8-1998

Students’ Perceptions for the Use of Computers in Elementary Schools

David Thomas Richardson
The College at Brockport

Follow this and additional works at: https://digitalcommons.brockport.edu/ehd_theses

Part of the Elementary Education Commons

To learn more about our programs visit: http://www.brockport.edu/ehd/

Repository Citation
https://digitalcommons.brockport.edu/ehd_theses/835

This Thesis is brought to you for free and open access by the Education and Human Development at Digital Commons @Brockport. It has been accepted for inclusion in Education and Human Development Master’s Theses by an authorized administrator of Digital Commons @Brockport. For more information, please contact kmyers@brockport.edu.
STUDENTS' PERCEPTIONS FOR THE USE OF COMPUTERS IN ELEMENTARY SCHOOLS

THESIS

Submitted to the Graduate Committee of the Department of Education and Human Development
State University of New York
College at Brockport
in Partial Fulfillment of the Requirements for the Degree of Master of Science in Education

by
David Thomas Richardson
State University of New York
College at Brockport
Brockport, New York
August, 1998
SUBMITTED BY:

David J. Richardson 8/18/98  
Candidate

APPROVED BY:

Eugenia Belgrand 8/18/98  
Thesis Advisor  
Date

Linda Johnson 8/18/98  
Second Faculty Reader  
Date

Scott D. Robinson 8/18/98  
Director of Graduate Studies  
Date
ACKNOWLEDGEMENTS

I would like to thank

Delores Simmons for her

hard work, cooperation and especially

her friendship.
Table of Contents

Chapter I
  Introduction 1
  Rationale 1
  Definitions 1
  Limitations of the Study 2

Chapter II
  Computer Usage in Schools 3
  Goals for Using Computers in Schools 3
  Staff Development 5
  Students’ Perceptions 7

Chapter III
  Purpose of the Study 11
  Methodology of the Study
    A. Subjects 11
    B. Data Collection 12
    C. Procedure for Collecting Data 12
    D. Analyzing the Data 13

Chapter IV
  Background of School 39 14
Survey Results:

1. Background of the Students Outside of School  
   A. Computers in the Home  
   B. Usage at Home  
   C. Hours a Week Students Use the Computer Outside of School  
   D. Usage at a Friend’s or Relative’s House  
   E. Who Students Use the Computer with  

2. Background of Students Inside of School  
   A. Usage of Computer in School  
   B. Hours a Week Students Use the Computer Inside of School  

Interview Results:

1. What the Students Think about Computers  
   A. Likes  
   B. Dislikes  
   C. On Why there are Computers in the Classroom  
   D. What should Computers be used for in School  

2. What the Teachers Think
Chapter V

Purpose 21
Conclusions of the Study 21
Implications for the School 22
Implications for Research 23
Summary 24

References 25

Appendix 26

A. Math, Science, and Technology Standard 5 27
B. Computer Education Objectives Grades 3-5 28
(Greece Central School District, Rochester, N.Y.)
C. Student Survey 30
D. Typical Interview Questions 32
E. Population Surveyed 33
F. Computer Usage 37
G. Usage of Computer at Home 41
H. Hours a Week Students Use Computers Outside of School 45
I. Usage at a Friend’s or Relative’s House 49
J. Whom Students Use the Computer With 53
K. Usage of Computer in School 57
L. Hours a Week Students Use Computers Inside of School 61
Chapter 1

Introduction

Andrew J. Townson, School #39, of the Rochester City School District (RCSD), is part of the New York State Systemic Initiative (NYSSI), for the improvement of inquiry in the teaching of math, science and technology. Children use computers every day. One of the areas School #39 is focusing on with its students is technology. The question that arises is how do students feel about the role of computers? How do students perceive the role of technology in their own education? The purpose of this study is to investigate and examine students' perceptions of the use of computers in elementary schools.

Rationale

Little research has been done on students' perceptions. Much of the research purportedly on students' perceptions in reality does not come from the students themselves, but rather from studies on educational programs, curriculum and teachers (Kramer, 1992). Feedback from students dealing with their thoughts and feelings on educational issues and what is being taught to them is extremely important to teachers, parents, administrators. That information can assist in designing curriculum, purchasing materials and deciding effective strategies for assessment. Students will feel motivated and excited to learn if they know that their thoughts and feelings about what is going on in school are heard and respected.

Definitions

For this study terms are defined as follows:

Perceptions- students' feelings, interests and attitudes
Although technology used in math, science and technology has a broad definition, including design and engineering, for the purpose of this study technology will be defined as the use of computers.

Limitations of the Study

It is important to remember that students’ perceptions for the use of computers in elementary school are taken only from a one school setting. While the classes used in this study are valid they, in no way, represent all students in grades four through six. Many factors, such as home-life and the child’s background with computers will influence a students’ perceptions about computers. The students’ classroom setting, including how much the computer is incorporated into daily lessons and activities, will deeply effect a students perceptions about computers. Conclusions about students’ perceptions would be better represented by using a much larger group of students in grades four through six (See Chapter 4, p. 15 for reasons why the sample is small).
Chapter 2

**Computer Usage in Schools**

Currently the use of computers is in the stage of transition. They are moving from being pieces of hardware in schools to connectivity-linking computers together for communication purposes. Computers are no longer simply an independent skills-practice tool but a resource that can integrate all the subject areas. Computers which were rarely used by teachers, mostly due to inadequate preparation, are becoming a high powered tool that is used heavily during the school day (Hawkins, 1996).

Current teachers and administrators believe that the only disadvantage about computers is the lack of access to them. Indeed, for technology education to occur in our schools, we must have access to the technology, itself. The national average for the ratio between computer and students is 1:9 (Goodnow, 1998). However, the ratio that is considered adequate to allow usage of the computer by all students is 1:5.

Currently about forty percent of students have computers in their homes (Goodnow, 1998). Having access to a computer at home allows a child to learn and become familiarized with the computer at their own pace, without any distractions and often without pressure from peers. A student can also spend more time doing educational activities like doing research, using CD-ROMS, and using the internet.

**Goals for Using Computers in Schools**

For teachers to use computers effectively in the classroom they need to know the goals toward which they are working. These goals are set at the state
and district levels. New York State has specific standards targeted for students' learning in all areas. In Math, Science and Technology, Standard 5 indicates that, by commencement, students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs (Appendix A). Under this standard are specific objectives targeted for the elementary, intermediate, and commencement levels. Prior to commencement, students must meet these objectives. Examples of objectives to meet Standard 5 are:

- Students must engage in technical design.
- Test, use, and describe materials, information and energy resources.
- Explain the effects of technological inventions
- Develop and use computer-based tools, such as flow charts and graphs.

This would require students prior to commencement to experience what goes on in the workforce and also what it takes to succeed in higher education.

Although the standards and objectives are well developed, presently New York State has no specific curriculum to implement these standards. Standards and objectives are mostly used at an individual level and sometimes at the district level.

Greece Central School District has specific district-level computer education objectives for the intermediate grades (Appendix B). These general objectives are then broken down to clear and detailed objectives for each specific grade. “By doing so, teachers can have an outline in writing which details the kind of technology skills children need to know at that level” (Imon, 1998, telephone interview).
In other parts of the United States, such as North Carolina, students beginning in the year 2001 will need to “pass a computer skills test to get a high school diploma” (McCafferty, 1998, p. 28). Specifics on what students will need to know are: computer basics, word processing and formatting, how to examine numbers in a database and how to extract information from spreadsheets (McCafferty, 1998). North Carolina has designed a specific curriculum so that all graduating seniors, starting in the year 2001, will know how to succeed in the 21st Century.

So how exactly are computers used in the classrooms in New York State? As a teacher in Greece Central School District puts it, “They are used in the classrooms to occupy free-time” (Ramsey, 1998, personal interview). According to Standard 5, in a typical classroom the computer should be used as a hands-on learning tool to enhance students’ learning. Yet, without clear curriculum guides or knowledge about the standards, teachers have different perceptions about computer use in the school.

**Staff Development**

In order for districts to meet the state objectives, teachers must receive the proper professional development on using computers effectively in the classroom. As technology increases, schools need to address how computers will be used in the classrooms and how to best utilize them. By the year 2010, one out of every 5 jobs in America will incorporate some usage of computers (National Education Council, 1997). The Rochester City School District (RCSD) spends thousands of dollars on staff training in the area of technology. Staff development, by contract, is not required by most districts, but strongly encouraged. Therefore, teachers
only take it upon themselves to learn about the computer and the advantages it can have in the classroom.

For example, Sarah Jeanne Hollister Davis (Davis, 1997) had no background in using technology in her classroom prior to teaching. Davis took it upon herself to use school resources and training workshops set up in her district to build her background. She did so because she felt technology needed to be integrated into her curriculum. When Davis asked a friend whether or not she was doing the right thing, her friend replied, “Can you afford to be not just one generation behind your students but, as time goes on, generations behind” (p. 51).

Sixty percent of teachers in New Zealand feel that accessibility and training isn’t the problem (Ham, 1997). The problem, according to a survey conducted to teachers, is not having the freedom to use technology in a way that is fit for their delivery of instruction. They feel that any decisions made which impacts their teaching and curriculum objectives must require the shared decision making approach. It was concluded from the survey that teachers were “pleading for greater democracy in decisions about technology” (Ham, 1997, p. 67).

Many teachers feel that technology is not a separate entity. It needs to be integrated into every part of the classroom. When teachers are asked if they are trained in the area of computers many might reply that they are not. Computer workshops, offered through staff development in many districts, are always available. Educational technology, which included staff training, received an almost 100% increase in the 1998 government budget (Lewis, 1998). Some may feel that these workshops are geared towards beginners or those who are well-advanced. What about those in the middle?
Those who do have the training can, or often do, apply for additional money through grants. By doing so, teachers can better accommodate the computer in the classroom to their teaching objectives.

**Students' Perceptions**

"Students think about school; their interpretations of school life and the meanings they confer on teachers' actions, classroom processes, and school events have consequences on how much they learn" (Kramer, 1992, p. 1). Students have perceptions about computers, however they are often overlooked. Many times these "perceptions" are really assumptions made by administrators, parents and teachers. The subject of computers is one where perceptions may vary greatly. Perceptions will vary in age, grade, background. Girls are more ambivalent about technology than boys. Boys are excited about technology because of their ability to participate, usually with video games. Girls are less likely than boys to attempt to fix a problem when using the computer and tend to get disinterested when confronted with a technological problem. The female attitude towards computers looks at how the computer can function socially, not the hardware and software components. The male view seems to be the opposite. Males tend to focus on the machine itself. These perceptions of males and females also mirror the differences of adults who use computers in their profession. (Brunner and Bennett, 1998).

What are some reasons for these varied viewpoints? One reason there is a difference between males and females towards computers is because of stereotypes. Girls are more often to be classified a "geek" than boys if they are computer knowledgeable. In the subject of technology, especially at the
middle-school and high-school levels, being "cool" is more important than being knowledgeable in something.

A second reason is the usage of computers by males and females. Girls and boys equally enjoy playing video games. However there are far fewer video games aimed at a female audience than there are those aimed at a male audience. Those that do rarely go beyond traditional female subjects like shopping and dolls. According to a survey conducted in 1996 by Software Publishers Association, it was found that "63 percent of CD-Rom buyers-and 66 percent of main users-are male" (Goodnow, 1998, p. 3E). So if it is males who are using the computer, then what kinds of products are computer companies going to make? In a study done by Roberta Furger, girls tend to spend more of their computer time doing social things like "sending e-mail, and typing school reports" (Goodnow, 1998, p. 3E). Forty percent of American homes have a computer, however girls are often on the fringe, usually waiting a turn behind their father or brother(s) (Goodnow, 1998).

School districts all across the U.S. are trying to break this "gap" between boys and girls. Teacher's like Gayle Beland and Nancy Mahosky are offering classes to girls to better familiarize them with technology. Beland's computer based women's history class is open to boys and girls. However she "designed the course specifically to introduce girls to computers" (Zehr, 1998, p. 14). She is concerned that girls are not interested in computers because they aren't given the time to use them. Beland and Mahosky emphasize cooperative learning and use computer programs that appeal to girls, as well as giving them time to just "explore." The aim is to boost their confidence in using computer technology.
A third reason which may cause a difference in perceptions towards computers is the curriculum that is in the schools. Often the curriculum, whether it is structured by administrators or teachers, is often centered around boys. Take for example the project high school students had to do in technology class in a school in North Carolina. Students had to design a structure that could shoot pellets at a target and also design a vehicle that could go up a ramp quickly. Students had to make blueprints for their projects on the computer. The result was that few girls were inspired to participate (Brunner and Bennet, 1998).

"Technologies can now be easily designed to embrace different ways of knowing, inviting diverse learners to express and develop multiple points of view" (Brunner and Bennett, 1998, p. 56-57). We as educators must remember to make sure that whatever technology we use in the classroom it is inviting to both sexes. Many times it is geared towards one sex, usually males, and often without the teacher realizing it.

"By actively listening to adolescents, we promote not only their growth as individuals but the development of positive relationships with adults and educational improvements that can greatly enhance the potential of students" (Kramer, 1992, p. 1). Student perceptions are should be important to teachers, parents and administrators. Taking into account what students think leads to a better classroom environment: one that provides motivation and an eagerness to learn.

So how do students feel about computers? Do they look at them as an educational enhancement in their learning or just for there recreational use? In order for computers to be incorporated in the classroom effectively students’
perceptions must be examined. From there, standards and goals can be set and staff development can be offered to teachers.
Chapter 3

Purpose of the Study

While doing an internship at School 39, in the Rochester City School District, the researcher decided to investigate students’ perceptions of computers. In speaking with the teachers at School 39, this researcher heard many teachers make assumptions about students’ perceptions of computers. What are students’ perceptions of computers? Do students’ perceptions change from grade level to grade level?

This study will be used as a tool to better understand students’ perceptions about computers. It will also make individual teachers aware of their own class’s perceptions enabling them to determine if their original assumptions proved true or not. This study will allow students to air their thoughts and feelings about computers in confidence, while allowing the school community to hear those views. Also it will serve as a piece of communication between the teachers and the students of School 39.

Methodology of the Study

• Subjects

To gather the perceptions of students about computers, the researcher needed to survey students who had a computer in their classroom. At School 39, only the intermediate grades, 4-6, have computers in the classroom. The school itself does have a computer lab in which half of each class attends for 30 minutes a week for half the year.

A total of 152 students were included in the study. Sixty-eight percent of the school’s population is minority with thirty-two percent being white Caucasian.
The school consists of 56% boys and 44% girls.

- **Data Collection**

  Each student in the classes being used in this study was given a survey containing questions pertaining to their perceptions about computers (Appendix C). The questions that appeared on the final draft of the questionnaire were developed over a series of revisions. Revisions were made through discussions with teachers whose classes were included in the study. With more and more research being collected in this area it is important to make sure the questions being asked pertained to the data being found. The questionnaire was designed to allow all students to be honest and open about their perceptions of computers.

- **Procedure for Collecting Data**

  After receiving permission from State University of New York College at Brockport, the researcher personally met with each teacher whose class he wished to include in the study. By doing so, it allowed the researcher to clearly explain the purpose and objectives for doing this study. The teacher then could freely ask questions about the study as well. The researcher left with the teacher a copy of the survey that was to be used so they could examine it and offer comments if needed. Then a time was set to come in to the class, explain the survey to the students and hand out the parental permission forms. Upon receipt of these forms, the researcher began his data collection by administering the questionnaire.

  This study also included personal interviews and observations of students in the building. Many times the observations were unscheduled to really get a first-hand account of what students use computers for in school, as well as their perceptions about computers. The interviews were very informal, at the
suggestion of the administration of the building. The interviews consisted of a short, non-threatening conversation between the researcher and student(s). As with all data collected, the responses provided by students are anonymous. A copy of typical interview questions is included in the appendix (Appendix D).

A total of seven teachers agreed to allow their classes to participate in the study. One of the classes was an inclusion class, made up of students in both grades 4 and 5.

- **Analyzing the Data**

To gain a clear view of the information collected, a spreadsheet was created to record the responses to the survey questions for each class. The spreadsheet allowed the researcher to compare and contrast classes according to similarities and differences. Data collected will help to clarify the perceptions of students towards computers. Percentages will be used to breakdown the categories of questions. Line, bar and pie graphs will be made for purposes of clarifying the results of the survey questions for teachers.
Chapter 4

Background of School 39

In 1993, School 39 began a partnership with the New York State Systemic Initiative (NYSSI). The main emphasis of this partnership was to better accommodate teachers by providing better resources and materials and more training and offerings of staff development. Under this partnership, School 39 received 40 Macintosh Computers. A computer was placed in every intermediate classroom, grades 4-6, and the rest were placed in a lab for the entire school’s use. Every class visits the computer lab at minimal for a half hour each week. Those with the computer in the classroom are also able to incorporate their computer into daily activities.

Seven teacher’s in grades 4-6, ranging from those with little or no training in computers to those who are well trained, participated in the survey to determine students’ perceptions towards computers. Due to limited availability, the fourth grade classrooms are the only ones that have access to e-mail and the internet. Those teachers have received some training in the area of computers. The four-five inclusion classroom also has access to the internet and e-mail. This teacher is well-trained in the field of computers and regularly incorporates the computer into daily activities. The fifth grade teachers have some knowledge about computers but all of their knowledge is self-taught. Of the sixth grade teachers that agreed to participate, one has a sound background and the other has a very limited background. This is reflected in the results of the survey (Appendix C for copy of survey).
Five teachers in grades 4-6 did not participate in the study. The two teachers in grade six did not have a computer at all in their classroom, the two fifth grade teachers wished not to be part of the study and the fourth grade teacher was a long term substitute and was not allowed to participate in the study. The researcher wanted to focus on students' perceptions of those who are around computers. If the other teachers had been included in this study, the results would of been more widespread.

For each question on the survey, the researcher made graphs for each grade level and a final graph that combined all the data (Appendix E-L). For example the first question asks for the students' gender. The researcher made a pie graph distinguishing those that are male and those that are female for each grade and then one summarizing all students in grades 4-6 (intermediate grades).

- **Note:** The four-five inclusion class was broken down so those that were in fourth grade were part of the fourth grade data and those that were in fifth grade were compiled in the fifth grade data.

Students were reminded that the survey was optional. Upon taking the survey students were encouraged to ask questions at any time throughout the survey. Students who did not return a permission slip were not allowed to take part in the survey. Of the seven classes that took part in the study, a total of nine students were not allowed to participate.

**Survey Results: Background of the Students Outside of School**

Seven teachers, two from each grade level 4-6 and one 4-5 inclusion teacher, agreed to let their classes participate in the study. A total of one hundred fifty-two students took the survey asking them for their thoughts and feelings.
about computers (Appendix C for copy of survey). Fifty-five percent of the population surveyed were females and forty-five percent were males (Appendix E). Of the 152 students, 32% were fourth graders, 38% were fifth graders and 30% were sixth graders. Ninety-eight percent of the respondents were between the ages of 9 and 12.

The following is a breakdown of the questions asked on the survey. For each questions there are corresponding charts in the appendix.

• **Computers in the Home** Overall, sixty-three percent say they have a computer at home that they use. However, of the sixth graders that took the survey, only 51% said they have a computer in their home. Eighty percent of the student body at School 39 get free or reduced lunches because of their families low income. Just under 80% of those surveyed reported they use a computer when at a friends or relatives house and 98% said they use it in school (Appendix F).

• **Usage at Home** All students reported a high usage of games on their computers at home. However the fifth and sixth grade data shows a higher form of usage due to the much wider responses for computer usage at home. The fifth and sixth grade data also show an increase of about 5-15% in the usage of the internet, e-mail, and the use of the computer for writing essays (Appendix G).

• **Hours a Week Students Use the Computer Outside of School** About 73% of the fourth and fifth grade respondents say they use the computer between 1-5 hours a week. The sixth grade data shows that 62% use it between 1-2 hours but 11% responded they use it more than 12 hours a week. This could
suggest that some students who do use the computer outside of school use it for many purposes (Appendix H).

- **Usage at a Friend’s or Relative’s House** Data for all students shows a high usage of games when going to a friend’s or relative’s house. The fifth grade respondents represented usage of the computer for all subject areas as well as a higher usage in the internet, e-mail, drawing and reports. Only 2.2% of the sixth graders that responded say they use it for drawing whereas, fourth and fifth graders reported close to 40% (Appendix I).

- **Whom Students use the Computer with** Students in grades 4-6 reported that roughly half of the time they spend working on the computer outside of school is by themselves. Students work on the computer with their parents 35% of the time. Data also showed that students do spend time on the computer with brother and sisters, aunts, uncles and cousins (Appendix J).

Survey Results: Background of the Students Inside of School

- **Usage of Computer in School** Aside from games, the differences in computer usage according to grade level is more obvious here. Due to e-mail and internet availability in the fourth grade classrooms only, the fourth graders would reported a higher usage of this in the classrooms. Fourth and fifth grade respondents reported a high usage for the computer in typing, drawing and doing reports. The sixth grade data shows a higher percentage than the other grades in the categories of typing, CD-ROMs and doing homework (Appendix K).
• **Hours a Week Students use the Computer in School** Just over 81% of all those who took part in the survey said they use the computer between 1 and 2 hours a week (Appendix L).

**Interview Results: What the Students Think about Computers**

When interviewing students the researcher made the setting as informal as possible. Approximately twenty-five informal interviews took place between the researcher and students. Most of the interviews consisted of the researcher stopping by the classroom when seeing students working on the computer and asking questions about what they were doing, why they were doing it and what they liked and disliked about doing it. The open-ended questions on the survey were often repeated to students during the informal interviews with students (Appendix D).

• **Likes** In students' opinions, the positives of working with computers clearly outweighed the negatives. Students most often commented on the "cool" games, the graphics and the ability to create drawings and pictures with the use of the draw and paint programs. The fourth graders commented on the power of using the internet and e-mail. "Communicating with people you don't know is very exciting," said one student. They also liked being able to use the internet as a resource for finding information. Other positive comments for using the computer included being able to do your homework, very educating, typing papers, and the user friendly atmosphere. Students always associated the computer with having fun.

• **Dislikes** Many students reported times of frustration when using the computer. These times included when the computer "freezes," when the
printer doesn’t work or the paper jams, and the time it takes to load a program. Surprisingly, students said that they were upset at the cost of computers because if they were cheaper then maybe they could get one at home.

- **On why there are Computers in the Classroom**  Students felt that there are computers in the classroom so students can learn in a “fun” way. Many responded that students learn a lot from working with machines, like computers, and that computers allowed them to get help and get needed information through the use of software programs and the internet. Computers also allow children to be creative and can bring out writing strengths in students. Students also reported that computers should be in the classroom so that they can be tied into daily activities and so that the class doesn’t have to leave the room to use computers.

- **What should Computers be Used for in School**  Most students stated that computers should be used to help kids learn and become better students. The fourth graders said that the computer should also be used as a communication tool to communicate with the rest of the world. These students believed that the experience of learning and talking with someone from a far away place is one they would never forget. Students also said that computers should be a tool for getting needed information and also should be used for helping students learn difficult things like new words and math facts.

**Interview Results: What the Teachers Think**

The researcher wanted to conduct a study that looked at what students thought not what the teachers thought. The teachers and administration at School 39 were in agreement with this idea and were very excited to take part in this
study. The administration was very supportive because a study like this has never been done before in School 39.

Teachers were very supportive and eager to find out the results of the survey. Many of them wanted to see how their class compared to the rest of their grade level, as well as the rest of the school. The teachers had their own beliefs about how their students would respond in the survey. When these teachers received the data for their classes, many were surprised by the results primarily because they didn’t know exactly what kind of thoughts and background their students had with computers. All teachers, even those whose classes did not participate in the study, were intrigued at just how much computer knowledge and access students did have in grades 4-6. The principal was particularly interested in seeing how student perceptions about computers change as students move from 4th grade to 6th grade. All teachers said that the data collected from this study will help them with their technology decisions in the years to come.
Chapter 5

Purpose

The purpose of this study was to examine students' thoughts and perceptions towards computers. Interviews were conducted with students to allow for interaction between the researcher and the students. Surveys were distributed to students in grades 4-6 to help determine their perceptions. The results of the survey were recorded on various charts and graphs (Appendix E-L).

Conclusions of the Study

This study has shown that the students of School 39 have a strong understanding of computers in school as well as the one(s) they may have at home. According to the findings of the survey, games and recreational usage are the main attraction by students to the computer. However, students also use the computer for many educational purposes. Examples include typing, drawing, internet, e-mail, homework and CD-ROMS.

Results from the survey show a difference in perceptions between grade levels. A wide range of factors can explain this, such as what the students already know (prior knowledge), how often the computer is used in each classroom, and how often it is used outside of the classroom.

The researcher concluded that teachers were unaware that their students were very intelligent and knowledgeable in the use of computers. Teachers assumptions towards students' perceptions proved false from the results of this study. For example, teachers assumed few students ever used a computer outside of school. Results of the survey show that almost 63% of students in grades 4-6 have a computer at home. Eighty percent of those surveyed said they use a
computer at a friend's or relative's house. The accessibility students have to computers outside of school surprised many teachers. Teachers learned of additional resources, the students and their computers, and created opportunities for students to use their computers at home in an educational way. Teachers allowed students to work on reports, practice their keyboarding skills, and work on their reading skills. Teachers and administrators took the results of this study and altered their curriculum to allow for more computer usage during lessons, throughout the school day, as well as at home.

Implications for the School

The school's goal is for students to be life-long learners and be educated in an environment that is rich in hands-on learning materials. Changes in the classrooms needed to take place so School 39 joined the State Systemic Initiative (NYSSI). Materials and resources and hands-on learning kits were brought in and a Math, Science, Technology lab was built as a place for teachers to get materials and supplies. Computers were also brought into the intermediate classrooms as well as software programs to tie into the curriculum. School 39 became a school of inquiry.

In the four years that these materials and computers have been in the classroom, students achievement has increased. In speaking with teachers at School 39, they report an increase in their classes standardized test scores since joining NYSSI. This study supports the premise that students are very knowledgeable and bright in the field of computers.

To be a true inquiry school, the administration needs to allow all teachers the privilege of having a computer in the classroom. All teachers in School 39 are
involved in the transition to inquiry learning, therefore all should have access to computers daily. From the results of this study, teachers in grades 4-6 feel they can now incorporate the computer into their daily activities with much more confidence. The primary teachers should have the same opportunity.

A further implication of this study would be that parents should be more aware of their child's knowledge towards computers. Parents should emphasize to their child the advantages of the computer educationally, like writing, educational CD-ROMS and the use of the internet for research.

**Implications for Research**

Specific investigations into the exact usage of computers by students is encouraged. For example, a survey could be given to determine what CD-ROMS and drawing programs students use, or to see what internet sites are most visited by students, or survey students to see with what subject area the computer best fits. Another suggestion would be to re-survey all students at School 39 to see if there is a difference between students' perceptions in the primary grades vs. those in the intermediate grades. This study could also look into the effects on students of having a computer in the classroom. None of the primary classrooms have access to computers on a daily basis so comparing student perceptions with those who have computers in the classrooms would be interesting.

Another possibility for research is to survey teachers' perceptions. Collecting the teachers' perceptions and comparing them with the students' perceptions might reveal some interesting conclusions. This study might determine that both students and teachers have similar thoughts and feelings.
Summary:

After examining the perceptions students have towards computers, I hope the administrators realize just how powerful a resource a computer is in the classroom. I have the highest respect for what students can do with computers and the knowledge students have about computers can be a solid foundation upon which to build future learning.
References


Appendix
**Mathematics, Science, and Technology**

**Appendix A**

**Standard 5:** Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.

<table>
<thead>
<tr>
<th>Elementary</th>
<th>Intermediate</th>
<th>Commencement</th>
</tr>
</thead>
<tbody>
<tr>
<td>• engage in technological design as in Standard 1.</td>
<td>• engage in technological design as in Standard 1.</td>
<td>• engage in technological design as in Standard 1.</td>
</tr>
<tr>
<td>• use a variety of materials and energy sources to design and construct things</td>
<td>• choose resources for a particular purpose based on their properties, costs, availability, and environmental impact</td>
<td>• test, use, and describe the attributes of a range of material, information, and energy resources</td>
</tr>
<tr>
<td>• understand the importance of safety, cost, ease of use, and availability in selecting tools and resources for a specific purpose</td>
<td>• use a variety of hand tools and machines</td>
<td>• select appropriate tools, instruments, and equipment and use them correctly to process materials, energy, and information</td>
</tr>
<tr>
<td>• develop basic skills in the use of hand tools</td>
<td>• produce, market, and distribute a product.</td>
<td>• describe and model methods (including computer-based methods) to control system processes and monitor system outputs.</td>
</tr>
<tr>
<td>• use simple manufacturing processes (e.g., assembly, multiple stages of production, quality control) to produce a product.</td>
<td>• assemble a complete computer system</td>
<td>• understand basic computer architecture and describe the function of computer subsystems</td>
</tr>
<tr>
<td>• use appropriate graphic and electronic tools and techniques to process information.</td>
<td>• use a computer system to acquire information from the Internet</td>
<td>• attach and use a computer modem</td>
</tr>
<tr>
<td>• identify and describe the function of the major components of a computer system</td>
<td>• use computer hardware and software to create prototypical designs and models</td>
<td>• use computer-aided drawing and design (CADD) software to model realistic solutions to design problems</td>
</tr>
<tr>
<td>• use the computer as a tool for generating and drawing ideas</td>
<td>• use a computer system to monitor and control external events and/or systems.</td>
<td>• understand computer programming and write some computer programs.</td>
</tr>
<tr>
<td>• control computerized devices and systems through programming.</td>
<td>• assemble, operate, and explain the operation of simple open- and closed-loop electrical, electronic, mechanical, and pneumatic systems</td>
<td>• model, explain, and analyze the performance of a feedback control system</td>
</tr>
<tr>
<td>• assemble and operate simple technological systems, including those with interconnected mechanisms to achieve different kinds of movement</td>
<td>• describe how subsystems and system elements (inputs, processes, outputs) interact within systems.</td>
<td>• explain how complex technological systems involve the confluence of numerous other systems.</td>
</tr>
<tr>
<td>• understand that larger systems are made up of smaller component subsystems.</td>
<td>• understand how the evolution of technology led to the shift in society from an agricultural base to an industrial base to an information base</td>
<td>• explain the effects of technological inventions.</td>
</tr>
<tr>
<td>• identify technological developments that have significantly accelerated human progress.</td>
<td>• describe how outputs of a technological system can be desired, undesired, expected, or unexpected</td>
<td>• recognize how humans control the development and implementation of technology</td>
</tr>
<tr>
<td>• describe how technology can have positive and negative effects on the environment and on the way people live and work.</td>
<td>• describe through examples how modern technology reduces manufacturing and construction costs and produces more uniform products.</td>
<td>• explain how computers and automation have changed the nature of work.</td>
</tr>
</tbody>
</table>

**MST 5**
COMPUTER EDUCATION OBJECTIVES

Grades 3-5

GENERAL

1. Exercises proper care and usage of available hardware and software (e.g., uses diskette properly, handles by label).

2. Exercises safe work habits when using the computer system.

3. Demonstrates progressive mastery of selected software programs.

4. Uses problem-solving software appropriate to grade level to enhance critical thinking skills.

5. Demonstrates the ability to work cooperatively with partners on computer tasks.

6. Uses the computer as a tool to enhance and reinforce learning in curricular areas.

7. Values the computer as a productivity tool.

Approved May 1991
Definitions of Strands

The Computer Objectives for Grades 3-5 include 11 key strands:

Proper Care and Usage: To help students learn the proper care and use of computer hardware and software.

Keyboarding: Use of proper posture and fingering techniques to facilitate data entry.

Graphic Applications: To help students use the computer to visualize information through pictures, charts, and graphs.

Computer Terminology: To help students learn the terms associated with computer hardware and software.

Wordprocessing: To help students build a foundation for the computer as a tool to complement and enhance language skills in content areas.

Subject Area Software: To help students use computer software to reinforce, and enrich all content areas.

Social Implications: To help students learn rights, rules, and responsibilities of a citizen in a technology-based society.

Problem Solving: To help students develop, reinforce, and practice thinking skills. Problem solving also includes using the computer to solve everyday problems.

Communication Links: To help students learn about the exchange of information between multiple systems via communication links.

Careers: To help students recognize and explore computer applications in various careers.

Data Base: This strand compliments and enhances data entry and retrieval in a content area.

In addition, 3 strands will be included beginning in Middle School Technology.

System Concept: To provide students with an understanding of the structure, function, components, and control of technological systems.

History: Evolution and development of today's computer systems and software.

Spreadsheets: Complement and enhance content areas that require numerical calculations.

Approved May 1991
Date:

This survey is asking you for your thoughts and feelings about COMPUTERS. Remember that this survey is completely voluntary and you can stop at any time. If there is a question you feel that is inappropriate do not answer it. You are not timed and there are NO right or wrong answers.

Sex: (circle one)

Male  Female

Grade: (circle one)  4  5  6

Age:  8  9  10  11  12  13

Do you have a computer in your home?  Yes  No

If yes, what do you use your computer for? (circle all that apply)

- games
- internet
- e-mail
- typing
- drawing
- homework
- reports
- other __________________________

Who do you use the computer with? (circle all that apply)

- parents
- brother(s)
- sister(s)
- alone
- friends

Do you ever use a computer at a friend’s or relative’s house?  Yes  No

If yes, what for? (circle all that apply)

- games
- internet
- e-mail
- typing
- drawing
- homework
- reports
- other __________________________

About how many hours a week do you use a computer outside of school?

- Never
- 1-2 hours a week
- 3-5 hours a week
- 6-9 hours a week
- 10-12 hours a week
- more than 12 hours a week
Do you use the computer in school (computech and the classroom)?  Yes  No
If yes, what for? (circle all that apply)
games  internet  e-mail  typing  drawing
homework  reports  other

About how many hours a week do you use the computer in school?

_____ Never
_____ 1-2 hours a week
_____ 3-5 hours a week
_____ 6-9 hours a week
_____ 10-12 hours a week
_____ more than 12 hours a week

Open-Ended Questions

What do you like about computers?

What do you dislike about computers?

Why do you think there are computers in the classroom?

What do you think computers should be used for in school?
Typical Interview Questions

1. What are you doing on the computer now?
2. What are you trying to accomplish?
3. What do you like about using a computer?
4. What do you dislike about using the computer?
5. Who do you usually use the computer with?
6. Do you have one at home?
   If yes, what do you use it for?
7. Why do you think there are computers in the classrooms?
8. What do you think computers should be used for in schools?
9. What have you learned about computers so far this year?
10. Which subject (math, science, reading) do you think best goes along with using the computer?
   Why?
4th Grade Population Surveyed

Female (59.2%)

Male (40.8%)
5th Grade Population Surveyed

Male (44.8%)

Female (55.2%)
6th Grade Population Surveyed

Female (44.4%)

Male (55.6%)
Population Surveyed

Male (44.8%)  
Female (55.2%)
Computer Usage 4th Grade
By Location

At Home: 63.8%
At Friends or Relatives: 85.7%
At School: 100.0%

Series 1
Computer Usage-5th Grade

By Location

Percentage

At Home 70.7%
At Friends or Relatives 74.1%
At School 96.6%

Location

Series 1
Computer Usage-6th Grade
By Location

Percentage

0.0%  10.0%  20.0%  30.0%  40.0%  50.0%  60.0%  70.0%  80.0%  90.0%  100.0%

At Home  At Friends or Relatives  At School

Location

Series 1

97.8%
80.0%
51.1%
Appendix F

Computer Usage-Intermediate Grades
By Location

- At Home: 62.5%
- At Friends or Relatives: 79.6%
- At School: 98.0%

Percentage

Location
- Series 1
4th Grade Usage of Computers

At Home

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Games</td>
<td>55.1%</td>
</tr>
<tr>
<td>Internet</td>
<td>8.2%</td>
</tr>
<tr>
<td>E-mail</td>
<td>10.2%</td>
</tr>
<tr>
<td>Typing</td>
<td>42.9%</td>
</tr>
<tr>
<td>Drawing</td>
<td>24.5%</td>
</tr>
<tr>
<td>Homework</td>
<td>38.8%</td>
</tr>
<tr>
<td>Reports</td>
<td>16.3%</td>
</tr>
</tbody>
</table>
5th Grade Usage of Computers

At Home

- Games: 62.1%
- Internet: 17.2%
- E-mail: 6.9%
- Typing: 44.8%
- Drawing: 41.4%
- Homework: 39.7%
- Reports: 31.0%
- Math: 5.2%
- Science: 1.7%
- Social Studies: 1.7%
- Cards: 0.0%
- Music: 1.7%
- Writing: 0.0%
- CD-ROMs: 3.4%
- Phone Book: 1.7%
6th Grade Usage of Computers

At Home

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Games</td>
<td>46.7%</td>
</tr>
<tr>
<td>Internet</td>
<td>24.4%</td>
</tr>
<tr>
<td>E-mail</td>
<td>11.1%</td>
</tr>
<tr>
<td>Typing</td>
<td>44.4%</td>
</tr>
<tr>
<td>Drawing</td>
<td>4.4%</td>
</tr>
<tr>
<td>Homework</td>
<td>20.0%</td>
</tr>
<tr>
<td>Reports</td>
<td>33.3%</td>
</tr>
<tr>
<td>Math</td>
<td>4.4%</td>
</tr>
<tr>
<td>Science</td>
<td>0.0%</td>
</tr>
<tr>
<td>Social Stu</td>
<td>0.0%</td>
</tr>
<tr>
<td>Cards</td>
<td>0.0%</td>
</tr>
<tr>
<td>Music</td>
<td>0.0%</td>
</tr>
<tr>
<td>Writing</td>
<td>6.7%</td>
</tr>
<tr>
<td>CD-Roms</td>
<td>2.2%</td>
</tr>
</tbody>
</table>
Overall Usage of Computers

At Home

Percentage Used

Category

Games 55.3%
Internet 16.4%
E-mail 9.2%
Typing 44.1%
Drawing 25.0%
Homework 33.6%
Reports 27.0%
Math 3.3%
Science 0.7%
Social Studies 0.7%
Cards 0.7%
Music 0.7%
Writing 2.6%
CD-ROMs 2.6%
Phone Books 0.7%
Hours a Week Use Computer-4th Grade

Outside of School

- 40.8% for 1-2 hours
- 32.7% for 3-5 hours
- 6.1% for 6-9 hours
- 4.1% for 10-12 hours
- 2.0% for more than 12 hours
Hours a Week Use Computer-5th Grade

Outside of School

Percentage

Range

- Never
- 1-2 hours
- 3-5 hours
- 6-9 hours
- 10-12 hours
- more than 12 hours

- 0.0%
- 34.5%
- 37.9%
- 15.5%
- 1.7%
- 0.0%

Series 1
Appendix H

Hours a Week Use Computer-6th Grade

Outside of School

Percentage

Range

Never 1-2 hours 3-5 hours 6-9 hours 10-12 hours more than 12 hours a week

- Series 1

42.2% 20.0% 6.7% 0.0% 11.1%
Hours a Week Use Computer-Int. Grades

Outside of School

Percentage

Range

- Never
- 1-2 hours
- 3-5 hours
- 6-9 hours
- 10-12 hours
- more than 12 hours

38.8%
30.9%
9.9%
2.0%
3.9%
4th Grade Usage of Computers
At Friends or Relatives

- Games: 75.5%
- Internet: 14.3%
- E-mail: 8.2%
- Typing: 49.0%
- Drawing: 38.8%
- Homework: 26.5%
- Reports: 20.4%
- Writing: 2.0%
4th Grade Usage of Computers

At Friends or Relatives

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Games</td>
<td>75.5%</td>
</tr>
<tr>
<td>Internet</td>
<td>14.3%</td>
</tr>
<tr>
<td>E-mail</td>
<td>8.2%</td>
</tr>
<tr>
<td>Typing</td>
<td>49.0%</td>
</tr>
<tr>
<td>Drawing</td>
<td>38.8%</td>
</tr>
<tr>
<td>Homework</td>
<td>26.5%</td>
</tr>
<tr>
<td>Reports</td>
<td>20.4%</td>
</tr>
<tr>
<td>Writing</td>
<td>2.0%</td>
</tr>
</tbody>
</table>
5th Grade Usage of Computers

At Friends or Relatives

Percentage

Games 65.5%
Internet 29.3%
E-mail 19.0%
Typing 29.3%
Drawing 43.1%
Homework 25.9%
Reports 15.5%
Math 3.4%
Science 1.7%
Social Stu 1.7%
CD-Roms 3.4%
6th Grade Usage of Computers

At Friends or Relatives

Appendix I
Grades 4-6 Usage of Computer

At Friends or Relatives

Percentage

0.0% 10.0% 20.0% 30.0% 40.0% 50.0% 60.0% 70.0% 80.0%

Games 71.1% Internet 21.7% E-mail 12.5% Typing 38.8% Drawing 29.6% Homework 25.7% Reports 21.1% Writing 1.3% CD-Roms 2.6% Math 1.3% Science 0.7% Social St 0.7%

Category
Who Students Use the Computer With

4th Grade

- Parents (28.6%)
- Aunt (4.1%)
- Brother(s) (20.4%)
- Sister(s) (12.2%)
- Alone (46.9%)
Who Students Use the Computer With

5th Grade

- Parents: 43.1%
- Alone: 53.4%
- Brother(s): 17.2%
- Sister(s): 27.6%
- Cousin(s): 1.7%
Who Students Use the Computer With

6th Grade

- Parents (33.3%)
- Cousin(s) (4.4%)
- Brother(s) (22.2%)
- Sister(s) (15.6%)
- Alone (44.4%)
Who Students Use the Computer With

Intermediate Grades

- Parents (35.5%)
- Alone (48.7%)
- Cousin(s) (2.0%)
- Brother(s) (19.7%)
- Aunt (1.3%)
- Sister(s) (19.1%)
Grade 4 Usage of Computer

In School

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>100.0%</td>
</tr>
<tr>
<td>Games</td>
<td>98.0%</td>
</tr>
<tr>
<td>Internet</td>
<td>28.6%</td>
</tr>
<tr>
<td>E-mail</td>
<td>14.3%</td>
</tr>
<tr>
<td>Typing</td>
<td>59.2%</td>
</tr>
<tr>
<td>Drawing</td>
<td>59.2%</td>
</tr>
<tr>
<td>Homework</td>
<td>32.7%</td>
</tr>
<tr>
<td>Reports</td>
<td>2.0%</td>
</tr>
<tr>
<td>Make C</td>
<td>2.0%</td>
</tr>
<tr>
<td>Writing</td>
<td>2.0%</td>
</tr>
<tr>
<td>CD-Roms</td>
<td>2.0%</td>
</tr>
</tbody>
</table>
Grade 5 Usage of Computer

In School

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>96.6%</td>
</tr>
<tr>
<td>Games</td>
<td>96.6%</td>
</tr>
<tr>
<td>Internet</td>
<td>17.2%</td>
</tr>
<tr>
<td>E-mail</td>
<td>19.0%</td>
</tr>
<tr>
<td>Typing</td>
<td>53.4%</td>
</tr>
<tr>
<td>Drawing</td>
<td>65.5%</td>
</tr>
<tr>
<td>Homework</td>
<td>12.1%</td>
</tr>
<tr>
<td>Reports</td>
<td>32.8%</td>
</tr>
<tr>
<td>Making Car</td>
<td>1.7%</td>
</tr>
<tr>
<td>Writing</td>
<td>3.4%</td>
</tr>
</tbody>
</table>
Grade 6 Usage of Computer

In School

- Games: 97.8%
- Internet: 2.2%
- E-mail: 2.2%
- Typing: 71.1%
- Drawing: 15.6%
- Homework: 33.3%
- Reports: 33.3%
- CD-Roms: 11.1%
- Yes: 97.8%

Category

Percentage
Appendix K

Intermediate Grades Usage of Computer

In School

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>98.0%</td>
</tr>
<tr>
<td>Games</td>
<td>97.4%</td>
</tr>
<tr>
<td>Internet</td>
<td>16.4%</td>
</tr>
<tr>
<td>E-mail</td>
<td>12.5%</td>
</tr>
<tr>
<td>Typing</td>
<td>60.5%</td>
</tr>
<tr>
<td>Drawing</td>
<td>48.7%</td>
</tr>
<tr>
<td>Homework</td>
<td>17.8%</td>
</tr>
<tr>
<td>Reports</td>
<td>32.9%</td>
</tr>
<tr>
<td>CD-Roms</td>
<td>3.9%</td>
</tr>
<tr>
<td>Making C</td>
<td>1.3%</td>
</tr>
<tr>
<td>Writing</td>
<td>2.0%</td>
</tr>
</tbody>
</table>
Hours a Week 4th Graders Use Computer

In School

Percentage

Range of Hours

- Series 1
Hours a Week 5th Graders Use Computer

In School

Percentage

Range of Hours

- Never
- 1-2 hours
- 3-5 hours
- 10-12 hours
- more than 12 hours a week

Series 1
Hours a Week 6th Graders Use Computer

In School

<table>
<thead>
<tr>
<th>Range of Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>20.0%</td>
</tr>
<tr>
<td>1-2 hours</td>
<td>13.3%</td>
</tr>
<tr>
<td>3-5 hours</td>
<td>0.0%</td>
</tr>
<tr>
<td>6-9 hours</td>
<td>4.4%</td>
</tr>
<tr>
<td>10-12 hours</td>
<td>2.2%</td>
</tr>
<tr>
<td>more than 12 hours</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Series 1

73.3%
Int. Grades Usage of Computers

Hours a Week In School

Percentage

Range of Hours

Never 1-2 hours 3-5 hours 6-9 hours 10-12 hours more than 12 hours

81.6% 9.2% 1.3% 0.0% 0.0%

Series 1