
   
   YES    NO    NOT SURE
9. If a program was made available to you, which allowed you to post your grades and assignments for no cost and at anytime from the Internet, would you be willing to use this program? (Assume that this information is protected, meaning only you, administrators, parents, and students could view this private information)

   YES       NO       NOT SURE

10. Would you be willing to spend a few minutes a day on a regular basis to post student grades, assignments, and or comments on the Internet?

    YES       NO       NOT SURE

11. Would you support a program that allows you and other teachers to post information such as grades and homework assignments on the Internet?

    YES       NO       NOT SURE
Internet Survey: For Students at Camden County Technical High School

This survey is being conducted as part of a master’s thesis on Educational Internet Grading Software Programs available to schools. The responses given in the survey will remain confidential and private. The responses will be used only to generate statistical data to be used in the research section of the thesis. Your assistance in answering these questions will be very beneficial for this study. Participation is optional. The survey should take no more than 10 minutes to answer. Thank you in advance for your time and participation.

Name on scantron is optional
Using a number 2 pencil, answer the following questions on the scantron by selecting the letter that best applies to you.

1. I am a _____?
   A = Freshman     B = Sophomore     C = Junior     D = Senior

2. My gender is _____?
   A = Male          B = Female

3. My primary residence (where I live) is in the city of _______?
   A = Camden       B = Pennsauken     C = Merchantville     D = Other

4. Is there a computer located at your primary residence?
   A = YES          B = NO

5. Is the Internet connected to the computer?
   A = YES          B = NO          C = Does Not Apply

6. Not including school, do you have access to the Internet in other places besides your primary residence (for example, a relative’s house or a friend’s house)?
   A = YES          B = NO          C = Does Not Apply

7. Do you have a local public library within walking distance from your primary residence, which has free Internet access that you can use?
   A = YES          B = NO          C = Does Not Apply

8. Do your parent(s) or guardian(s) have access to the Internet at their work place?
   A = YES          B = NO          C = I Do Not Know
9. I often use the Internet for school or personal use.
   
   A = Strongly Disagree  B = Disagree  C = Agree  D = Strongly Agree

10. I feel comfortable using computers and the Internet.
   
   A = Strongly Disagree  B = Disagree  C = Agree  D = Strongly Agree

11. My parent(s) or guardian(s) feel comfortable using computers and the Internet.
   
   A = Strongly Disagree  B = Disagree  C = Agree  D = Strongly Agree

12. When I am absent from class, I have an easy time obtaining missing homework and assignments.
   
   A = Strongly Disagree  B = Disagree  C = Agree  D = Strongly Agree

13. If I am absent from school for more than two days, I receive my missing assignments at home in a very short period of time, so I am not behind in class when I return.
   
   A = Strongly Disagree  B = Disagree  C = Agree  D = Strongly Agree

14. I feel that I am constantly aware of my grade point average throughout each marking period.
   
   A = Strongly Disagree  B = Disagree  C = Agree  D = Strongly Agree

15. If a program was made available to me, which allowed my parents and myself to view my grades and assignment for no cost and at anytime from the Internet, I would use this program. (Assume that this information is protected, meaning only you, your parents, and teachers could view this private information)
   
   A = Strongly Disagree  B = Disagree  C = Agree  D = Strongly Agree

16. Same question as 15, except that only you are able to view your grades and assignments, not your parents.
   
   A = Strongly Disagree  B = Disagree  C = Agree  D = Strongly Agree
Appendix C

Pre-Test and Post-Test
Pre-Test for Internet Grading Software Project

The following pages contain a physical science pre-test. There are 40 multiple choice questions that you should try to answer to the best of your abilities. There will be some questions that you do not know the answers to. Try not to worry about those questions and answer as many questions as you can. Just remember that this test does not count against your grade in any manner. The results generated from this test will only be used to generate statistical information for the Internet grading software program that many of you are participating in.

Please Note ****************

This test is confidential and you are not required to put your name on the scantron. However, in order to separate the two groups (those with Internet access to their grades, and those who do not have Internet access to their grades) please refer to the following instructions:

**Have Internet password and access:**
On the scantron, under Subject write the words Physical Science

**Do Not Have Internet password and access:**
Leave the Subject area blank

In either case, including your name is optional
1. General properties of matter include
   a. mass          b. volume          c. density          d. all of the above

2. Weight is
   a. a measure of the density of an object
   b. always equal to the mass of an object
   c. the response of mass to pull of gravity
   d. described as the amount of matter in an object

3. Density is
   a. mass per unit volume
   b. volume per unit mass
   c. related to the pull of gravity
   d. the total amount of matter in an object

4. Calculate the volume of an object that has a mass of 5.0g, and a density of 2.5g/ml
   a. 7.5ml          b. 12.5 ml         c. 2.5 ml          d. 2.0 ml

5. Examples of physical properties include
   a. mass and weight           b. volume and density
   c. color, shape, hardness, and texture   d. all the above

6. Chemical properties
   a. describe how a substance changes into other new substances
   b. are changes in phase
   c. are changes in volume or shape
   d. are changes in mass or weight

7. An example of a chemical change is
   a. burning paper           b. dissolving sugar in tea
   c. mixing alcohol and water  d. melting ice

8. A molecule is
   a. made of two or more elements physically combined
   b. chemically combined
   c. a heterogeneous mixture
   d. used as a solvent

9. The substances that make up a mixture
   a. keep most of their properties
   b. lose most of their properties
   c. are chemically combined
   d. are combined in definite proportions
10. The smallest particle of an element that has the properties of that element is a (an)
   a. nucleus   b. molecule   c. atom   d. proton

11. The modern atomic model is based on the principles of
   a. planetary orbits   b. wave mechanics
   c. radioactive decay   d. indivisible particles

12. The atomic theory of matter was developed by

13. The number of protons located in the nucleus of an atom is called the
   a. element number   b. atomic number
   c. mass number   d. atomic weight

14. Elements within the same vertical column
   a. have similar but not identical properties
   b. have identical properties
   c. belong to the same period
   d. are arranged alphabetically

15. Elements in a period
   a. are arranged alphabetically   b. belong to the same family
   c. have identical properties   d. are not alike in properties

16. The two rows that stand alone at the bottom of the periodic table are
   a. noble gases   b. rare-earth elements
   c. halogens   d. in the oxygen family

17. A metal that can be drawn into a thin wire is said to be
   a. brittle   b. ductile   c. malleable   d. inert

18. The energy needed to move electrons from an atom is called
   a. valence energy   b. ionization energy
   c. network energy   d. bonding energy

19. Aluminum is a metallic element with 3 valance electrons. Its oxidation number is
   a. 3+   b. 3-   c. 5+   d. 5-

20. The chemical equation $\text{Al}_2\text{SO}_4 + 3\text{BaCl}_2 \rightarrow 2\text{AlCl}_3 + 3\text{BaSO}_4$ represents a
   a. synthesis reaction   b. decomposition reaction
   c. single-replacement reaction   d. double-replacement reaction

21. In the formula $5\text{CaSO}_4$, the total number of sulfur atoms present is
   a. 1   b. 5   c. 9   d. 20
22. A chemical bond is formed when the electrons are
   a. gained       b. lost       c. shared       d. all of these

23. A substance that does not conduct an electric current is called a (an)
   a. nonelectrolyte       b. tincture       c. electrolyte       d. aqueous solution

24. A weak acid has a pH of
   a. close to 0       b. close to 7       c. 7       d. close to 14

25. The general formula for an alkene is
   a. C_2H_2       b. C_2H_{2n}       c. C_nH_{2n+2}       d. C_nH_{2n-2}

26. An example of a synthetic fiber is
   a. an amino acid       b. cotton       c. nylon       d. wool

27. Scientists predict that polymer products will increase the use of
   a. nuclear energy       b. tidal energy       c. solar energy       d. wind energy

28. An example of a natural polymer is
   a. silk       b. phenol       c. glycerol       d. vinyl chloride

29. The binding energy is the energy needed to
   a. keep the electrons spinning around the nucleus of an atom
   b. keep the atoms in a covalent compound together
   c. keep the atoms in a sample of an element together
   d. hold the nucleus of an atom together

30. One of the scientists who first discovered fission is
   a. Henri Becquerel       b. Marie Curie
   c. Hans Geiger       d. Enrico Fermi

31. An atom containing 13 protons, 22 neutrons, and 13 electrons has an atomic number
   of
   a. 13       b. 22       c. 35       d. 53

32. Which of the following is most likely to be an insulator
   a. copper       b. plastic       c. gold       d. silver

33. Temperature is a measure of average
   a. kinetic energy       b. amount of calories
   c. amount of work       d. heat of fusion
34. If a 10.0g piece of metal required 100 cal to raise its temperature by 20°C, what would you report as its specific heat
a. 10 cal/g°C  b. 200 cal/g°C  c. 0.5 cal/g°C  d. 2 cal/g°C

35. An example of a wave that can be transmitted through a vacuum is
a. light  b. sound  c. both a,b  d. neither a,b

36. Frequency times wavelength always equals
a. 1  b. amplitude  c. speed  d. 1/speed

37. For a wave of wavelength 4m and a frequency 8 waves/sec
a. amplitude = 32m  b. amplitude = 0.5m  c. speed = 32m/s  d. speed = 2m/s

38. Light waves are
a. electric and sound-like  b. magnetic and sound-like  c. electric and magnetic  d. electric only

39. Waves with frequencies slightly higher than those of visible light are called
a. ultraviolet rays  b. X-rays  c. gamma rays  d. infrared rays

40. Which of the following does not require a physical medium to travel through
a. light  b. sound  c. a,b  d. neither a,b
Post-Test for Internet Grading Software Project

The following pages contain a physical science post-test. There are 40 multiple choice questions that you should try to answer to the best of your abilities. There will be some questions that you do not know the answers to. Try not to worry about those questions and answer as many questions as you can. Just remember that this test does not count against your grade in any manner. The results generated from this test will only be used to generate statistical information for the Internet grading software program that many of you are participating in.

Please Note *****************

This test is confidential and you are not required to put your name on the scantron. However, in order to separate the two groups (those students with Internet access to their grades, and those who do not have Internet access to their grades) please refer to the following instructions:

Have Internet password and access:
On the scantron, under Subject write the words Physical Science

Do Not Have Internet password and access:
Leave the Subject area blank

* In either case, including your name is optional
1. General properties of matter include
   a. mass  b. volume  c. density  d. all of the above

2. Weight is
   a. a measure of the density of an object
   b. always equal to the mass of an object
   c. the response of mass to pull of gravity
   d. described as the amount of matter in an object

3. Density is
   a. mass per unit volume
   b. volume per unit mass
   c. related to the pull of gravity
   d. the total amount of matter in an object

4. Calculate the volume of an object that has a mass of 5.0g, and a density of 2.5g/ml
   a. 7.5ml  b. 12.5 ml  c. 2.5 ml  d. 2.0 ml

5. Examples of physical properties include
   a. mass and weight  b. volume and density
   c. color, shape, hardness, and texture  d. all the above

6. Chemical properties
   a. describe how a substance changes into other new substances
   b. are changes in phase
   c. are changes in volume or shape
   d. are changes in mass or weight

7. An example of a chemical change is
   a. burning paper  b. dissolving sugar in tea
   c. mixing alcohol and water  d. melting ice

8. A molecule is
   a. made of two or more elements physically combined
   b. chemically combined
   c. a heterogeneous mixture
   d. used as a solvent

9. The substances that make up a mixture
   a. keep most of their properties
   b. lose most of their properties
   c. are chemically combined
   d. are combined in definite proportions
10. The smallest particle of an element that has the properties of that element is a (an)
a. nucleus b. molecule c. atom d. proton

11. The modern atomic model is based on the principles of
a. planetary orbits b. wave mechanics c. radioactive decay d. indivisible particles

12. The atomic theory of matter was developed by

13. The number of protons located in the nucleus of an atom is called the
a. element number b. atomic number c. mass number d. atomic weight

14. Elements within the same vertical column
a. have similar but not identical properties
b. have identical properties
c. belong to the same period
d. are arranged alphabetically

15. Elements in a period
a. are arranged alphabetically b. belong to the same family
c. have identical properties d. are not alike in properties

16. The two rows that stand alone at the bottom of the periodic table are
a. noble gases b. rare-earth elements c. halogens d. in the oxygen family

17. A metal that can be drawn into a thin wire is said to be
a. brittle b. ductile c. malleable d. inert

18. The energy needed to move electrons from an atom is called
a. valence energy b. ionization energy c. network energy d. bonding energy

19. Aluminum is a metallic element with 3 valance electrons. Its oxidation number is
a. 3+ b. 3- c. 5+ d. 5-

20. The chemical equation \( \text{Al}_2\text{SO}_4 + 3\text{BaCl}_2 \rightarrow 2\text{AlCl}_3 + 3\text{BaSO}_4 \) represents a
a. synthesis reaction b. decomposition reaction c. single-replacement reaction d. double-replacement reaction

21. In the formula \( 5\text{CaSO}_4 \), the total number of sulfur atoms present is
a. 1 b. 5 c. 9 d. 20
22. A chemical bond is formed when the electrons are
   a. gained  b. lost  c. shared  d. all of these

23. A substance that does not conduct an electric current is called a (an)
   a. nonelectrolyte  b. tincture  c. electrolyte  d. aqueous solution

24. A weak acid has a pH of
   a. close to 0  b. close to 7  c. 7  d. close to 14

25. The general formula for an alkene is

26. An example of a synthetic fiber is
   a. an amino acid  b. cotton  c. nylon  d. wool

27. Scientists predict that polymer products will increase the use of
   a. nuclear energy  b. tidal energy  c. solar energy  d. wind energy

28. An example of a natural polymer is
   a. silk  b. phenol  c. glycerol  d. vinyl chloride

29. The binding energy is the energy needed to
   a. keep the electrons spinning around the nucleus of an atom
   b. keep the atoms in a covalent compound together
   c. keep the atoms in a sample of an element together
   d. hold the nucleus of an atom together

30. One of the scientists who first discovered fission is

31. An atom containing 13 protons, 22 neutrons, and 13 electrons, has an atomic number of
   a. 13  b. 22  c. 35  d. 53

32. Which of the following is most likely to be an insulator
   a. copper  b. plastic  c. gold  d. silver

33. Temperature is a measure of average
   a. kinetic energy  b. amount of calories
   c. amount of work  d. heat of fusion
34. If a 10.0g piece of metal required 100 cal to raise its temperature by 20°C, what would you report as its specific heat
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Biographical Data

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<tr>
<th>Name</th>
<th>Michael Grossman</th>
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<td></td>
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