AN ANALYSIS OF STUDENTS' ATTITUDES TOWARD THE USE OF COMPUTER-BASED MULTIMEDIA INSTRUCTION IN LEARNING SELECTED UNITED STATES HISTORY CONCEPTS

MASTER'S THESIS

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by

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DEDICATION

To my wife, Lisa, thanks for always being there throughout the duration of this project, your support, loyalty, proof reading, and advice. I could never have come this far without your devotion. Thank you.

Chapter I

INTRODUCTION

Purpose for the Study

Today's society is engrossed in visual excitement. Children are exposed to this genre through television, music television, movies, and/or on the computer screen. Multimedia captivates young audiences. Each and every form of media today can use the computer to enhance its written, audio, and visual effects. Children learn from this fast paced bombardment in the electronic form, e.g., information from the desktop shown on an LCD panel, CD ROM video clips, tutorial programs, Laser Discs, etc. Because of television and movie trends, people are becoming more visual learners (Pence, 1996). Research shows that visual stimuli is considered to be superior to verbal stimuli in children's retention and recall: learners recall more information when responding in pictorial form than in verbal form (Suttan & Jones, 1995). In 1990, Howe and Vasu concluded that if two different types of sensory input were used, retention was greater than if only one type of input was used by itself (Beichner, 1994). Computer-generated multimedia effects combined with lecture is just one combination of two different types of sensory input. Some multimedia programs themselves can offer more than one type of sensory input. Education is now beginning to adapt itself to reach this generation that has been raised and is accustomed to seeing dazzling visual effects (Pence, 1996). Classrooms in the state of Ohio and across the country are now being hooked up to the Internet to accommodate these students to the mass information age as an early step to help educate Ohio's youth and accommodate different learning styles. The Internet is being used to download information in classrooms for pictures, sounds, video clips, text, and data to help enhance classrooms across the United States and throughout the world.

The computer is now being used to help reach this visual learning generation with the use of multimedia computer programs that can excite and motivate learners. Multimedia is a combination of text, pictures, and sounds in the digital form (Pence, 1996). Computer programs can show visual concepts that teachers are trying to teach to their students. These programs can add sound effects, movies, simulations, animations, and other audiovisual material to help increase the effectiveness of the presentation.

While reviewing the literature, the researcher has discovered that many computer studies focused on mathematics and the science curriculum. Mathematics and science have been the main focuses in education since the 1950's (Sadker, M.P. & D.M. Sadker,1991). The "Cold War" and the "Space Race" increased the need for scientists and engineers. The United States government became increasingly concerned with America's youth being able to defend the nation after Sputnik was launched by the Soviet Union (Sadker, M.P. & D.M. Sadker,1991). Computer programs have been used to help explain these abstract concepts that both disciplines require students to learn. For example, students can use graphing calculators to graph information in math and/or science to help them better understand an experiment, analysis, or unit of measurement that may otherwise seem abstract.

The social studies curriculum also has concepts that are very difficult for students to learn. Social studies is a content-driven subject, in which students must make a connection with the past in order to understand the present. Students in the social studies curriculum are instructed to make connections with events and people that may have existed hundreds of years before that student was born. Some students may have difficulty understanding the events that the instructor is trying to teach. The computer(s) can help illustrate these events through images, sounds, and text to help to help reach today's visually stimulated student. With the aid of the computer,

students can take a tour of the White House, travel the Oregon Trail, discover how a bill becomes a law, visit the Swiss Alps, see the battle plans for Gettysburg, and much more. Multimedia programs can make concepts seem real (Pence, 1996). They can also reinforce the main idea of what an educator is explaining to his/her students. Multimedia images can be another medium in which teachers use to help educate today's visually stimulated learner.

Research Question

What are the opinions of eighth grade United States history students when they are exposed to computer based multimedia instruction in learning selected history concepts? Do males and females have different attitudes towards computer based multimedia instruction in learning selected United States history concepts? Do students have different attitudes towards computer based multimedia instruction in learning selected United States history concepts if they have access to a computer at home?

Do eighth grade United States history students feel they learn when they are taught by using computer based multimedia instruction in learning selected history concepts?

Assumptions

This study used a Likert-type survey to gather data regarding eighth grade United States History students' attitudes about computer based multimedia instruction. It was assumed that the instrument, constructed to measure opinions and attitudes of eighth grade students, is based upon educational research findings. Also, it was assumed that the subjects chosen to complete this study answered the questions in ways that reflected their opinion about computer based multimedia instruction in the classroom. Finally, it was assumed that the day the questionnaire was distributed, the students that were present were a representation of the entire eighth grade class.

Limitations

This study had several limitations. First, the sample of students was limited to eighth grade United States History students who were taking the researcher's course at the time of the study. Second, the subjects may have had limited access to a computer and may not fully understand the usage of the computer. Third, the students may not have a computer at home and feel that their computing skills and knowledge about computers are not adequate and they may feel uncomfortable using a computer. Fourth, the sample of students may have had negative experiences when using a computer prior to this study. Because a student may have had negative feelings about computers in previous experiences, they may feel as if they can not learn from any computer experience without really trying. Finally, a limitation of this study was the limited amount of literature on the usage of computers in the social studies curriculum.

Definition of Terms

Attitude. An attitude is a student's positive or negative feeling towards a topic (Eben, 1996).

Audiovisual Material. Audiovisual material is the combination of sound and visuals to help enhance learning (Sharp, 1996).

Computer Based Instruction. Computer based instruction is the use of the computer in support of instruction (Merrill et al., 1996).

Gender Equity. Gender equity is the extent to which males and females are   treated equally by a teacher (Teh & Fraser, 1995).

Definition of Terms

LCD Panel. It is a projection device that enlarges images on a computer monitor and makes it visible to an entire class by projecting images from the computer onto a wall screen (Sharp, 1996).

Multimedia. It is a combination of text, pictures, and sounds in the digital form. Multimedia can also add movie clips, simulations, animations, and other audiovisual material to help enhance the topic being taught (Pence, 1995).

Text. Text are letters or words that appear on a computer screen (Pence, 1995).

Videodisc. A videodisc is a round disc that has information stored on it with a laser beam, and it can not be altered. Videodiscs can store large amounts of information. It can have pictures, sounds, texts, motion pictures, and animation stored on it (Sharp, 1996).

CHAPTER II

REVIEW OF THE RELATED LITERATURE

Uses of Computer Based Multimedia Instruction

Multimedia is a combination of text, pictures, movies, and sounds that are available in the digital form (Pence, 1996). Multimedia presentations or programs can integrate movies, simulations, animations, sounds, and other audiovisual material. The purpose of using this type of format to teach is to capture the generation of students who are visually stimulated (Pence, 1996). Information presented in computerized form through pictures, sound effects, and text can reach a variety of students' learning styles as well as entertain them as they learn.

Multimedia can integrate movies, simulations, animations, sound, and other audiovisual material (Pence, 1996). This medium can also incorporate devices such as video cameras, videodisc players, CD-ROM, tape recorders, VCR tapes, musical keyboards, audio digitizers, and a scanner to produce a finished multimedia product (Sharp, 1996). Any one of these components can be used in combination to create a multimedia presentation. This type of presentation can be shown on a television, computer screen, and an overhead projector through the use of an LCD panel. A multimedia presentation can be shown to a small group for individualized instruction or to a large audience for group instruction. Elementary educators primarily use multimedia computer presentations for drill and practice (Pelgrum & Plomp, 1993). This allows the students to use these presentations to practice their multiplication facts, spelling words, and to review their states and capitals. Elementary teachers can also use the computer to allow students to review previously learned material and to

sharpen their cognitive skills. Secondary level educators use multimedia computer presentations in many different ways. It has been used to express student ideas, record and analyze information, and present new information.

The use of a multimedia presentation is a form of Computer Based Instruction (CBI). In CBI a teacher uses the computer to help support the educational process. CBI is sometimes referred to as computer assisted instruction (CAI) (Merrill, et al., 1996). These multimedia presentations can be used in a variety of ways to teach students, and help support the teacher in presenting information. These presentations often focus upon intellectual skills, cognitive skills, verbal information, and problem solving. Examples of these types of presentations can be students analyzing data using a graphing calculator, using Hyperstudio to explain an amendment to the Constitution and the rights that Amendment provides, and presenting other information using a computer. Educators at many different levels have used multimedia presentations to teach their students new information as well as review previously learned material (Pence, 1996).

Student Achievement when Using Computer Based Instruction

The two reasons CBI has been used in education is an attempt to try and increase student achievement and to stimulate student interest. Weiner, (1994) conducted a study to measure sixth grade middle school students' abilities on achievement tests in social studies after using Computer Based Instruction. He targeted a total of eight students, four males and four females, with varying levels of performance. A standardized pretest was given to the subjects. Results indicated that 50 % of the subjects did not have the abilities to be successful in a sixth grade social studies classroom. He then devised a plan to help increase the subjects' vocabulary,

recall of information, and the interpretation of maps through the use of multimedia programs. The subjects would meet three times a week for 50 minutes over a 12 week period. They would be instructed as individuals, as paired groups, and as a whole group.

Weiner used a CD-ROM automated card catalog system, CD-Rom encyclopedia, and word processing software/hardware. The students would be measured by a teacher generated pretest and posttest (Weiner, 1994).

Weiner concluded that success through the use of this program was attained by 75 % of the subjects in the area of vocabulary on a teacher-made pretest and posttest. This group increased their individual scores by 40 %. Their second objective, recalling information, was also successful. In this area, 75 % of all students increased their scores by 30 % on a teacher-made pretest and posttest. The third objective, increasing map skills, also helped increase student achievement scores by 75%. Of the total number of students in this study, 40 % increased their individual scores from the pretest and posttest. Weiner concluded that multimedia instructional technology helped increase student achievement.

Similar results have been found in various studies concerning multimedia instruction and increasing student achievement. In 1993, Clements and Nastasi stated that computers can help raise mathematics achievement scores for preschoolers and primary grade children (Weiner, 1994).

In 1992, Higgins and Boone adapted a social studies textbook to a hypermedia format. They wanted to increase the quality of instruction time, promote a change in which the way their subject was taught, and decrease the demand for individualized teacher instruction. The control group only received traditional classroom lecture. The experimental group used classroom lecture and computerized instruction. Higgins and Boone concluded that student achievement increases with a combination of

lecture and computerized instruction on social studies tests and quizzes, in comparison to groups that received only a lecture or just used computerized instruction (Weiner, 1994).

In 1986, Marsh examined a group of 30 college prep students. He wanted to study the effects of CAI on student achievement scores. An experimental and a control group were created to determine if computerized instruction had an effect on student achievement scores compared to that of regular teaching methods in social studies. The experimental group used only computer-assisted instruction. The control group received traditional social studies instruction. The results of Marsh's study concluded that computer assisted instruction was as effective, and at times, better than traditional teaching methods (Weiner, 1994).

In 1990, Howe and Vasu studied recall and retention when using verbal and visual stimuli to better understand which method influenced student retention more strongly. Generally, visual stimuli has been found to be superior to verbal stimuli in a child's retention and recall of information. Student retention is also higher when two different modes of sensory input lead to greater retention and recall of information (Beichner, 1994). Computer-based multimedia instruction often offers two or more different modes of sensory input e.g., Hyperstudio. It can also use digital pictures and animation to help stimulate the visual learner.

In 1983, Bradley conducted a study of high school students studying United States history using computer assisted instruction. He used the computer to help assist his instruction in class. Bradley used a standardized pretest and posttest to assesses student achievement. He concluded that student achievement was better with the group using computer-assisted instruction compared to a control group that received only traditional instruction. He also noted that the attitudes of the two groups were not different after the use of computer-assisted instruction (Ehman & Glenn,

1987).

In 1994, Rock and Cummings conducted a study of fifteen schools of different ethnic, socioeconomic status, and grade levels to see if videodiscs could improve student outcomes in science. The students who participated in this study ranged from first to twelfth graders. The schools that were involved in this study were from urban, suburban, rural areas, and from eight different states.   All 15 schools collected their data by using standardized tests. Scores were compared with schools that were not using videodisc instruction with similar characteristics.   Comparisons were made after the first semester of instruction. The students were taught with videodisc now had no significant standardized score difference between the scores of the two groups. This was interesting because the groups using the videodisc were of lower achievement and socioeconomic status, and the high achieving group was taught by traditional teaching methods. The results illustrated that lower achieving students' scores increased after using videodiscs in science, and that their rate of growth in achievement was better than that of the high achieving group. Also, positive changes in student achievement had a direct relationship in students' attitudes toward videodisc instruction.   The researchers concluded that videodisc can improve student outcomes (Rock & Cummings, 1994).

In 1977, Hartley used a meta-analysis on computer based instruction that focused of mathematics education in elementary and secondary schools. This analysis reported that the effect of computer based instruction in mathematics raised student achievement scores 16 percent. She also concluded in her study that elementary students did better than secondary students with computer-based instruction (Kulik, Bangert, & Williams, 1983).

In 1983, Kulik, Bangert,and Williams conducted a meta-analysis of 51 evaluations of computer based teaching in grades six through twelve. They examined

five variables in their study: drill and practice, tutoring, computer-managed teaching, simulations, and programming the computer to solve problems. They concluded that in 39 of the 48 studies, classes that used computer based instruction had better examination scores. These results were obtained from the students' final examination scores. A total of 23 studies favored computer based instruction, and only two favored traditional teaching methods (Kulik, Bangert, & Williams, 1983).

Advantages of Computer Based Multimedia Instruction

Computers are seen as having the potential to become the single most important instrument of change in education in the twentieth century (Collins & Anderson, 1994). Computers have the power to reach students with many different learning styles and interests (Janda, 1992). Multimedia is seen by teachers as a way to reach today's television oriented generation (Janda, 1992). The visuals and sounds that multimedia computers generate are lively, dynamic, and interesting, just like television, music videos, movie special effects, and computer games (Peterson, 1990). Today's learner has grown accustomed to these types of effects through many different forms of media to which they are exposed. The majority of the top movies released by Hollywood have many special effects. Also, music videos and computer games have capitalized on these effects to capture their audiences. Education is now beginning to emulate what the movie, television, and video game industry by incorporating these same effects into multimedia programs that help students learn. This is done by adding these effects to help captivate its audience much like movies and television. At the same time, these programs are entertaining students as they learn. Multimedia programs make students feel like Hollywood has entered the classroom (Peterson, 1990).

At a recent Ohio Education Association (OEA) convention in Columbus, Ohio, David Pearce Snyder stated that about 30 % of the population are visual learners (Ohio Schools, 1997). Multimedia computers help deliver instruction in many different forms including visual, audio, and hands on. Therefore, it affects a wider array of learners. The multimedia computer also allows a learner to be exposed to a variety of textual, graphic, audio, video, photographic, or information (Sultan & Jones, 1995). Since many of these programs have these features, many students' learning styles can be reached, and at the same time, they are being entertained (Peterson, 1990). Different students have unique learning styles. Some students are visual learners, auditory learners, and some are multisensory learners. Because multimedia computer programs use text, pictures, sounds, animation, movie clips, and simulation, these programs can better reach students compared to traditional teaching methods such as lecturing (Sultan & Jones, 1995).

Multimedia computer programs can also provide an in-depth analysis of a subject and subject areas (Collins & Anderson, 1994). The computer has memory capabilities, vast amounts of pictures, text, maps, graphics, audio, and video of an actual event can be recorded on a CD-ROM. Therefore, these specific events can be accessed by a student for individual information, or it can be used for a large group presentation.

Interactive multimedia programs provide the highest level of activity for students (Kissier, et al., 1994). They allow the student to be more involved in the learning process. These programs seem to be the best programs with students who have limited computer experiences. Kissier also found in his study that the more interaction the students had with multimedia experiences the more positive their attitudes were. Computer based instruction produces a thought provoking environment that negates passive learning (Weiner, 1994).

Multimedia programs demonstrate through the use of movies, animation, and other visuals, that information on a certain subject is dynamic rather than static (Pence, 1996). The factors that make multimedia dynamic can prove events happened, and makes the concept seem real. These images are a powerful teaching tool, and this realism will help students accept that events and concepts are fact, rather than taking the teacher's explanation of the event as fact (Pence, 1996).

Students who use visual multimedia programs can make connections with people, places, and events (Swan, 1994). This can often be a difficult task for a student to comprehend. History can often be a complex web of relationships over time (Swan, 1994). Multimedia programs can show these relationships and help students make sense of the topic they are discussing. Text can not compete with the videos that multimedia programs show to help illustrate these relationships to students. Swan studied students' thinking which showed relationships between historical people and events when using a multimedia program. She studied a combined seventh and eighth grade class which was all white in rural Vermont. She wanted to determine if they could make connections with the Civil Rights movement. Swan concluded that students used the visuals from the multimedia program to make connections with people, places, and events. When students saw the visuals, they could verbally discuss what they had seen (Swan, 1994).

Another feature of multimedia programs is that they can show a single frame of information at a time as well as an instant replay of that same frame (Pence, 1996). This allows for the teacher and student to move as quickly or as slowly as he or she may need. Students can also review the material on an individual basis at their own pace. A student may have to go back to a previous screen and get some information that may have been missed. Most multimedia programs make it very easy for a student to go back and retrieve the previously shown material.

The main function of a multimedia program is to show instruction which accommodates a diversity of learning. A student who has received instruction from a multimedia computer program is exposed to a variety of textual, graphical, audio, video, photographic, or animated information. A student who receives traditional instruction is less likely to have been exposed to such a multitude of diverse learning strategies (Sultan & Jones, 1995).

Students' Attitudes Toward Computer Based Multimedia Instruction

Students' attitudes about the uses of computer based multimedia instruction are important when it comes to evaluating the success of this medium. The student is an expert in the area of their individualized learning techniques. Many educators believe that the computer was supposed to revolutionize education, but what do the experts think? What are the students' opinions about computer based multimedia instruction?

In 1996, Pence conducted a study of 60-100 college general chemistry students. He used a Powerpoint multimedia program along with lecture, overheads, and handouts to teach his class. Students remarked in a survey that the information seemed dynamic rather than static. Pence's survey also asked the students if they felt that this was a better way of presenting the material rather than just using overheads. Remarkably, 73 % strongly agreed, 16 % agreed, seven percent were neutral, four percent disagreed, and none strongly disagreed. When the students were asked what their opinion was about delayed classes because of a technological malfunction, which occurred three or four times, very few students complained. Many of the students commented that waiting for the multimedia presentation was well worth the wait. Some students also commented that the video images are almost as memorable as a live demonstration (Pence, 1996).

In 1983, Kulik, Bangert, and Williams did a meta-analysis of 51 independent evaluations of computer based teaching in grades six through twelve. Ten of the 51 studies, examined students' attitudes toward the subject studies and the uses of computer-based instruction. They reported that students had a more positive attitude in a subject when they used computer-based instruction. Students examined in the same meta analysis, gave a more favorable rating to other classes that used computer-based instruction (Kulik, Bangert, & Williams, 1983). In a review of these studies, Bangert-Drowns, J. Kulik, and C. Kulik stated that this is not the case in reviewing the previous study. They reviewed five simulation studies and found that there was no effect when studying the effects of simulation treatments. None of these five studies were in the social studies content area (Ehman & Glenn, 1987).

Eighth and ninth grade students felt that computer-based instruction helped increase their knowledge after studying three social studies topics in a study conducted by Way (1984). These students were reading maps, interpreting graphs, and using reference information. This study explained that visual information, when taught using computer based instruction, gave students positive attitudes (Sultan & Jones, 1995).

Sometimes success and learning stems from the fact of how motivated a person is to learn. As a result of a study done by Yang in 1992, students exhibit high levels of motivation and a positive attitude when they were exposed to computer multimedia instruction (Sultan & Jones, 1995). In 1991, Rieber conducted a study on computer animation. He wanted to determine if students were intrinsically motivated over time by these animations. Rieber concluded that students were intrinsically motivated to return to a learning task when computer animated visuals were used (Sultan & Jones, 1995).

Sultan and Jones conducted a study that was similar in one aspect of Rieber's

study. Sultan and Jones wanted see if students were intrinsically motivated to learn from computer-animated graphics. They studied 70 fourth graders that were being taught Newton's Laws of Motion. The subjects were exposed to two basic types of visual presentations: static graphics and animated graphics. Their study also found similar results to Rieber's study. Sultan and Jones results' showed that students chose to return to computer-animated graphics on their own free will. They also agreed with Rieber that computer animated graphics intrinsically motivate students and hold their attention over time (Sultan & Jones, 1995). In 1994, Beichner conducted a study that tracked nine students in a magnet school environment while using a multimedia computer program to teach science to themselves and to others within the group. They were to learn scientific topics through creating information screens for a visitor center in a zoo. These students were to create a multimedia information screen using audio, video, narrated movies, and colorful graphics. The students worked in groups of two and three. Throughout the study, Beichner observed that students began to skip lunch, study halls, and they started to arrive early to school to work on this project. The computer coordinator would arrive early to school to open up the computer lab only to find that the students would be there before him. Beichner's findings support that this group of students was intrinsically motivated to learn science through the use of technology, and the computer projects increased the students' interest (Beiehner, 1994).

Some researchers believed that a home computer may have had an effect on students' opinions about computer uses in the school. Campbell studied the effects of gender and school level computer anxiety in six middle schools in 1989. This study also examined the effects of home computer usage and students' anxiety levels at school. The results indicated the use of a home computer may have a direct effect on how comfortable students may be with using a computer in school when they use a

computer at home. Computer use at home gave the student the chance to practice these skills, and therefore it gave that student confidence to operate a computer at school (Campbell, 1989).

Gender Issues When Using Computer Based Instruction

There have been significant research findings suggesting that there are gender inequities in the use of a computer according to a review of related literature. The research has also indicated that there were differences in the attitudes of males and females about computer usage. These attitude differences were a multidimensional problem stemming from parents, peers, counselors, and teachers (Shashaani, 1993). The socialization process of males and females played an important role in their attitudes. A person's exposure to different outlets of the world first occur in the family unit. This was where an individual learns norms, beliefs, basic attitudes, self image, and sexual identity role (Shashaani, 1993). The family was the most powerful social influence on a child's academic performance. The parent's educational background, along with their occupation, were important factors in a child's academic performance (Shashaani, 1993). As a part of the socialization patterns, males were intended to be the main users of the computer in the home (Nelson & Watson, 1990-1991). Males generally will have had more experiences with computer usage than females in the home and at school. Fathers often encouraged and explained the relevance of computer to their sons, but research indicates that fathers did not explain the relevance nor did they encourage their daughters to use a computer. As a result, males had less computer anxiety and they had more positive attitudes about their abilities to use the computer (Nelson & Watson, 1991).

The schools helped shape the individual and could help reinforce the home environment. Students were influenced by two sources, the educator and the peer group. The teacher could influence a student through praise or punishment for a desired behavior. The peer pressure could help reinforce cultural and sexual stereotypes held by an individual (Shashaani, 1993). Gender inequity can begin during the preschool years. Generally, males spent more time than females in computing activities. This inequity had led to males having higher achievement scores in the computer-based classroom (Nelson & Watson, 1991). The different attitudes about computers between males and females could be found as early as kindergarten(Berhand & Seigel, 1994). When studying third and fourth grade male and female attitudes and performances, results indicated that females are less motivated than males to learn to use a computer (Nelson & Watson, 1991). A female's dislike for a computer increased by the time she reaches high school. Males achieved more positive attitudes about computers by the time they reached high school (Nelson & Watson, 1991).

In 1993, Shashaani surveyed 1750 ninth and twelfth grade students from five school districts in the Pittsburgh, Pennsylvania area. The survey was distributed to English and social studies classes. The results showed significant sex differences in many of the statements. Males were generally more excited about working with computers than the females. Females, however, displayed a very distinct negative attitude toward the usage of computers (Shashaani, 1993).

Shashaani also studied males and females confidence levels in order to determine their expectations for success. She believed low confidence in using a computer resulted in low participation in its use. According to Shashaani, females demonstrated a fear of using computers, felt helpless around a computer, and were often nervous and uncomfortable around them. Collos, Chen, and Siann also have

reported similar results (Shashaani, 1993). These results also seem to indicate that females believe they can use a computer, however they have low self-confidence about their computing abilities. Both males and females agree that parents, particularly their fathers, feel that computers are more appropriate for a male rather than a female (Shashaani, 1993).

In a 1982 study, Winkle and Mathews concluded that females expressed anxiety when dealing with mathematics and science. Consequently, these subjects' anxieties about science and mathematics were transplaced onto computers (DeRemer, 1989). Shashaani concluded similar results as well in her study, when she reported that females perceive computers as a mathematics tool thereby resulting in anxiety toward a computer. Mathematically related motivational factors and performance have been shown to have a direct relationship with computer attitudes and performance (Benhard & Seigel, 1994).

Another factor that may have an effect on the gender implications of computer usage was video games. Software characteristics in video games generally cater to male stereotypes: sports, fighting, adventure, etc. (Nelson & Watson, 1991). A survey of 636 students in grades one, three, five, seven, nine, and eleven done by Johnson and Swoope in 1987, stated that stereotypic roles have an effect on learning (Bohlin, 1993). Johnson and Swoope also concluded that the disinterest of females in video games maybe transferred to their view on computers (Bohlin, 1993). Most characters in video games are males. Therefore, this disinterest may decrease female motivation to play video games because they may feel they can not identify with any characters in the game. Males can gain interest in computers because video game topics often focus on male interest. A 1989 study conducted by Biraimah revealed that 63 percent of all characters in software programs were male characteristics (Nelson & Watson,

1991). Females can not identify with any characters and therefore lose interest and motivation (Nelson & Watson, 1991).

Many researchers have concluded that the more time a child spends on a computer the more positive that child is toward computer experiences (Nelson & Watson, 1991). Males take more advantage of their free time to use computers than do females (as cited in Bohlin, 1993). A study conducted by Hess and Miura in 1985, stated that computer camps favor school-aged males three to one (Bohlin, 1993). The researcher also found in a review of the related literature, Shaashaani (1993), Winkle and Mathews (1982), Nelson and Watson (1991), and Johnson and Swoope (1987), stated that males rate computers, video games, and classes that use computer higher than females.

There are three main reasons for computer gender differences as identified by Fisher in 1984. The first difference was caused by social stereotypes and socialization factors created by parents, peers, and schools. The second difference was software bias which favors more male characters and interests in computer programs and video games. Educational programs were also more male-orientated by focusing on adventure, science, and war (Nelson & Watson, 1991). Finally, the use of computer programming rather than practical application in computer classes is the third major reason for the gender differences. Females see no practical application of programming, and they feel that it is not useful. When a female sees no practical use for using a computer this creates a lack of interest (Bohlin, 1993).

A study conducted by Winkle and Mathews in 1982 demonstrates that inequities in computer usage, as a result of gender, can be reduced. They have recommended that schools create computer activities in which females can gain confidence. Also, female role models that use computers should be emphasized so female students can

identify with positive influences with computers (Bohlin, 1993). This can help reduce the belief that computers are the male's domain. Female role models can also make females more aware of careers in computers besides programming (Bohlin, 1993). Finally, more classes that deal with practical application of the computer, such as word processing rather than programming should be offered (Bohlin, 1993). Even though gender inequity may exist, there is insufficient evidence that biological inferiority of females in analytical ability and computing exists (Shashaani, 1992).

Why Computer Based Multimedia Instruction Is Not Often Used

There are many positive effects on student achievement and interests when a computer generated multimedia instruction has been used, but why do educators not use this form of media more often? First, multimedia software packages may be difficult to operate by teachers who are not properly trained to use the software, and they may even be difficult to use even if the teachers were trained. These software packages are often updated and some commands may change (Pelgrum & Plomp, 1993). In addition, teachers may not have sufficient inservice time to learn how to use these computer programs. Third, a computer coordinator may not exist in a given school or school district. This may cause a staff to be unaware of the capabilities that the computers have and whether computer software packages exist to suit their specific needs and teaching style. As a result of a lack of a computer coordinator in a school building or school district, teachers may be unaware of how to use a computer to fit the students' needs and learning styles (Pelgrum & Plomp, 1993). Fourth, many teacher education programs in colleges and universities offer little or no training for teachers in the undergraduate level on how to use a computer in the classroom. These schools do not show future educators how to integrate computer-based

instruction into their content specific areas. Therefore, these future educators may not use computer-based instruction. Fifth, a teacher may not have access to a computer in school or at home. If a teacher does not have a computer at home, he/she may not have sufficient planning on how to use a computer. This may also cause a teacher, similar to his/her students, to not feel comfortable to use a computer at school. Sixth, access to a computer or computer lab may or may not be available for the teacher either (Pelgrum & Plomp, 1993). Finally, the high cost of computer software packages may be to expensive for a school district's budget. Other devices that help enhance the computer capabilities for large audiences may be costly, such as an LCD projection panel.

CHAPTER III

PROCEDURES

Subjects

The subjects of this study were eighth grade United States history students, and these subjects were the researcher's students. Students in six different class periods completed a questionnaire asking them what their attitudes were about computer-based multimedia instruction for learning selected history concepts. A total of 109 students participated in the survey. The results of the survey showed that 100 %, or 109 total students who were present that day at school participated.

One of the questions in the background information asked the students do they have a home computer. Thirty-one females out of 39 reported having a home computer, and 32 males out of 70 identified that they had a home computer.

The students were also asked how many days a week they used the home computer. Twenty-four percent (15) of the student population reported that they used a computer everyday at home. Sixteen percent (10) of the students indicated that they used the home computer six days a week. Also, the same results were reported by the students who used a computer at home five days a week, which was sixteen percent of the student polled (10). Nineteen percent (12) of the students reported using a home computer four days a week. Five percent (3) showed that they used a home computer three days a week. Eight percent (5) students expressed that they used a home computer two days a week. Thirteen percent (8) students reported that they used the computer at home at least one day a week.

The students who reported that they used a home computer were also asked what they used the computer for, as a part of the background information. The students could choose more than one answer if it applied to them. Sixty-seven percent (42) of the students reported that they used the computer for games. Forty percent (25) of the students reported that they used the home computer for school work/homework. Thirty-two percent (20) reported that they used the Internet on their home computer. Twenty-seven percent (17) said they used the computers for reports. There was also a category marked other and an answer space for a student to respond. This group of four students, six percent, marked other. The students stated that they used the computer to communicate with friends, for drawing, for E-Mail, and for a daily journal.

Some of the background questions used in this study asked the students about their educational plans during high school. These students had already scheduled for the 1997-1998 school year. Fifty percent (54) reported that they have enrolled in the College Prep program at the high school. Twenty-three percent (25) stated they will be in the Vocational program. Sixteen percent (17) were enrolled in the Honors program at the high school. Twelve percent (13) were in a program that consists of a combination of College Prep and Vocational courses.

The students were also asked what are their educational plans after high school. Thirty-eight percent (41) reported that they wanted to enroll in a four college program. Twenty-five percent (27) stated that they wanted to have five or more years of a college education. Seventeen percent (19) said that their highest educational plans were to graduate high school and enter the work force. Nine percent (10) reported that they wanted to join the military after high school. Six percent (6) stated that they were going to enroll in a vocational training school after high school. Four percent (4) reported that they wanted to attend a two year college program. Two

percent (2) students checked other and did not specify what their career plans were.

The students were also asked as a part of the background information, which adult, eighteen years or older, used the computer the most at home. They also had to include a brief descriptor indicating what gender that person was, and their relationship to that person. Fifty-eight percent (63) total students responded that they used a computer once a week. Not every student that had a home computer, had an adult who used their home computer. Ninety-three percent (59) of all students who used a home computer, reported that there was an adult, eighteen years of age or older, who lived with them and used a computer at least once a week. Fifty-nine percent (35) reported that they had an adult male who used the home computer at least once a week. While, forty-one percent (24) reported that a female adult used the computer at least once a week. The students were also asked how many days a week the adult used the home computer. Thirty-one percent (18) reported that an adult in their home used the home computer seven days a week. Seventeen percent (10) reported that an adult used the home computer six days a week. The same results applied when an adult used the home computer five days a week, 17% (10) used the computer. Fourteen percent (8) of the students reported that an adult used the home computer four days a week. Twelve percent (7) of the students reported that an adult used the home computer three days a week. Ten percent (6) of the students reported that an adult used the home computer two days a week. No students reported that an adult used the home computer less than two days a week.

The students were also asked in the survey what their ethnic background was. Seventy-eight percent (85) identified that they were Caucasian. Ten percent (11) of the students surveyed showed that they were Multi Racial. Seven percent (8) of the students reported that they were African American. Two percent (2) of the students indicated that they were Asian/Pacific Islander. Also, two percent (2) students reported

that they were Hispanic. One percent (1) student indicated that they were an American Indian.

Setting

School. The school which these subjects attended was a public county school located in the Midwestern United States. The district was primarily a suburban city district surrounded by a mid-size city. The school building was a middle school that exclusively educates seventh and eight graders. The eighth grade had approximately 300 students, and class sizes vary, and the average class size was approximately 18 students per class. The subjects were comprised of low-income families. Approximately, one-third of the students' parents derived their income from a neighboring military base.

Community. The community where the study took place was a suburban city which is surrounded by a mid-size Midwestern city. The population of this suburban city was approximately 34,000 people. All of the students surveyed in this study lived in the school district. This area would be classified as low income. This community also contained some of the military based housing for the military base. Approximately, one-third of the people in this community derived their income in one way or another from the military instillation.

Data Collection

Construction of the Data Collection Instrument. The data collection instrument was derived from information gathered from the review of the literature. The instrument was a Likert-type questionnaire. (See Appendix). The computer-based multimedia instructional approach and questions about students' concerns were addressed in the instrument.

The following topics were addressed in the survey: demographics, characteristics of computer-based multimedia instruction, principles of multimedia instruction, characteristics of gender perception of multimedia computer presentations, level of comfort with technology, perceptions about learning when using a computer, and influences from parents and peers. There were a total of thirty questions asked in the questionnaire. Twenty-five were questions followed the Likert-type questionnaire with the following choices: strongly agree (SA), agree (A), undecided (U), disagree (D), and strongly disagree (SD). Also, the students had to read five statements, and rank them from the one they liked the most to the one they liked the least. Then, the students had to read questions twenty-six through thirty. There were five letters that the students could choose from for each question. Statements A, B, C, D, and E were then ranked by asking what their opinions were about computer programs.

The instrument was field tested by a panel of five educators that used computers in their classroom, and by a university instructor with an expertise in the construction of a Likert-type questionnaire. These educators provided clarity and wording of some questions for the questionnaire. The survey was then revised, and a field test was then conducted in the researcher's district by another eighth grade United States history teacher who used computers in his classroom. A total of 32 students from his class participated in this field test. This teacher reported to the

researcher that none of his students asked him to clarify any questions after he explained the directions to the students on how to fill out the questionnaire.

Administration of the Data Collection Instrument. The survey was distributed to each of the students who were present the day the study took place. The students were given instructions on how to fill out the survey by the researcher. The students had the entire class period to complete the questionnaire. When all the students completed the survey, the researcher collected them. 109 surveys were distributed and 109 surveys were returned. A return rate of 100% was reported and used throughout the analysis process. The students were given this questionnaire after they observed four computer-based multimedia lessons in the same unit of information that covered the Civil War. The researcher presented his lessons using Claris Works Slide Show he created. These four lessons were conducted over a two week span. The multimedia instruction was complemented with lecture and discussion on the information the researcher presented. The computer-based multimedia slide show was created on a Power Macintosh and was projected onto a movie screen using a LCD panel.

CHAPTER IV

RESULTS

Presentation of the Results

The researcher presented the results of the questionnaire in five tables. Each table was labeled to indicate the type of data that was analyzed. The tables are as follows: Total of all student responses of attitudes toward the use of computer-based multimedia instruction with selected United States history Concepts (Table 1), Total female responses of attitudes toward the use of computer-based multimedia instruction with selected United States history concepts (Table 2), Total male responses of attitudes toward the use of computer-based multimedia instruction with selected United States history concepts (Table 3), Total female student responses of attitudes toward the use of computer-based multimedia instruction with selected United States history concepts who have a home computer (Table 4), and Total male student responses of attitudes toward the use of computer-based multimedia instruction with selected United States history concepts who have a home computer (Table 5). The data was expressed in percentages that were rounded up to the nearest whole number for each table. Each question was analyzed from the Likert-type questionnaire and their scores were expressed in percentages. These percentages were placed under the appropriate response categories. These tables are located starting on page 33.

Discussion of the Results

One hundred and nine surveys were distributed to the researcher's eighth grade United States history classes. All one hundred and nine surveys were collected and analyzed. All tables were based on this one hundred percent return rate. Thirty-nine females participated in the survey, and out of the 39, 31 females had a home computer. A total of 70 males answered the questionnaire. Thirty-two males indicated that they had a home computer. For females, 79% (31) reported having a home computer. For males, 45% (32) reported having a home computer. Of the total students who reported having a home computer, females had a higher percentage of having a home computer compared to their male counterparts.

Each question's results were analyzed and discussed by examining the total number of students, compared to the total number of females, and to the total number of males. Also analyzed, were females who reported having a computer at home compared to the males who reported having a computer at home.

The first question asked "I enjoy working with computers." The question examined the students' opinion about their enjoyment of working with a computer. The total student responses were favorable to this question. Of the 109 students, 36% (39) strongly agreed, and 51% (56) agreed. This may have demonstrated that students had a positive attitude when it comes to using a computer, but would they like instruction using a computer? Ten percent (11) were undecided, three percent (3) disagreed, and there were no responses for strongly disagreed. No students felt extremely negative about computer usage. Previous research had shown that students like to use computers (Pence, 1996).

Females overwhelmingly expressed a positive attitude about working with computers. Forty-six percent (18) strongly agreed that they enjoyed working with

computers. Also, 46% (18) females enjoyed working with computers. This was the exact opposite of most findings that have been stated in the review of the literature. Three percent (1) were undecided, 5% (2) disagreed, and 0% strongly disagree.

Of the 32 females who reported they had a home computer, fifty-five percent (17) of all females who reported that they had a home computer, strongly agreed that they enjoyed working with computers. Females who had a home computer seemed to have a more positive attitude about working with computers. This may have been a result of practicing their computer skills at home. Thirty-nine percent (12) of the females agreed, 3% (1) of the females were undecided, 3% (1) student disagreed, and no female with a home computer reported that she strongly disagreed working with a computer.

Of the 70 males who responded to question one, 30% (21) strongly agreed that they enjoyed working with computers. Fifty-four percent (38) agreed they enjoyed working with computers, 14% (10) were undecided, and 1% (1) disagreed. No male students indicated that they strongly disagreed with the first question. The female respondents seemed more positive than the males. There was a higher percentage of the total number of females, 46% strongly agreed that they enjoyed working with computers, and only 30% of the total number of males strongly agreed. This goes against the majority of the literature reviewed.

Of the 32 males who identified that they had a home computer, 47% (15) strongly agreed that they enjoyed working with computers. Forty-four percent (14) also agreed that they enjoyed working with computers. Nine percent (3) of the males were undecided about question one, and there were not any males that disagreed or strongly disagreed that they enjoyed working with computers. Males displayed a very positive attitude about their attitude about working with computers if they reported having a computer at home. Males and females who reported that they had a

TABLE 1
TOTAL OF ALL STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-
BASED MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
(RESPONSES IN ROUNDED PERCENTAGES)
(N=109)

Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. I enjoy working with computers.	36%	51%	10%	3%	0%
2. Working with computers makes me want to learn.	15%	29%	32%	15%	9%
3. If I know more about computers, it will be easier to get a job.	49%	32%	12%	4%	4%
4. Computers are exciting to use.	27%	50%	14%	5%	5%
5. I have a good understanding of how to operate a computer.	27%	47%	16%	8%	3%
6. If taught, anyone can learn how to operate a computer.	35%	46%	15%	5%	0%
7. Computers make learning information easier.	33%	40%	20%	5%	2%
8. I like it when teachers present information using computers	36%	34%	19%	6%	6%
9. I feel confident about my ability to use a computer.	28%	40%	22%	8%	2%
10. My parent(s) encourage me to learn about computers.	22%	30%	30%	8%	9%
11. My friends believe that males are better at using computers.	8%	3%	33%	16%	40%
12. My friends believe that females are better at using computers.	4%	6%	32%	17%	41%
13. I feel comfortable when I use a computer.	28%	45%	19%	3%	6%

TABLE 1
TOTAL OF ALL STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-
BASED MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
(RESPONSES IN ROUNDED PERCENTAGES)
(N=109)

Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
14. Males and females have the same ability to use a computer.	61%	27%	6%	5%	3%
15. My friends think that using computers is fun.	21%	42%	30%	1%	6%
16. I understand information better when it is presented on a computer.	25%	29%	28%	9%	8%
17. Computers help me learn new information.	33%	49%	11%	3%	5%
18. I pay attention better when computers are used in the classroom.	29%	36%	20%	7%	7%
19. I enjoy class when computers are used.	33%	37%	20%	6%	4%
20. I remember information better when teachers use computers to present information.	19%	34%	32%	7%	7%
21. I feel that when computer programs show pictures they help me learn.	28%	50%	14%	4%	5%
22. I feel computer programs that show charts help me learn.	20%	51%	21%	2%	5%
23. I feel sounds or voices in computer programs help me learn.	25%	38%	23%	10%	5%
24. I feel computer programs that use a combination of pictures, sounds, and charts help me learn.	37%	40%	15%	4%	5%
25. I like it when teachers present information using computer generated multimedia presentations.	41%	32%	17%	6%	4%

TABLE 1

TOTAL OF ALL STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-
BASED MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
(RESPONSES IN ROUNDED PERCENTAGES)

(N=109)

Question	First Rank Order	Second Rank Order	Third Rank Order	Fourth Rank Order	Fifth Rank Order
26. I like computer programs that just have text.	5%	2%	5%	10%	79%
27. I like computer programs that just have pictures?	6%	10%	13%	57%	13%
28. I like computer programs that have a combination of sounds and text?	3%	19%	61%	17%	2%
29. I like computer programs that have a combination of pictures and text?	5%	66%	17%	9%	3%
30. I like computer programs that have a combination of pictures, text, and sounds?	82%	3%	6%	6%	4%

TABLE 2
TOTAL FEMALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-
BASED MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
(RESPONSES IN ROUNDED PERCENTAGES)
(N=39)

Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. I enjoy working with computers.	46%	46%	3%	5%	0%
2. Working with computers makes me want to learn.	15%	44%	23%	15%	3%
3. If I know more about computers, it will be easier to get a job.	44%	36%	13%	3%	5%
4. Computers are exciting to use.	28%	54%	13%	3%	3%
5. I have a good understanding of how to operate a computer.	28%	49%	15%	5%	3%
6. If taught, anyone can learn how to operate a computer.	46%	38%	13%	3%	0%
7. Computers make learning information easier.	39%	41%	15%	5%	0%
8. I like it when teachers present information using computers	41%	33%	21%	3%	3%
9. I feel confident about my ability to use a computer.	33%	44%	15%	5%	3%
10. My parent(s) encourage me to learn about computers.	23%	26%	36%	5%	10%
11. My friends believe that males are better at using computers.	8%	3%	31%	13%	46%
12. My friends believe that females are better at using computers.	8%	13%	31%	13%	36%
13. I feel comfortable when I use a computer.	33%	41%	15%	3%	8%

TABLE 2
TOTAL FEMALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-
BASED MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
(RESPONSES IN ROUNDED PERCENTAGES)
(N=39)

Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
14. Males and females have the same ability to use a computer.	76%	21%	0%	3%	0%
15. My friends think that using computers is fun.	21%	41%	36%	0%	3%
16. I understand information better when it is presented on a computer.	23%	31%	36%	5%	5%
17. Computers help me learn new information.	36%	46%	15%	0%	3%
18. I pay attention better when computers are used in the classroom.	36%	23%	33%	5%	3%
19. I enjoy class when computers are used.	31%	36%	26%	5%	3%
20. I remember information better when teachers use computers to present information.	23%	26%	43%	3%	5%
21. I feel that when computer programs show pictures they help me learn.	33%	44%	18%	3%	3%
22. I feel computer programs that show charts help me learn.	18%	54%	27%	0%	3%
23. I feel sounds or voices in computer programs help me learn.	31%	31%	28%	8%	3%
24. I feel computer programs that use a combination of pictures, sounds, and charts help me learn.	33%	46%	18%	0%	3%
25. I like it when teachers present information using computer generated multimedia presentations.	44%	36%	18%	0%	3%

TABLE 2

TOTAL FEMALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-
BASED MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
(RESPONSES IN ROUNDED PERCENTAGES)

(N=39)

Question	First Rank Order	Second Rank Order	Third Rank Order	Fourth Rank Order	Fifth Rank Order
26. I like computer programs that just have text.	3%	0%	8%	13%	77%
27. I like computer programs that just have pictures?	3%	5%	8%	69%	15%
28. I like computer programs that have a combination of sounds and text?	3%	18%	69%	8%	3%
29. I like computer programs that have a combination of pictures and text?	3%	77%	15%	3%	3%
30. I like computer programs that have a combination of pictures, text, and sounds?	90%	0%	0%	8%	3%

TABLE 3
TOTAL FEMALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-
BASED MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
WHO INDICATED THAT THEY HAD A HOME COMPUTER
(RESPONSES IN ROUNDED PERCENTAGES)
(N=31)

Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. I enjoy working with computers.	55%	39%	3%	3%	0%
2. Working with computers makes me want to learn.	19%	35%	26%	13%	6%
3. If I know more about computers, it will be easier to get a job.	48%	32%	13%	3%	3%
4. Computers are exciting to use.	26%	58%	13%	0%	3%
5. I have a good understanding of how to operate a computer.	32%	52%	10%	6%	0%
6. If taught, anyone can learn how to operate a computer.	35%	45%	16%	0%	3%
7. Computers make learning information easier.	42%	42%	13%	3%	0%
8. I like it when teachers present information using computers	42%	32%	19%	3%	3%
9. I feel confident about my ability to use a computer.	39%	42%	13%	3%	3%
10. My parent(s) encourage me to learn about computers.	26%	26%	35%	6%	6%
11. My friends believe that males are better at using computers.	10%	0%	35%	10%	45%
12. My friends believe that females are better at using computers.	10%	16%	32%	10%	32%
13. I feel comfortable when I use a computer.	35%	42%	13%	3%	6%

TABLE 3

TOTAL FEMALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-BASED MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS WHO INDICATED THAT THEY HAD A HOME COMPUTER
(RESPONSES IN ROUNDED PERCENTAGES)
(N=31)

Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
14. Males and females have the same ability to use a computer.	74%	23%	0%	3%	0%
15. My friends think that using computers is fun.	23%	35%	39%	3%	3%
16. I understand information better when it is presented on a computer.	19%	39%	35%	3%	3%
17. Computers help me learn new information.	32%	55%	10%	0%	3%
18. I pay attention better when computers are used in the classroom.	32%	29%	32%	3%	3%
19. I enjoy class when computers are used.	29%	39%	23%	6%	3%
20. I remember information better when teachers use computers to present information.	23%	25%	45%	0%	6%
21. I feel that when computer programs show pictures they help me learn.	35%	42%	19%	0%	3%
22. I feel computer programs that show charts help me learn.	23%	58%	16%	0%	3%
23. I feel sounds or voices in computer programs help me learn.	32%	23%	35%	3%	6%
24. I feel computer programs that use a combination of pictures, sounds, and charts help me learn.	39%	39%	19%	0%	3%
25. I like it when teachers present information using computer generated multimedia presentations.	48%	32%	16%	0%	3%

TABLE 3
TOTAL FEMALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-
BASED MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
WHO INDICATED THAT THEY HAD A HOME COMPUTER

(RESPONSES IN ROUNDED PERCENTAGES)

(N=31)

Question	First Rank Order	Second Rank Order	Third Rank Order	Fourth Rank Order	Fifth Rank Order
26. I like computer programs that just have text.	3%	0%	10%	16%	71%
27. I like computer programs that just have pictures?	0%	6%	6%	68%	19%
28. I like computer programs that have a combination of sounds and text?	0%	23%	68%	10%	3%
29. I like computer programs that have a combination of pictures and text?	3%	71%	16%	3%	3%
30. I like computer programs that have a combination of pictures, text, and sounds?	94%	0%	0%	3%	3%

TABLE 4
TOTAL MALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-BASED
MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
(RESPONSES IN ROUNDED PERCENTAGES)
(N=70)

Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. I enjoy working with computers.	30%	54%	14%	1%	0%
2. Working with computers makes me want to learn.	14%	21%	37%	14%	13%
3. If I know more about computers, it will be easier to get a job.	51%	30%	11%	4%	3%
4. Computers are exciting to use.	26%	49%	14%	6%	6%
5. I have a good understanding of how to operate a computer.	26%	46%	16%	10%	3%
6. If taught, anyone can learn how to operate a computer.	29%	50%	16%	6%	0%
7. Computers make learning information easier.	30%	40%	23%	4%	3%
8. I like it when teachers present information using computers	33%	34%	19%	7%	7%
9. I feel confident about my ability to use a computer.	24%	38%	26%	10%	1%
10. My parent(s) encourage me to learn about computers.	21%	33%	27%	10%	9%
11. My friends believe that males are better at using computers.	9%	3%	34%	17%	37%
12. My friends believe that females are better at using computers.	1%	3%	33%	19%	44%
13. I feel comfortable when I use a computer.	24%	47%	21%	3%	4%

TABLE 4
TOTAL MALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-BASED
MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
(RESPONSES IN ROUNDED PERCENTAGES)
(N=70)

Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
14. Males and females have the same ability to use a computer.	51%	30%	9%	6%	4%
15. My friends think that using computers is fun.	21%	43%	27%	1%	7%
16. I understand information better when it is presented on a computer.	26%	29%	24%	11%	10%
17. Computers help me learn new information.	31%	50%	9%	4%	6%
18. I pay attention better when computers are used in the classroom.	26%	43%	13%	9%	10%
19. I enjoy class when computers are used.	34%	37%	17%	7%	4%
20. I remember information better when teachers use computers to present information.	17%	39%	26%	10%	9%
21. I feel that when computer programs show pictures they help me learn.	26%	53%	11%	4%	6%
22. I feel computer programs that show charts help me learn.	21%	50%	19%	4%	6%
23. I feel sounds or voices in computer programs help me learn.	21%	41%	20%	11%	6%
24. I feel computer programs that use a combination of pictures, sounds, and charts help me learn.	89%	37%	13%	6%	6%
25. I like it when teachers present information using computer generated multimedia presentations.	40%	30%	15%	10%	4%

TABLE 4
TOTAL MALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-BASED
MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
(RESPONSES IN ROUNDED PERCENTAGES)

(N=70)

Question	First Rank Order	Second Rank Order	Third Rank Order	Fourth Rank Order	Fifth Rank Order
26. I like computer programs that just have text.	6%	3%	3%	9%	80%
27. I like computer programs that just have pictures?	9%	13%	16%	51%	11%
28. I like computer programs that have a combination of sounds and text?	3%	20%	56%	7%	1%
29. I like computer programs that have a combination of pictures and text?	6%	60%	17%	13%	3%
30. I like computer programs that have a combination of pictures, text, and sounds?	77%	4%	9%	6%	4%

TABLE 5

TOTAL MALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-BASED
MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS WHO
INDICATED THAT THEY HAD A HOME COMPUTER
(RESPONSES IN ROUNDED PERCENTAGES)
(N=32)

Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. I enjoy working with computers.	47%	44%	9%	0%	0%
2. Working with computers makes me want to learn.	6%	47%	34%	9%	3%
3. If I know more about computers, it will be easier to get a job.	59%	25%	9%	3%	3%
4. Computers are exciting to use.	34%	41%	16%	9%	0%
5. I have a good understanding of how to operate a computer.	31%	53%	16 %	0%	0%
6. If taught, anyone can learn how to operate a computer.	31%	53%	13%	3%	0%
7. Computers make learning information easier.	47%	28%	22%	3%	0%
8. I like it when teachers present information using computers	41%	31%	22%	0%	6%
9. I feel confident about my ability to use a computer.	34%	44%	16%	6%	0%
10. My parent(s) encourage me to learn about computers.	22%	34%	25%	13%	6%
11. My friends believe that males are better at using computers.	13%	0%	25%	25%	38%
12. My friends believe that females are better at using computers.	0%	3%	28%	16%	53%
13. I feel comfortable when I use a computer.	44%	41%	16%	0%	0%

TABLE 5

TOTAL MALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-BASED
MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
WHO INDICATED THAT THEY HAD A HOME COMPUTER
(RESPONSES IN ROUNDED PERCENTAGES)
(N=32)

Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
14. Males and females have the same ability to use a computer.	53%	38%	9%	0%	0%
15. My friends think that using computers is fun.	19%	44%	34%	0%	3%
16. I understand information better when it is presented on a computer.	31%	34%	19%	6%	9%
17. Computers help me learn new information.	47%	41%	9%	0%	3%
18. I pay attention better when computers are used in the classroom.	41%	41%	6%	3%	9%
19. I enjoy class when computers are used.	47%	34%	13%	3%	3%
20. I remember information better when teachers use computers to present information.	22%	47%	22%	3%	6%
21. I feel that when computer programs show pictures they help me learn.	38%	44%	13%	3%	3%
22. I feel computer programs that show charts help me learn.	34%	44%	9%	3%	9%
23. I feel sounds or voices in computer programs help me learn.	25%	50%	16%	6%	3%
24. I feel computer programs that use a combination of pictures, sounds, and charts help me learn.	50%	34%	9%	3%	3%
25. I like it when teachers present information using computer generated multimedia presentations.	47%	31%	9%	13%	0%

TABLE 5
TOTAL MALE STUDENTS' RESPONSES OF ATTITUDES TOWARD THE USE OF COMPUTER-BASED
MULTIMEDIA INSTRUCTION WITH SELECTED UNITED STATES HISTORY CONCEPTS
WHO INDICATED THAT THEY HAD A HOME COMPUTER
(RESPONSES IN ROUNDED PERCENTAGES)

(N=32)

Question	First Rank Order	Second Rank Order	Third Rank Order	Fourth Rank Order	Fifth Rank Order
26. I like computer programs that just have text.	0%	0%	3%	6%	84%
27. I like computer programs that just have pictures?	6%	9%	16%	66%	6%
28. I like computer programs that have a combination of sounds and text?	3%	16%	59%	19%	0%
29. I like computer programs that have a combination of pictures and text?	9%	75%	13%	9%	0%
30. I like computer programs that have a combination of pictures, text, and sounds?	81%	0%	9%	0%	9%

computer at home both exhibited positive attitudes about working with computers. Of the thirty-one females who identified that they had a home computer, 94% had a positive attitude, strongly agreed or agreed with question one. Ninety-three percent of the males had a positive attitude.

One important issue was if students thought that working with computers motivated them to learn. Question two explored the intrinsic value that students may have had about the motivational factors of working with computers. "Working with computers makes me want to learn." Out of the 109 students, 36% percent (39) students strongly agreed that computers make them want to learn. Twenty-nine percent (32) agreed, 32% (35) were undecided, 15% (16) disagreed, and 9% (10) strongly disagreed. Forty-four percent of the student population had a positive response that computers make them want to learn.

The thirty-two females that participated, had a very positive response that computers make them want to learn. Fifteen percent (6) of the total female population of students strongly agreed, and 44% (17) agreed that computers made them want to learn. Fifty-nine percent of the females surveyed felt that computers did motivate them to learn. Twenty-three percent (9) were undecided, 15 % (6) disagreed, and 3% (1) strongly disagreed.

The thirty-one females that had a home computer had a slightly lower positive response for question two on the survey, than the total number of females who responded. Nineteen percent (6) of this group of females strongly agreed that computers made them want to learn. Thirty-five percent (11) felt that computers motivated them to learn. Fifty-four percent responded that the computer motivated them to learn, twenty six percent (8) stated that they were undecided if a computer motivated them to learn, 13% (4) disagreed, and 6% strongly disagreed.

The total number of males who responded to question number two, did not have as positive of a response as the females. Fourteen percent (10) strongly agreed, and 21% (15) agreed that computers made them want to learn. Only 36% of the entire male population surveyed, felt that computers motivated them to learn, when 59% of the entire female population felt that computers did make them want to learn. Thirty-seven percent (26) of the males were undecided, 14% (10) disagreed, and 13% (9) strongly disagreed.

The 32 males who reported having a computer at home also had a positive response to question number two. Six percent (2) of this group of students strongly agreed, and 47% (15) agreed that computers made them want to learn. Fifty-three percent of the males surveyed who had a computer at home, agreed that computers motivated them to learn. Thirty-four percent (11) were undecided, 9% (3) disagreed, and 3% (1) strongly disagreed that computers were not a motivational factor that made them want to learn.

"If I know more about computers, it will be easier to get a job" was the question asked for question number three. Forty-nine percent (53) of the total 109 students surveyed, strongly agreed that knowledge about computers will help them find employment. Thirty-two (35) students also agreed that computing skills will be helpful in finding a job. Therefore, 81% of the students who were polled felt that computers skills may be a determining factor in finding a job in the twenty-first century's job market. Computers have increased their relevance in the job market of the nineties, and these students may have felt that this trend will continue into the next century. Twelve percent (13) of the students were undecided about question number three, four percent (4) disagreed, and four percent (4) strongly disagreed.

The female respondents, also had positive feelings about question number

three. Forty-four percent (17) strongly agreed and 36% (14) agreed that the greater the knowledge was about computers, the easier it would be to get a job. Thirteen percent (5) of the female students were undecided, three percent (1) disagreed, and five percent (2) strongly disagreed.   One reason that females may have seen relevance in computer skills and employment was that more and more females are entering the job market. They may feel that computer skills can help them compete for a job.

Of the females that have a home computer, 48% (15) strongly agreed that knowledge about computers will make it easier to get a job. Thirty-two percent (10) agreed, 13% (4) of the females were undecided, three percent (1) disagreed, and only one female student (3%) who had a home computer strongly disagreed that more knowledge about computers will make it easier to get a job.

The 70 males surveyed felt that it was important to have knowledge about computers. Fifty-one percent (36) strongly agreed, and 30% (21) agreed that it was important to gain knowledge about computers so it will be easier to gain employment. Eleven percent (8) of the total males who were surveyed were undecided, four percent (3) disagreed, and three percent (2) strongly disagreed.

The 32 males that identified that they had a home computer, had the highest percentage of positive attitudes about question three, compared to all the other subdivisions of students in this study. Fifty-nine percent (19) strongly agreed that knowing about computers will make it easier to get a job. Twenty-five percent (8) agreed with question three, nine percent (3) were undecided, three percent (1) disagreed, and three percent (1) strongly disagreed.

Question four asked the students if they thought computers were exciting to use. Of the 109 total students, twenty-seven percent (29) strongly agreed, and 50% (55) agreed with this statement. Over three quarters of all the students surveyed felt that it

was exciting to use computers. Fourteen percent (15) were undecided if they were excited to use a computer, five percent (5) disagreed, and also five percent strongly disagreed with question four.

The 39 females that were surveyed felt strongly that computers are exciting. Twenty-eight percent (11) strongly agreed, and 54% (21) agreed with question four. Thirteen percent (5) were undecided, three percent (1) disagreed, and three percent (1) strongly disagreed. Females in general seemed to have a more positive attitude than males about this statement.

The thirty-one females who reported having a home computer, also felt similar to the total female population surveyed. Twenty-six percent (8) strongly agreed, and 58%(18) females who reported having a home computer agreed that computers are exciting to use. Thirteen (4) were undecided, zero students disagreed, and only one student strongly disagreed.

Twenty-six percent (18) strongly agreed, and 49% (34) agreed that computers were exciting to use. Fourteen percent (10) of the male students were undecided, six percent (4) disagreed, and six percent (4) strongly disagreed.

The 32 males surveyed that had a home computer, mostly conveyed that they had a positive attitude about question four. Thirty-four percent (11) strongly agreed, and 41% (13) agreed that computers were exciting to use. Sixteen percent (5) of the students were undecided, nine percent (3) disagreed, and zero students strongly disagreed. Males in general, seemed to have felt that computers are more exciting to use than females. The students surveyed stated they they felt that computers are exciting. Both males and females concurred that computers are exciting to them with very little difference.

When the 109 students were asked question number five, almost three quarters of the students felt that they have a good understanding of how to operate a computer.

Twenty-seven percent (29) strongly agreed, and 47% (51) agreed with question five. Sixteen percent (17) students were undecided, eight percent (9) disagreed, and three percent (3) strongly disagreed.

Over three quarters of the thirty-nine females surveyed, conveyed that they have a good understanding of how to operate a computer. Twenty-eight percent (11) strongly agreed, and 49% (19) agreed with question five. Fifteen percent (6) were undecided, five percent (2) disagreed, and only 3% (one student) strongly disagreed that they had a good understanding of how to operate a computer. The female responses demonstrated that they felt they had a good understanding how to use a computer when compared to the total male scores.

The 31 females who reported having a computer at home overwhelmingly reported having a good understanding of how to operate a computer. Thirty-two percent (10) strongly agreed, and 52% agreed with question five. Ten percent (3) of the females who have a home computer were undecided, six percent (2) disagreed, and no students reported that they strongly disagreed with question five.

The total 70 male respondents also exhibited a positive attitude when they were asked to rank, "I have good understanding of how to operate a computer." Twenty-six percent (18) strongly agreed, and 46% (32) students agreed, 16% (11) were undecided, ten percent (7) disagreed, and three percent (2) strongly disagreed.

The 32 males who have a home computer responded favorably, since 84% stated that they had a good understanding of how to run a computer. Thirty-one percent (10) strongly agreed, and 53% (17) agreed to question five. Sixteen percent (5) were undecided, and there were not any students who had a home computer that disagreed or strongly disagreed. The students in general seemed to have a good understanding on how to use a computer. Males who had a home computer out scored the females who identified that they have a home computer.

"If taught, anyone can learn how to operate a computer," was question number six. The total 109 students had an overwhelmingly positive attitude toward this question. Thirty-five percent (38) strongly agreed, and 46% (50) agreed. When these categories are combined, 81% of the students expressed that they had a positive attitude that anyone can learn to operate a computer. Fifteen percent (16) were undecided, five percent (5) disagreed, and no one strongly disagreed with this statement.

The total female population of 39, also displayed that they approved of the statement in question six. Forty-six (18) stated that they strongly agreed, 38% (15) agreed with this statement, 13% (5) were undecided, three percent (3) disagreed, and no students displayed that they strongly disagreed with question six.

The 31 females who indicated that they had a computer at home also highly supported the fact that if taught, anyone can learn. Thirty-five percent (11) strongly agreed, and 45% (14) agreed with this statement. Sixteen percent (5) were undecided about question six, zero students disagreed, and three percent (1) strongly disagreed.

The total male population of 70 students, was in favor of the statement, "If taught anyone can learn how to use a computer." Twenty-nine percent (20) strongly agreed, and 50% (35) of the total male population agreed with question six. Males seem to think that anyone can use a computer if given the proper instruction. Sixteen percent (11) of the total male population were undecided, six percent (4) disagreed, and zero students strongly disagreed.

The 32 males who reported that they have a home computer also expressed an overwhelmingly positive attitudes about question six. Thirty-one (10) percent strongly agreed, and 53% (17) agreed. Therefore when combined, 84% of all males who have a computer at home, agree that if taught, anyone can learn how to use a computer. Do males feel it is easier to learn how to use a computer than their female counterparts?

Thirteen percent (4) agreed with question six, three percent (1) disagreed, and no student disagreed.

Almost three quarters of the 109 students surveyed, felt that computers make learning information easier. Thirty-three percent strongly agreed with question seven, that computers make learning information easier. Forty percent agreed with this statement. Twenty-two percent (7) of the students indicated that they were undecided whether or not computers make learning information easier. Five percent (5) disagreed, and two students strongly disagreed. It would appear that the students surveyed, felt that a computer can make learning easier. The responses seemed to indicate that students like to learn by using a computer.

Over three fourths of the total 39 females, stated that they felt computers made learning information easier. Thirty-nine percent (15) of the total female population strongly agreed, and 41% (16) agreed that computers make learning easier. Fifteen (6) percent stated they they were undecided, five percent (2) disagreed, and no student strongly disagreed.

The females who reported that they had a home computer, stated their opinion that computers make learning easier. Forty-two percent (13) strongly agreed, and 42% (13) also agreed that computers make learning information easier. However, 13% (4) of the students were undecided, only one student disagreed and there were not any female students that strongly disagreed. Eighty-three percent of all females who had a home computer showed that they had positive attitudes about question seven.

The male students who were a part of the survey also had very positive opinions about question seven. Thirty percent (21) of the male students strongly agreed, and forty percent (28) agreed. A total of 70% of the students had positive opinions that computers make learning easier. Twenty-three percent (16) of the

students were undecided, four percent (3) disagreed, and three percent (2) strongly disagreed.

The males who stated that they had a computer at home, had the highest percentage of strongly agreeing that computers make learning information easier compared to any other classification group by 47% (15). Twenty-eight percent (9) of the males who had a home computer agreed, 22% (7) were undecided, 3% (1) of the students disagreed, and there were not any males who had a home computer that strongly disagreed. Three quarters of males who had a home computer exhibited positive attitudes that it is easier to learning using a computer.

"I like it when teachers present information using computers." This statement was an extension of the previous statement that computers makes learning new information easier. The students displayed similar attitudes from the preceding question. Eighty-six percent of the 109 students displayed a positive attitude that they liked it when teachers present information using a computer. Thirty-six percent (39) of the students strongly agreed, and 34% (37) agreed that they liked it when teachers present information using a computer. However, 19% (21) of the students were undecided, six percent disagreed (6) , and six percent (6) strongly disagreed. The students seemed to enjoy it when information was presented using a computer. The researcher noted that during his study, that the students often commented that they liked this method of conveying new information. The students also commented that the researcher should use the computer more often to explain information to them. The researcher also observed that many students were very engaged in the lessons taught by using a computer. This was one observation the researcher made during the series of four computer-based multimedia lessons. Also, the day after researcher presented new information using a computer, the researcher taught a lesson using only lecture. Many students commented, "When are you going to use the computer

again to teach us?"

The females that participated the study also exhibited positive attitudes when teachers presented information using a computer. Forty-one percent (16) strongly agreed, and 33% (13) agreed. A combined 74% of the total females display a positive attitude when teachers present information using a computer. Twenty-one percent (8) of the students were undecided, 3% (1) disagreed, and 3% (1) strongly disagreed.

The females that had a home computer were also very positive about question eight. Forty-two percent (13) strongly agreed, and 32% (10) agreed. These results illustrated that 74% of females that had a home computer, like it when teachers presented information using a computer. However, 19% (6) were undecided, one student disagreed, and only one student strongly disagreed.

The total 70 male students in this study also showed positive attitudes about teachers using computers to show new information. Thirty-three percent (23) of the male students strongly agreed, and 34% (24) of the students agreed with question eight. Nineteen percent (13) of the male students were undecided, seven percent (5) disagreed, and seven percent (5) strongly disagreed.

The 32 males who reported that they had a home computer also displayed that they had positive attitudes about computers. Forty-one percent (13) of male students strongly agreed, and 31% (10) of male students agreed that they like it when teachers present information using computers. Twenty-two percent (7) were undecided, no students disagreed with this statement, and only two students strongly disagreed. When comparing scores of students with home computers, there was not much difference between the male and female scores.

For question number nine, the students were asked if they had confidence in their ability to use a computer. Twenty-eight percent (30) of the 109 students, strongly agreed that they had confidence in their computing ability. Forty percent (44) agreed

with this question, 22% (24) were undecided, 8% (9) of the students disagreed, and two students strongly disagreed. The students in this study seemed confident in their ability to use a computer. Many of these students have had some basic computer skills taught to them in the computer labs by various teachers at the middle school level. This may account for their positive attitudes displayed over this question.

Over three quarters of the 39 females answered that they had confidence about their ability to use a computer. Thirty-three percent (13) strongly agreed, and 44% (17) agreed that they had confidence in their computing abilities. Only six female students were undecided, two students disagreed, and only one female student strongly disagreed.

The 31 female students who identified that they had a home computer stated that they had confidence in their computer skills. Thirty-nine percent (12) strongly agreed, and 42% (13) agreed that they had confidence in their computer ability. Thirteen percent (4) of the students were undecided, one student disagreed, and only one female strongly disagreed.

The total male population of 70, also had positive attitudes about their ability to use a computer. Twenty-four percent (17) of the total male population strongly agreed, and thirty-eight percent (27) agreed that they had confidence in their computing abilities. Twenty-six percent (18) were undecided, 10% (7) disagreed, and only one students strongly disagreed with question nine. Even though males displayed positive attitudes about their computer ability, females had a higher confidence level in their computing ability by almost ten percent over the males.

The 32 males who indicated that they had a home computer also displayed positive attitudes when referring to their confidence when using a computer. Thirty-four percent of the males strongly agreed that they had confidence in their ability to use a computer, and 44% (14) students agreed. Sixteen percent (5) of the students

were undecided, two students disagreed, and there were not any students that strongly disagreed. There was almost no difference between the females and males who reported that they had a home computer about their confidence to operate a computer.

The next three questions tried to determine who may have influenced the students' attitudes about computers. Number ten asked, "Did your parents encourage you to learn about computers?" Twenty-two percent (24) strongly agreed that their parents influenced them to learn about computers. Thirty percent (33) agreed that their parents influenced them to learn about computers, and 30% (33) were undecided about their parents' influence. Eight percent (9) disagreed and nine percent (10) strongly disagreed that their parents influenced them about computers.

The females surveyed may have suggested that parents do influence them to learn about computers. Twenty-three percent (9) stated that they strongly agree, and twenty- six percent (10) agreed with the statement made in question ten. Also, 36% (14) of the female students were undecided, two students disagreed, and four students strongly disagree.

Over half of the females that reported that they had computers at home, stated that their parents encourage them to learn about computers. Twenty-six percent (8) strongly agreed, and 26% (8) also agreed that their parents influence them to learn about computers. Then, 35% (11) of the female students disagreed, two students disagreed, and two students strongly disagreed. It appears that 52% of females who had a home computer were encouraged by their parents to learn about computers.

The male subjects also exhibited strong parental influences that encouraged them to learn to use a computer. Twenty-one percent (15) strongly agreed, and thirty-three percent (23) agreed that parents influence them to learn about computers. Also, 27% (19) were undecided on this statement, 10% (7) disagreed, and 9% (6) strongly

disagreed.

Over half of the total males who had a home computer stated that their parents encouraged them to learn about computers. Twenty-two percent (7) strongly agreed, and thirty-four percent (11) agreed that their parents influence them. Twenty-five percent (8) of the male students noted that they were undecided on this issue, four males disagreed, and two males strongly disagreed.

"My friends believe that males are better at using computers," was the eleventh question asked on the questionnaire. The total student population of 109, had a very strong negative responses towards this statement. Eight percent (9) strongly agreed, 3% (3) disagreed, 33%(36) were undecided, 16% (17) disagreed, and 40% (44) strongly disagreed. Fifty-six percent of the student responses displayed very negative attitudes about this question.

The total female population of 39, also showed the same negative attitudes about this statement. Eight percent (3) strongly agreed, one student agreed, 31% (12) were undecided, 13% (5) disagreed, and 46% of the total female population strongly disagreed with the statement that their friends believe that males are better at using computers. Over half of the females who responded to this statement disagreed with the statement.

The 31 females that identified that they had a home computer also displayed similar trends to the question that males are better computer users according to their friends. Ten percent (3) strongly agreed, no females agreed, 35% (11) were undecided, ten percent (3) disagreed, and 45% strongly disagreed. Over half of the females that had a home computer disagreed that males are better computer users according to their friends.

The total male population, had similar results to that of the total female population. About half of the total males in this study disagreed with the statement,

that their friends believe that females are better at using computers. Nine percent (6) of the students strongly agreed, two students agreed with this statement, 34% (24) were undecided, 17% (12) disagreed, and 37% (36) strongly disagreed. Males also displayed strong negative attitudes about this statement, like their female counterparts.

The 32 males who said they have a computer at home also continue to follow the trend that has been displayed in question eleven. Thirteen percent (4) strongly agreed, no males agreed with this statement, 25% (8) were undecided, 25% (8) disagreed, and 38% (12) strongly disagreed with this statement. Over half of the males that have a home computer disagreed that males are better computer users according to the their friends.

"My friends believe that females are better at using computers," is the exact opposite question asked as the previous statement. Out of the total students surveyed, only 4% strongly agreed (4), 6% (7) agreed, 35% were undecided, 17% (18) disagreed, and 41% (45) strongly disagreed with this statement.

The total female population, had very similar responses to the previous question. Eight percent (3) strongly agree, 13% (5) agree, 31% (12) were undecided 13% (5) disagreed, and 36% (14) strongly disagreed.

The females who identified that they had a home computer, also have strong negative feelings about question twelve. Ten percent (3) strongly agreed, 16% (5) agreed, 32% (10) were undecided, ten percent (3) disagreed, and 32% (10) strongly disagreed. It would appear that females, whether they had a home computer or not, do not feel that their friends consider males or females to be better at using a computer. The data suggests that it depends on the individual, not gender.

The total 70 male students also showed a negative attitude to the statement that their friends believe that females are better at using computers. Only one student strongly agreed with this statement, two male students agreed, 33% (23) were

undecided, 19% (13) disagreed, and 44% (31) strongly disagree.

The 32 males that indicated that they had a computer at home also continue the trend of negative feelings about this question. There were not any males that have a home computer who strongly agreed with this statement. One student agreed, 28% were undecided (9), 16% (5) disagreed, and 53% (17) of males with a home computer strongly disagreed with the statement that their friends believed that females are better at using a computer. Males like females, feel that their friends consider neither gender to be superior at using a computer.

The total students were also asked if they felt comfortable when they used a computer. An overwhelming response indicated that the majority of students felt comfortable when using a computer. Twenty-eight percent (28) strongly agreed, and 45% (49) agreed that they were comfortable when using a computer. Nineteen percent were undecided, three percent disagreed, and six percent strongly disagreed.

The female sample of students, showed that almost three quarters of females felt comfortable when using a computer. Thirty-three percent (13) strongly agreed, 41% (16) agreed they were comfortable when using a computer, 15% were undecided, one student disagreed, and eight percent (3) strongly disagreed.

Over three quarters of the females who had a computer at home, indicated that they felt comfortable when they use a computer. Thirty-five (11) strongly agreed that they were comfortable using a computer, 42% (13) agreed, 13% (4) were undecided, one student disagreed, and two students strongly disagreed with this statement.

All males responding also indicated they too are comfortable when using computers. Twenty-four percent (17) strongly agreed, 47% (33) agreed, 21% were undecided, two students disagreed, and three students strongly disagreed. Over half of the total male population in this study felt comfortable when using a computer. The females seem to indicate that they were more comfortable when using a computer

when compared to the total male population.

Over three quarters of the males that had a home computer, showed that they felt comfortable when they used a computer. Forty-four percent (14) strongly agreed, 41% (13) agreed, 16% were undecided, zero students disagreed and strongly disagreed. There appeared to be little difference between males and females who had a home computer. They both stated that they had positive attitudes, and were confident when they used the computer.

Of the total students that participated in the survey, 61% (66) strongly agreed that males and females have the same ability to use a computer. Twenty-seven percent (29) agreed, 6% (6) were undecided, 5%(5) disagreed and 3% (3) strongly disagreed. A significant amount of students agreed that males and females have the same ability to use the computer.

Of the total females, 76% (30) also strongly agreed that males and females have the same ability to use the computer. Twenty-one percent (8) agreed, there were not any females that were undecided, 3%(1) disagreed and no one strongly disagreed. Overall, the female population of this study overwhelmingly agreed that males and females have the same ability to use the computer.

Seventy-four percent of the females that reported having a computer strongly agreed that males and females have the same ability to use the computer. Twenty-three percent (7) agree, zero students were undecided, 3% (1) disagreed and there were not any females that strongly disagreed with this statement.

The males who participated in this study also seemed to have the same feelings about whether males and females have the same ability to use a computer. However, the males tend to have a few more undecided, disagree, and strongly disagree responses than the females. Fifty-one percent (36) strongly agreed, 30% (21) agreed, 9% were undecided, 6%(4) disagreed and 4%(3) strongly disagreed.

Fifty-three percent (17) of the males that reported having a home computer, strongly agreed that males and females have the same ability to use a computer. Thirty-eight percent (12) agreed, 9% (3) were undecided, and there were not any males that disagreed or strongly disagreed.

Twenty-one percent of the students surveyed, strongly agreed that their friends thought that using computers was fun. Forty-two percent (46) agreed, 30% (30) were undecided, 1% (1) disagreed, and 6% (6) strongly disagreed with the above statement. Seventy-two percent of the students surveyed, concur that using computers was fun.

 Twenty-one percent (8) of the females strongly agreed that their friends thought that using computers are fun. Forty-one percent (16) agreed, 36% (14) were undecided, zero disagreed, and 3% (1) strongly disagreed. Sixty-two percent of the females had a positive attitude that computers are fun.

Of the females that reported having a home computer, 23% (7) strongly agreed that their friends think that using computers is fun. Thirty-five percent (11) agreed, 39% (12) were undecided, 3 % (1) disagreed, and there were not any females that strongly disagreed.

Twenty-one percent (15) of the the males that participated in this study, strongly agreed that their friends thought that using computers was fun. Forty-three percent (30) agreed, 27% (19) were undecided, 1% (1) disagreed, and 7% (5) strongly disagreed. The majority of the males believed that using computers was fun.

Of the 32 males that reported that they had a home computer, 19% (6) strongly agreed that their friends thought that using computers was fun. Forty-four percent (14) agreed, 34% (11) were undecided, zero disagreed, and 3% (1) strongly disagreed. When answering the question, "My friends think that using computers is fun," the majority of the students had a positive response to this question.

For question sixteen, 25% (27) of the total students strongly agreed that they understood information better when it was presented on a computer. Twenty-nine percent (32) agreed that they understood information better when it was presented on a computer. Twenty-eight percent (31) were undecided about whether or not they understand information better, 9% (10) disagreed and 8% (9) strongly disagreed with this statement.

Of the total females, 23% (9) strongly agreed that they understood information better when it was presented on a computer. Thirty-one percent (12) agreed, 36% (14) were undecided, 5% (2) disagreed, and 5%(2) strongly disagreed with the above statement. Many of these students may have been undecided because some of their teachers may not have taught using a computer, and they are not as familiar with this type of instructional method.

Nineteen percent (6) of the females that have a home computer, strongly agreed that they understand information better when it was presented on a computer. Thirty-nine percent(12) agreed, 35% were undecided, 3% (1) disagreed, and 3% (1) strongly disagreed.

Of the 70 males, 26% (18) strongly agreed that they understand information better when it was presented on a computer. Twenty-nine percent (20) agreed, 24% (17) were undecided, 11% (8) disagreed, and 10% (7) strongly disagreed with the above statement.

Thirty-one percent (10) of the 32 males that reported having a home computer, strongly agreed that they understand information better when it was presented on a computer. Thirty-four percent agreed, 19% were undecided, 6% (2) disagreed and 9% (3) strongly disagreed.

For question sixteen, there were many responses for strongly agreed and agreed that the students understand information better when it was presented on the

computer. There were not many disagreed or strongly disagreed answers. However, many of the students were undecided about this question. As stated before, this may be that the students have not been taught this way for most of their schooling. Some of their teachers may not have used this type of teaching style, and therefore, the students are not very familiar with it. The more the students become exposed to computer-based instruction, the more understanding they may have about this process.

Thirty-three percent (36) of the 109 students that participated in this study strongly agreed that computers help them learn new information. Forty-nine percent (53) agreed that computers helped them learn, 11 % (12) were undecided, 3% (3) disagreed, and 5% (5) strongly disagreed. An overwhelmingly amount of students strongly agreed or agreed that computers helped them learn new information.

Of the 39 females that were surveyed, 36% (14) strongly agreed that computers help them learn more information. Forty-six percent (18) agreed, 15% (6) were undecided, zero disagreed, and 3% (1) strongly disagreed. The majority of the total females also strongly agreed or agreed that computers helped them learn new information. Therefore, an overwhelmingly 82% of all the females had a positive attitude that computers helped them learn new information.

Thirty-two percent (10) of the 31 females that reported to had a home computer, strongly agreed that computers helped them learn new information. Fifty-five percent of the females agreed with the statement that computers helped me learn new information, 10% (3) were undecided, zero students disagreed, and 3% (1) strongly disagreed.

Of the total 70 males, 31% (22) strongly agreed that computers helped me learn new information. Fifty percent (35) agreed, 9% (6) were undecided, 4% (3) strongly disagreed, and 6% (4) strongly disagreed. An overwhelmingly amount of 81% of all

the males strongly agreed or agreed that computers helped them learn new information.

Forty-seven percent (15) of the 32 males that reported having a home computer, strongly agreed that computers help them learn new information. Forty-one percent (13) agreed, 9% (3) were undecided, zero students disagreed and 3% (1) strongly disagreed. An overwhelmingly 88% of the males with home computers strongly agreed or agreed that computers helped them learn information.

The majority of the students chose strongly agreed or agreed for question seventeen, computers helped me learn new information. The students reported a very positive attitude about computers and learning. Over three-fourth of the students stated that computers helped them learn new information.

Twenty-nine percent (32) of the total students strongly agreed that they paid attention better when computers were used in the classroom. Thirty-six percent (39) agreed with the above statement, 20% (22) were undecided, 7% (8) disagreed, and 7% (8) strongly disagreed. Over half of the students reported that they paid attention better when computers were used in the classroom.

Thirty-six percent (14) of the females, strongly agreed that they paid attention better when computers were used in the classroom. Twenty-three percent (9) agreed, 33% (13) were undecided, 5% (2) disagreed and 3% (1) strongly disagreed that they paid closer attention when computers were used in the classroom. Fifty-nine percent of the females strongly agreed or agreed that they paid better attention when computers are used in the classroom.

Thirty-two percent (10) of the females that reported having a computer, strongly agreed that they paid attention better when computers were used in the classroom. Twenty-nine percent (9) agreed, 32% (10) were undecided, 3% (1) disagreed and 3% (1) strongly disagreed that they paid attention better when computers were used in

the classroom. Again, many of the students may have been undecided, because they have not been exposed to this type of teaching in their classes. However, there were also a higher number of females, with and without home computers, that strongly agreed and agreed that they paid attention better when computers were used in the classroom.

Of the total males that participated in the study, 26% (18) strongly agreed that they paid attention better when computers were used in the classroom. Forty-three percent (30) agreed, 13% (9) were undecided, 9% (6) disagreed, and 10% (7) strongly disagreed. There were not as many undecided males as their were females. Also, over half of the males strongly agreed or agreed with the statement, "I paid attention better when computers were used in the classroom."

Forty-one percent (13) of the males that reported they had a home computer, strongly agreed that they paid attention better when computers are used in the classroom. Forty-one percent (13) also agreed, 6% (2) were undecided, 3% (1) disagreed and 9% (3) strongly disagreed. Eighty-two percent of the males who had home computers strongly agreed or agreed that they paid better attention when computers were used in the classroom.

When comparing the males and females to this last question, "I paid better attention when computers were used in the classroom," both males and females responded more positively than negatively. However, more females were undecided as whether or not they paid better attention when computers were used in the classroom than the males. The males also had a slightly higher percentage of strongly agreeing and agreeing than the females did.

Thirty-three percent (36) of the total students, strongly agreed that they enjoyed class when computers were used. Thirty-seven percent (40) agreed, 20% (22) were undecided, 6% (7) disagreed and 4% (4) strongly disagreed. Almost three-fourths of

the students enjoyed class when computers were used.

Of the 39 females, 31% (12) strongly agreed that they enjoyed class when computers were used. Thirty-six percent (14) agreed, 26% (10) were undecided, 5% (2) disagreed, and 3% (1) strongly disagreed. Sixty-seven percent of the females had a positive attitude about class when computers were used.

Twenty-nine percent (9) of the females that reported they had a computer, strongly agreed that they enjoy class when computers are use. Thirty-nine percent (12) agreed, 23% (7) were undecided, 6% (2) disagreed, and 3% (1) strongly disagreed.

Of the 70 males, 34%(24) strongly agreed that they enjoyed class when computers were used. Thirty-seven percent (26) agreed, 17% (12) were undecided, 7% (5) disagreed, and 4% (3) strongly disagreed. Almost three-fourths (50) of the males strongly agreed or agreed that they enjoyed class when the computer was used. When computers were used in class, males seemed to enjoy class more than the females.

Forty-seven percent (15) of the males that reported they had home computers, strongly agreed that they enjoyed class when computers were use. Thirty-four percent (11) have agreed, 13% (4) were undecided, 3% (1) strongly disagreed, and 3% (1) strongly disagreed. An overwhelmingly amount of males with computers enjoyed class when computers were used.

Question twenty stated, " I remembered information better when teachers used computers to present information." Nineteen percent (21) of the 109 students strongly agreed that they remembered information better when teachers used computers to present information. Thirty-four percent (37) agreed, 32% (35) were undecided, 7%(8) disagreed and 7%(80) strongly disagreed.

Of the 39 females, 23% (9) strongly agreed that they remembered information

better when teachers used computers to present information. Twenty-six percent (10) agreed, 43% (17) were undecided, 3% (1) disagreed, and 5% (2) strongly disagreed with question number twenty. Forty-nine percent of the females had a positive attitude about remembering information when teachers used computers, however, 43% of the students were undecided.

Twenty-three percent (7) of the females that had home computers, strongly agreed that they remembered information better when teachers used computers to present information. Twenty-five percent (8) agreed, 45% (14) were undecided, zero disagreed, and 6% (2) strongly disagreed.

Of the 70 males, 17% (12) strongly agreed that they remembered information better when teachers used computers to present information. Thirty-nine percent (27) agreed, 26% (18) were undecided, 10% (7) disagreed, and 9% (6) strongly disagreed. The males seemed to have a more positive attitude about retaining knowledge when taught with a computer that the females.

Twenty-two percent (7) of the males that had a home computer, strongly agreed that they remembered information better when teachers used computers to present information. Forty-seven percent (15) agreed, 22% (7) were undecided, 3% (1) disagreed, and 6% (2) strongly disagreed with the previous statement. When comparing males with home computers to females with home computers, 21% more males felt they remembered information better when teachers used computers to present information than the females did.

The next four questions, twenty-one, twenty-two, twenty-three, and twenty-four all pertained to how the students felt about using sounds, pictures, and charts on the computer that helped them learn. "I felt that when computer programs showed pictures they helped me learn;" "I felt that computer programs that used charts helped me learn;" "I felt that sounds or voice in computer programs helped me learn;" "I felt that

computer programs that used a combination of pictures, sounds, and charts helped me learn.

Of the total students that participated in this study, 28% (31) strongly agreed that when computer programs showed pictures they helped them learn. Fifty percent (54) agreed, 14% (15) were undecided, 4% (4) disagreed, and 5% (5) strongly disagreed. Over three-fourths of the students, 78%, had a positive attitude that using computer programs with pictures helped them learn.

Thirty-three percent (13) of the females, strongly agreed that computer programs that showed pictures helped them learn. Also, 44% (17) agreed, 18% (7) were undecided, 3%(1) disagreed, and 3% (1) strongly disagreed. Over three-fourths of the females, 77%, were in agreement that pictures used in computer programs helped them learn.

Of the 31 females that had a home computer, 35% (11) strongly agreed, and 42% (13) agreed that when computer programs showed pictures they helped them learn. Nineteen percent (6) were undecided, there were not any students that disagreed, and only 3% (1) that strongly disagreed.

Twenty-six percent (18) of the males strongly agreed, and 53% (37) agreed that when computer programs showed pictures they helped them learn. Eleven percent (8) were undecided, 4% (3) disagreed, and 6% (4) strongly disagreed. Over three-fourths, 79%, of the males concurred that pictures in computer programs helped them learn.

Of the 32 males with home computers, 38% (11) strongly agreed, and 44% (14) agreed that when computer programs showed pictures they helped them learn. This is a solid majority of students that had a positive attitude about pictures in computer programs. Also, 13% (4) were undecided, 3%(1) disagreed, and 3% (1) strongly disagreed. The majority of males and females were in accordance that they learned when computer programs used pictures.

Seventy-one percent of all the students were in agreement that computer programs that showed charts helped them learn. Twenty percent (22) strongly agreed, 51% (56) agreed, 21% (23) were undecided, 2% (3) disagreed, and 5% (5) strongly disagreed.

Of the 39 females, 18% (7) strongly agreed, and 54% (21) agreed that computer programs that showed charts helped them learn. Almost three-fourths of the females were in agreement with this statement. Twenty-seven percent (10) were undecided, no student disagreed, and 3% (1) strongly disagreed with the above statement.

An overwhelming 81% of the females that had a home computer, concurred that computer programs that showed charts helped them learn. Twenty-three percent (7) strongly agreed, 58% (18) agreed, 16% (5) were undecided, no students disagreed, and 3% (1) strongly disagreed.

Of the 70 males, 21% (15) strongly agreed that computer programs that showed charts helped them learn. Fifty percent (35) agreed, 19% (13) were undecided, 4% (3) disagreed, and 6% (4) strongly disagreed. Almost three-fourths of the males were in agreement that computer programs that showed charts helped them learn.

Seventy-eight percent of the males that had home computers, agreed that computer programs that showed charts helped them learn. Thirty-four percent (11) strongly agreed, 44% (14) agreed, 9% (3) were undecided, 3% (1) disagreed, and 9% (3) strongly disagreed.

When comparing females who had home computers to males who had home computers, 81% of the females stated that they felt charts helped them learn. Where as 78% of the males reported that computer programs that showed charts helped them learn.

Question twenty-three asked if the students felt that sounds or voices in computer programs helped them learn. Of the total students, 25% (27) strongly

agreed, 38% (41) agreed, 23% (25) were undecided, 10% (11) disagreed, and 5% (5) strongly disagreed. Over half of the students felt that sounds and or voices in computer programs help them learn.

Sixty-two percent of the total females reported that they felt sounds and voices helped them learn. Thirty-one percent (12) strongly agreed, 31% (12) agreed, 28% (11) were undecided, 8% (3) disagreed, and 3% (1) strongly disagreed with the above statement. Over half of the females felt that voices and sound helped them learn.

Of the 31 females with home computers, 32% (10) strongly agreed and 23% (7) agreed that sounds or voices in computer programs helped them learn. Thirty-five percent (11) were undecided, 3% (1) disagreed, and 6% (2) strongly disagreed.

Twenty-one percent (15) of the 70 males, strongly agreed, and 41% (29) agreed that sounds or voices in computer programs helped them learn. Also, 20% (14) were undecided, 11% (8) disagreed, and 6% (4) strongly disagreed. Sixty-two percent of the males were in agreement that sounds or voices helped them learn when a computer was being used to help teach them. Sixty-two percent of the females also felt the same as the males.

Seventy-five percent of the males that had home computers concurred that sounds or voices in computer programs helped them learn. Twenty-five percent (8) strongly agreed, 50% (16) agreed, 16% (5) were undecided, 6% (2) disagreed, and 3% (1) strongly disagreed. Three-fourths of the males with home computers, felt that sounds or voices in computer programs helped them learn. Only 55% of the females with home computers felt that sounds or voices in computer programs helped them learn.

Seventy-seven percent of the 109 students felt that computer programs that used a combination of pictures, sounds, and charts help them learn. Thirty-seven percent (40) strongly agreed, 40% (44) agreed, 15% (16) were undecided, 4% (4)

disagreed, and 5% (5) strongly disagreed. About three-fourths of the students felt that combining pictures, sounds and charts helped them learn.

Over three-fourths, 79% of all the females felt that combining pictures, sounds, and charts helped them learn. Thirty-three percent (13) strongly agreed, 46% (18) agreed, 18% (7) were undecided, no student disagreed, and 3% (1) strongly disagreed. There was a high number of students that felt that these visuals and sounds helped them learn better when a computer was used.

Seventy-eight percent of the females that had a home computer agreed that using sounds, pictures, and charts will help them learn. Thirty-nine percent (12) strongly agreed, 39% (12) agreed, 19% (6) were undecided, no student disagreed, and 3% (1) strongly disagreed. Again, there was a high number of students that felt that computer programs that used a combination of sounds, pictures, and charts helped them learn.

Of the 70 males, 39% (27) strongly agreed, and 37% 26) agreed that computer programs that used a combination of pictures, sounds and charts helped them learn. Thirteen percent (9) were undecided, 6% (4) disagreed, and 6% (4) strongly disagreed. Seventy-six percent of the males also had the same feelings as the females about the importance of sounds, pictures, and charts in computer programs.

An overwhelming 84% of the males that had a home computer agreed that computer programs that used a combination of pictures, sounds, and charts helped them learn. Fifty percent (16) strongly agreed, 34% (11) agreed, 9% (3) were undecided, 3% (1) disagreed, and 3% (1) strongly disagreed. The majority of the students were also in agreement with this last statement.

Of all the students surveyed, 41% (45) strongly agreed, and 32% (35) agreed that they liked it when teachers present information using computer generated multimedia presentations. Seventeen percent (18) were undecided, 6%(7) disagreed,

4% (4) strongly disagreed.

An overwhelming 80% of the females liked it when teachers present information using computer generated multimedia presentations. Forty-four percent (17) strongly agreed, 36% (14) agreed, 18%, were undecided, no student disagreed, and only one student strongly disagreed.

Eighty percent of the females that reported having a home computer enjoyed it when teachers presented information using computer generated multimedia presentations. Forty-eight percent (15) strongly agreed, 32% (10) agreed, 16% (5) were undecided, no students disagreed, and only one student strongly disagreed. The majority of the students seemed to enjoy computer presentations in the classrooms.

Seventy percent of the males liked it when teachers presented information using computer generated multimedia presentations. However, 80% of the females reported they enjoyed computer generated multimedia presentations. Forty percent (28) of the males strongly agreed, 30% (21) agreed, 16% (11) were undecided, 10% (7) disagreed, and 4% (3) strongly disagreed.

Seventy-eight percent of the males with home computers stated they enjoyed it when teachers presented information using computer generated multimedia presentations. However, 80% of the females with home computers reported enjoying computer generated multimedia presentations. Forty-seven percent (15) of the males strongly agreed, 31% (10) agreed, 9% (3) were undecided, 13% (4) disagreed, and there were not any students that strongly disagreed.

For the next five questions, 26, 27, 28, 29, and 30, the students were to choose the statement that best represents their opinion about computers. The statements they may chose from are as follows: "A. I like computer programs that just have text", "B. I like computer programs that just have pictures," "C. I like computer programs that have

a combination of sounds and texts," "D. I like computer programs that have a combination of text and pictures," "E. I like computer programs that have a combination of pictures, text, and sound."

For questions number 26, the students were to chose from the above statement that best represented their opinion. Five percent (5) of the total students, chose statement A, I liked computer programs that had just text. Six percent (7), chose statement B, I liked computer programs that had just pictures. Three percent (3), chose statement C, I liked computer programs that had a combination of sounds and texts. Five percent (5) chose D, I liked computer programs that had a combination of text and pictures, and 82% (89) chose E, I liked computer programs that had a combination of pictures, text, and sounds. An overwhelmingly amount of students chose statement E. When comparing these five statements, students seemed to have liked computer programs that had a combination of text, pictures, and sounds the best .

Of the 39 females that answered question 26, 3% (1) chose statement A, 3% (1) chose B, 3% (1) chose C, and 3% (1) also chose D. An overwhelmingly 90% chose statement E, I liked computer programs that had a combination of pictures, text, and sounds.

Three percent (1) of the females that reported having a home computer, selected A, no females chose B or C, and 3% (1) picked D. An abundant amount of females, 94% (29), selected choice E, I liked computer programs that had a combination of pictures, text, and sound.

Of the 70 males that participated in this study, 6% (4) picked choice A, 9% (6) chose B, 3% (2) selected C, and 6% (4) chose D. Again, there were a large percentage of students that chose letter E, for the statement that best represented their opinion about computers. Seventy-seven percent (54) of the males selected E.

There were not any males that reported having a home computer that chose

letter A for question 26. Only 6% (2) chose B, 3% (1) picked C, 9% (3) selected D, and again a large percent selected choice E.

When comparing the females and the males, the majority of the students chose letter E for the statement that best represents their opinion. Choice E stated, I liked computer programs that had a combination of pictures, text, and sounds.

Question 27 stated, "Which of the above statements is the second best response in your opinion?" The letters and the choices were the same as mentioned earlier. Of the total students, only 2% (2) chose letter A, 10%picked B, and 19% (21) chose C. Over half of the students, 66% (72) selected D, I liked computer programs that had a combination of text and pictures as the statement that was the second best response in their opinion. Only 3% (3) chose E.

Of the 39 females surveyed, there were not any females that chose A for question 27. Only 5% (2) chose B, 18% (7) selected (C), over half, 77% (30), chose D, and there were not any students that chose E. Most of the females also felt that choice D, is the second best response.

There were not any of the females with a home computer that chose letter A. Only 6% (2) picked B, 23% (7) chose C, over three-fourths of the females selected D, and there were no females that chose statement E.

Of the 70 males, only 3% (2) chose A, 13% (9) picked B, 20% (14) chose C, 60% (42) selected D, and 4% (3) chose E. Over half of the males selected choice D, I liked computer programs that had a combination of text and pictures for the statement that is the second best response. However, a larger percentage of males chose C, I liked computer programs that have a combination of sounds and text, than the females.

The were not any males that reported having a computer at home that chose letter A for question 27. Nine percent (3) selected B, 16%(5) chose C, three-fourths of

the males, 75% (24) selected D, and there were not any students that chose letter E. When comparing males and females that had home computers, both groups had about the same percentage for letter D.

Question 28 states, "Which of the above statement is the third best response in your opinion?" Five percent (5) of the total students chose statement A, I liked computer programs that just had text. Thirteen percent (14) selected B, I liked computer program that just had pictures. Over half of the students, 66% (66) chose letter C, I liked computer programs that had a combination of sounds and text, 17% (18) selected D, I liked computer programs that had a combination of text and pictures, and only 6% (6) chose E, I liked computer programs that had a combination of pictures, text and sounds.

Only 8% (3) of all the females chose A, 8% (3) chose B, and over half, 69% 27) chose letter C, I liked computer programs that had a combination of sounds and text. Fifteen percent (6) chose D, and there were not any females that selected letter E.

Ten percent (3) of the females that had home computers, chose A as the statement that was the third best response about how they felt about computers. Six percent (2) selected B, over half of the females, 68% (21) picked C, I liked computer programs that had a combination of sound and text, and 16% (5) selected D. There were not any females that chose letter E.

Of the 70 males, only 3% (2) chose A, 16% (11) selected B, and 56% (39), over half of the males chose letter C for the third best response. Seventeen percent (12) picked D, and only 9% (6) chose E. When comparing males and females, the majority of both groups had chosen letter C as the third best response as to what they liked in computer programs.

Only 3% (1) of the males that reported having a home computer, selected letter A. Sixteen percent (5) chose B, and again over half of the students, 59% (19) selected

C. Thirteen percent (4) chose D, and 9% (3) picked E.

Question 29 states, "Which of the above statements is the fourth best response in your opinion?" Ten percent (11) of the 109 students chose A, I liked computer programs that just had text. Fifty-seven percent (63) selected B, I liked computer programs that just had pictures, 17% (18) chose C, I liked computer programs that had a combination of sounds and text, 9% (10) selected D, I liked computer programs that had a combination of text and pictures, and only 6% (7) picked E, I liked computer programs that had a combination of pictures, text, and sound.

Of the total females, 13% (5) chose statement A, and over half, 69% (27) selected B. Only 8% (3) picked C, 3% (1) chose D, and 8% (3) selected E. Over half of the females, 69%, felt that statement B, I liked computer programs that just had pictures, was the fourth best response in their opinion.

Sixteen percent (5) of the females that reported having a home computer, chose statement A. Over half, 68% (21) selected B, 10% (3) chose C, 3% (1) picked D, and 3% (1) chose E. The females that had home computers also felt that statement B, was the fourth best response.

Of the 70 males, 9% (6) selected choice A, 51% (36), a little over half chose B, 7% (15) picked C, 13% (9) chose D, and only 6% (4) selected choice E. There were more females than males that felt that B, I liked computer programs that just had pictures, was the fourth best response.

Only 6% (2) of the males that had home computers, chose letter A. Over half, 66% selected B, I liked computer programs that just had pictures. Nineteen percent (6) chose C, 9% (3) selected, and there were no males that picked E. When comparing females with home computers to males with home computers, there were more females than males that chose statement B as the fourth best response.

Question 30 stated, "Which of the above statement is the fifth best response in

your opinion?" Of the total students, 79% (86) chose A, I liked computer programs that just had text. Thirteen percent (14) selected B, only 2% (2) picked C, 3% (3) selected D, and 4% (4) chose letter E. Over three fourths of the students selected choice A, I liked computer programs that just had text.

Seventy-seven percent (30) of the females selected choice A. Fifteen percent (6) chose B, only 3% (1) picked C, D, and E. Also, over three-fourths of the females selected choice A, I liked computer programs that just had text.

Of the 31 females that reported they had a home computer, 71% (22) chose letter A, I like computer programs that just have text as the fifth best response. Nineteen percent (6) selected B, only 3% (1) chose C, D, and E.

An overwhelmingly 80% (56) of the 70 males selected A, I liked computer programs that just had text as the fifth best response. Eleven percent (8), chose B, only 1% (1) picked C, 3% (2) chose D, and 4% (3) selected E. There were more males than females that selected choice A as the fifth best response.

Again, an overwhelming 84% of the 32 males that had home computers selected choice A for the fifth best response. There were only 6% (2) that chose B, and there were not any males that selected C, D, or E. When comparing males with home computers to females with home computers, there were more males than females that selected choice A for the fifth best response.

When comparing the past five questions, 26 through 30, the data showed that the majority of the students, males and females, liked computer programs that contained a variety of media. The students seemed to have liked the computer programs that offered, text, sounds, and pictures. Most of the students felt that letters E and D were the most important, the best two responses. According to the data, there were more students that felt statement A was the fifth best response. Students seem to want more in computer programs than just text.

CHAPTER V

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Summary

The purpose of this study was to analyze the attitudes and opinions of eighth grade United States history students when being taught by computer-based multimedia instruction when learning selected history concepts. Many assumptions were made concerning gender, home computer use, did students like this type of instruction, and did they feel they learned when computer based multimedia instruction was used. Did males and females attitudes differ? Did students have different attitudes if they had access to a home computer? Did the students actually felt they learned when being taught by computer based multimedia instruction. The researcher gathered information to see if these assumptions had validity. The following procedures were used in order to examine students' attitudes and opinions of computer based multimedia instruction in learning selected United States history concepts.

The study was conducted in order to examine if computer based multimedia instruction helped students learn, and did they enjoy learning using this method of instruction. The researcher examined many previous studies to formulate ideas on specifically what the researcher wanted to accomplish from this study. Then, a Likert-type questionnaire was developed in order to record the students' attitudes and opinions. Next, the questionnaire was distributed to 109 students in the researcher's classroom during periods two through seven. After the students completed the

questionnaire, then the researcher tabulated the results of this study, and they were analyzed. The results of this survey were stated in percentages rounded to the nearest whole number.

Conclusions

After analyzing the results of the study and examining a review of the related literature, the researcher concluded several findings as a result of this study. First, the students in this study expressed that they enjoyed working with computers in all five categories that this study was subdivided into. Another statement that the students felt strongly about was if they knew more about computers that it would be easier for them to get a job. The students examined in this study will be facing a very high tech job market in the twenty-first century, and they seemed to realize the importance that technology will play in the upcoming century.

"Computers are exciting to use," was another important item the students were asked. The students exhibited very positive attitudes about this statement. Seventy-seven percent of the 109 students showed positive attitudes towards this question. The students demonstrated that they felt computers were fun to use. Eighty-two percent of the total female population had a greater positive attitude when compared to the total student population. Of the 31 females who reported that they had a home computer, 84% demonstrated a positive attitude about this statement. The total male group showed similar to that of the total female group. Of the 70 males, 75% showed a positive attitude. The males who reported that they had a home computer, 32 demonstrated that they did not have as strong of a positive attitude as their counter part females who have a home computer. This group of males showed that 75% felt that computers were exciting to use.

The students also felt that they had a good understanding about how to operate a computer. The researcher does not know if these students have acquired these skills through school, computer camps, at home, or from friends, but 74% of the entire student population did illustrate that they had an understanding on how to run a computer. The 39 females who participated in this study also exhibited positive attitudes about this statement. Eighty-two percent of the females and 72% of the total males also felt that they had a good understating of how to operate a computer. The females who reported that they have a computer, showed that 84% had a good understanding of how to operate a computer, and the males who identified that they had a home computer had the same results.

Eighty-one percent of the total student population also felt that if taught, anyone could learn how to operate a computer. This seems to indicate that computers are not very difficult to learn how to use, as expressed by the sampling group. Seventy-seven percent of the 39 females and 79% of the 70 males, illustrated a positive attitude about this question. The females who reported that they had a home computer also demonstrated positive attitudes. Eighty-four percent of the females who had a computer at home, and 79% of the males who had a home computer, exhibited a positive attitude toward question number six.

"Computers make learning information seem easier," was another question the students felt strongly towards. Of the 109 students who participated in this study, 73% felt strongly towards this statement. A total of 80% of the total females, and 70% of the total male population showed positive attitudes about this statement. Females showed that they felt computers make learning information seem easier than males. Eighty-four percent of the females who reported that they have a computer at home, and 75% of the males who had a home computer exhibited a positive attitude about question seven. There is almost a ten percent difference between the total female and

male group that identified that they had a home computer. It seemed to indicate that females think it is easier to learn from using a computer.

"I like it when teachers present information using computers," was a cornerstone of the researcher's study. This question was important because the researcher wanted to see if the students, sampled in this study, really felt the computer was a vital learning tool when the teacher presented information while using the computer, rather than hands on computer learning. The review of the literature indicated that students felt that hands-on computer activities helped them, but few studies in the review of the literature used teacher computerized instruction. Seventy percent of the 109 students, showed that they enjoyed it when teachers presented information using a computer. In 1996, Pence had similar results in his study. Eighty-nine percent of the 60-100 students in Pence's college chemistry class, reported that they liked it when he used Powerpoint to present new information (Pence, 1996). Of the 39 females who participated in the researcher's study, 74% liked it when teachers presented information using computers. Of the total 70 males, 67% reported that they enjoy it when the computer was used by a teacher to present information. Seventy-four percent of the females who identified that they had a home computer, and 71% of the males who reported that they had a home computer, exhibited a positive attitude about question eight.

Another area the researcher wanted to explore through this study was who influenced the students to use a computer, and did they influence their opinions about peoples' ability to use a computer. Fifty-two percent of the students explained that their parents encouraged them to use a computer. Forty-nine percent of the total females who participated in this study, and 54% of the total male population identified that their parent(s) encouraged them to learn about computers. Fifty-two percent of the females who reported that they had a home computer, and 56% of the males who

indicated that they had a home computer, felt that their parents influenced them to learn about computers.

The students indicated that males and females have the same ability to use a computer. Out of the 109 students who participated, 88% felt that both genders have the same ability to use a computer. This feeling was consistent with the other four subdivisions of this study. Ninety-seven percent of the total female population (39), and 81% of the entire males (70) who participated in this study, felt males and females have the same ability. The percentage of total females and the percentage of females who had a computer at home (31) were identical, 97%. While, 91% of the males who identified that they have a home computer reported that they felt both genders had the same ability level when using a computer. All of the groups that were analyzed showed that they strongly believed that gender equity exists when males and females use a computer. These results contradict the evidence that was found in the review of the literature, Nelson and Watson, Shaashaani, and Benhard and Seigel.

Peer influences, through a review of the literature, seemed to have an effect on how an individual feels about a computer and computer usage. Question 11, 12, and 15 explored these influences. "My friends believe that males are better at using computers," was asked to see if peers helped shaped the individuals ideology about different genders proficiencies using a computer. Fifty-six percent of the total 109 students, displayed a negative attitude. "My friends believe that females are better at using computers." Similar results were indicated about this questions, 58% indicated that they had a negative attitude about that statement. Every subdivision of students analyzed, also displayed extreme negative attitudes about both of these statements.

But, students did indicate that their friends thought that using a computer was fun. Sixty-three percent of the 109 students that participated in this study, indicated that they had a positive attitude about this statement. Sixty-two percent of the total

female population, and 64% of the total males showed positive attitudes that their peers thought computing was fun. Fifty-eight percent of females who have a computer at home, and 68% of the males who reported that they have a home computer described that their friends thought that using a computer at home was fun.

In a review of the literature, it was indicated that when comparing males and females, males tended to exhibit higher levels of comfort when using a computer. When analyzing female and male perceptions of being comfortable when using a computer, the data was only minutely different in the researchers' study. Out of the total 39 females, 74% indicated that they felt comfortable when using a computer. Of the total 70 males, 71% felt comfortable when using a computer. Females had a higher percentage of comfortability when compared to males. The data analyzed in this study also contradicts the studies that were stated in the review of the literature, Shashaani, Winkle and Mathews, and Collos, Chen, and Siann, that believed that females feared using a computer.

Another important piece of information to this study, was do students feel they learn better when information is presented on a computer? Fifty-four percent of the 109 students that participated in this study, indicated that they do learn information better when it was presented on a computer. Out of the 39 total females that were apart of this study, 54% felt they understood information better when it was presented on a computer, and of the 70 male, 55% also concurred with this statement. When comparing the 31 females that have a home computer and the 70 males that have a home computer, 58% of the females and 65% of the males, displayed positive attitudes that they understood information better when it was presented on a computer.

An overwhelming 82% of the total students in this study, responded that computers helped them learn new information. Also, the same percentage of total females responded the same way as the total student population. Eighty-one percent

of the total male population felt that computers helped them learn new information. The 87% of the female students who identified that they had a home computer, and 88% of the males who have a home computer, thought that computers helped them learn new information. The sampling of these students seemed to think that computers fit their learning style and helped them learn new information that an educator presented.

Out of the total students who responded to the questionnaire, 65% believed they paid attention more when computers were used in the classroom. The total 39 females also had similar results. Fifty-nine percent of the total females in this study felt that they paid attention more when computers were used in class. Over two thirds, 69%, of the total male population believe that they paid greater attention when a computer was used in a classroom. Females and males who have a computer at home, reported as having similar results about this question. Eighty-seven percent of the females and 82% of the males felt that they paid attention better when a computer was used in the classroom.

"I remember information better when teachers use computers to present information," was another vital piece of information the researcher analyzed to determine the students' attitudes about computer based multimedia instruction. Fifty-three percent of the total students felt that they do remember information better when an educator used a computer to present new information. Of the total females and males who responded, 49% of the total females and 56% of the total males felt they remembered information better when it was presented on a computer. When comparing males who have home computers and females that have home computers, males felt more strongly than females that when computers were used in the classroom they help them remember information better. Eighty-one percent of the males who have a home computer stated that computers help them remember

information better when used in class, and 48% of the females who have a home computer supported this statement. Males who identified that they have a home computer seem to believe that computers helped them remember important information that they learned in class.

The next two questions focused on the students' learning styles and the computer. In the Spring of 1997, the Ohio Education Association had a convention in Columbus, Ohio where David Pearce Snyder explained that 30% of the population are visual learners (Ohio Schools, 1997). In a review of the literature, several journal articles suggested that students have become accustomed visual effects because of television. Because of the television era, students have become visual learners (Peterson, 1990). This question was addressed in the questionnaire about the student's learning styles and computer generated visuals. "I feel that when computer programs show pictures they help me learn." Over three quarters, 78%, of the students exhibited positive attitudes about this statement, conveying that out of the 109 total students that 85 students may be visual learners. Also, that they felt very strongly about the computers ability to show graphic information to help them learn. The total female and male population had very similar results. Seventy-seven percent of the females and the 79% of the males showed that when using a computer, visuals helped them learn. The females who have a home computer also like it when computers used visual information. Seventy-seven percent of the females showed a positive attitude about this statement. The males who reported that they have a home computer, showed that they learned the best out of all of the subdivisions of students. Eighty-two percent stated that they learn better when pictures are shown on a computer screen.

Similar results were also identified when the students were asked if they felt when charts are shown using a computer that they help the them learn. Seventy-one

percent of the total students in this study, felt that charts helped them learn when they were shown using computer. Of the 39 females in this study, 72% identified that charts helped them learn when information was shown on a computer. The males also had similar results to the total female population, 71% also liked it when charts were shown to help them learn using a computer. The females who have a home computer liked it the most when charts were used to show information on a computer to help them visualize information. Eighty-one percent of the females who reported that they had a home computer, had a positive attitude about this statement. The males who have a home computer also showed positive attitudes when asked if they felt that computer programs that showed charts helped them learn. Seventy-eight percent identified that computers did in fact help them learn when charts were shown. This question also helped reinforce the principle that this sample population of students are more visually oriented.

One of the main objectives of this study was to discover if students liked to learn new information when computer based multimedia instruction was used in the classroom. Of the 109 students who participated in this study, 77% felt that a combination of pictures, sounds, and charts helped them learn. Seventy-nine percent of the total females, and 76% of the total male population who surveyed in this study had positive attitudes about multimedia helping them learn. Seventy-eight percent of the females who have a home computer felt that multimedia presentations helped them learn. Of the 32 males who have a home computer, they reported the highest percentage out of all the subdivisions of students. Eighty-four percent of these males reported that computer programs that used a combination of pictures, sounds, and charts helped them learn. Question 24 also helped illustrate that the students felt multimedia stimuli helped them learn information.

Another one of the main objectives was to inquire if the students liked it when

the researcher and other educators used multimedia presentations to present information in the classroom. Out of the total students in this study, 73% stated that they liked it when teachers use multimedia presentations. Eighty percent of the female participants who were involved in this study also had positive attitudes about multimedia instruction. Seventy-percent of the males who participated, stated that they liked it when teachers presented information when multimedia programs were used. The total female population seemed to like multimedia presentations more than the male population. The females responded 10% higher than the males on the topic of teachers presenting information using multimedia instruction. Of the 31 females who reported that they had a home computer, 80% explained that they liked multimedia instruction. Out of the 32 males who identified that they had a home computer, 78 percent described that they liked multimedia instruction in the classroom.

Questions 26-30 the students were to rank five statement in order from the one that they liked the best to the one they liked the least. Each of the five statements asked the students about their preferences concerning computer programs. The researcher was trying to determine which type of computer program best captivated the students interest and fit their unique learning styles. Each subdivision of students stated that they liked computer programs that had a combination of pictures, text, and sounds the best. The students overwhelmingly voted this to be the number one choice out of the five statements in each of the five categories of students. Eighty-two percent of the total students liked a combination of pictures, text, and sounds the best. Ninety percent of the females who participated in this study also felt this was their favorite type of computer program. Seventy-seven percent of the males identified that this was their favorite type of computer program. The females seemed to like a combination of pictures, text, and sounds better in a computer program than the males in this study. Ninety-four percent of the females who had a home computer also felt that the best

type of computer program was a combination of pictures, text, and sound. Finally, the males who identified that they had a home computer, 81% stated that the combination of pictures, text, and sound was the best type of computer program that were stated out of the five choices in the questionnaire. The females who reported that they had a home computer liked this type of computer program better than the males who have a home computer by more than 10%.

Recommendations

After analyzing all the data that the students conveyed in the questionnaire, the research identified that students had very positive attitudes about multimedia computer programs. Also, the students liked it when multimedia computer programs were used by teachers to present new information in class, and they liked the pictures, charts, sounds, and text that accompanied these multimedia presentations when they were learning. Next, this group of students confirmed that when presented on a computer, visual information helped them learn. They also stated that they enjoyed class more, and had a better understanding of information when computers were used in the classroom.

The students also exhibited positive attitudes when working with computers, and their ability when they used computers. The students, males or females, were not afraid to use a computer. The females also showed that they did not have low self confidence, and they did not feel uncomfortable when using a computer like the review of the literature suggested. They actually exhibited very positive attitudes about their abilities and confidence to use a computer, and in some instances equaled or had a better attitude than males with and without a computer. The researcher is not sure why

the females had such contrasting attitudes that were stated in numerous studies in the review of the literature. Was it because the program used in this study was not associated with programming, and reduced the anxiety that females may have about computer when they are associated programing as suggested by Bohlin in 1993. Or maybe females realize that in order to be successful in the twenty-first century's job market they will have to be proficient in the use of computers? This question may never be answered, but this study seems to indicate that females are not computer-phobic, and that females do not doubt their ability to operate a computer. Further research about gender differences may finally answer the question about males' and females' ability to use a computer. If researchers use computers in a variety of subject areas and with different computer applications, this may be a better reflection of the males' and females' ability to operate a computer.

This study also seemed to indicate that students would like teachers to integrate computers and multimedia computer presentations into their curricula. Lastly, the researcher would like state that multimedia computer programs are not the panacea for all students, but most of the students have indicated that seeing is believing.

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Appendix

APPENDIX
EIGHTH GRADE STUDENTS' ATTITUDES TOWARD THE USE OF COMPUTER-BASED MULTIMEDIA INSTRUCTION IN LEARNING SELECTED UNITED STATES HISTORY CONCEPTS

BACKGROUND INFORMATION:

DIRECTIONS:

Please place a check in the blank that applies to you. Check only one for each question.

1) What is your gender?

     Male _____   Female _____

2) What is your age?

     10-12 _____   13-15 _____   16-18 _____

3) What is your ethnicity?

     American Indian _____   Asian/Pacific Islander _____

     Black/ African American _____   Hispanic _____

     White _____   Multi Racial _____

4) What is your current grade level?

     7 _____   8 _____

5) What time/period of the day do you have this class?

     Period 2 _____   Period 3 _____ Period 4 _____ Period 5 _____

     Period 6 _____   Period 7 _____

6) What type of high school educational plan are you going to enroll?

     College Prep _____

     Vocational Training _____

     Honors College Prep _____

     Combination College Prep/ Vocational Training _____

7) What type of education plans do you have?

     High School Diploma/Work _____   Five or more year college program _____

     Vocational Training School after High School _____   Military _____

     Two year college program _____   Other _____

     Four year college program _____

BACKGROUND INFORMATION:

8) Do you have a computer at home?

Yes _____   No _____

9) Do you use your computer at home?

Yes _____   No _____

If you did not check yes for number 9, do *not* answer 10-14.

10) Are you allowed to use the computer at home?

Yes _____   No _____

11) How many days during a week (seven days) do you use a computer at home? Circle your response.

0 days   1 day   2 days   3 days
4 days   5 days   6 days   7 days

12) Which adult, 18 years or older, uses the computer the most at your home? (Include a brief descriptor, ex., my older brother)

_____

13) How many days during a week (seven days) does the person you described in question 12 use the computer?

0 days   1 day   2 days   3 days
4 days   5 days   6 days   7 days

14) Why do you use the computer ? Check more than one if the situation applies to you. If you check other, please describe what the other uses may be.

School Work/ Homework _____   Reports _____
Games _____   Internet _____
Other _____ :   _____

DIRECTIONS: Please read the following statements about computer usage carefully. Please, *CIRCLE* the number which best describes your opinion about computer usage.

SA = Strongly Agree   A = Agree   U = Undecided   D = Disagree   SD = Strongly Disagree

		SA	A	U	D	SD
1	I enjoy working with computers.	5	4	3	2	1
2	Working with computers makes me want to learn.	5	4	3	2	1
3	If I know more about computers, it will be easier to get a job.	5	4	3	2	1
4	Computers are exciting to use.	5	4	3	2	1
5	I have a good understanding of how to operate a computer.	5	4	3	2	1
6	If taught, anyone can learn how to operate a computer.	5	4	3	2	1
7	Computers make learning information easier.	5	4	3	2	1
8	I like it when teachers present information using computers.	5	4	3	2	1
9	I feel confident about my ability to use a computer.	5	4	3	2	1
10	My parent(s) encourage me to learn about computers.	5	4	3	2	1
11	My friends believe that males are better at using computers.	5	4	3	2	1
12	My friends believe that females are better at using computers.	5	4	3	2	1
13	I feel comfortable when I use a computer.	5	4	3	2	1

SA = Strongly Agree   A = Agree   U = Undecided   D = Disagree   SD = Strongly Disagree

		SA	A	U	D	SD
14	Males and females have the same ability to use a computer.	5	4	3	2	1
15	My friends think that using computers is fun.	5	4	3	2	1
16	I understand information better when it is presented on a computer.	5	4	3	2	1
17	Computers help me learn new information.	5	4	3	2	1
18	I pay attention better when computers are used in the classroom.	5	4	3	2	1
19	I enjoy class when computers are used.	5	4	3	2	1
20	I remember information better when teachers use computers to present information.	5	4	3	2	1
21	I feel that when computer programs show pictures they help me learn.	5	4	3	2	1
22	I feel computer programs that show charts help me learn.	5	4	3	2	1
23	I feel sounds or voices in computer programs help me learn.	5	4	3	2	1
24	I feel computer programs that use a combination of pictures, sounds, and charts help me learn.	5	4	3	2	1
25	I like it when teachers present information using computer generated multimedia presentations.	5	4	3	2	1

Multimedia- is a combination of text, pictures, and sounds in the digital form. Multimedia also can add movie clips, simulations, animations, and other audiovisual material.

Text- are letters or words that appear on a computer screen.

DIRECTIONS: Read the following five statements, and use them to answer 26-30. Please use each statement only once.

Text- are letters or words that appear on a computer screen.

A. I like computer programs that just have text.

B. I like computer programs that just have pictures.

C. I like computer programs that have a combination of sounds and text.

D. I like computer programs that have a combination of text and pictures.

E. I like computer programs that have a combination of pictures, text, and sound.

26) Which of the above statements **best** represents your opinion?

   A   B   C   D   E

27) Which of the above statements is the **second** best response in your opinion?

   A   B   C   D   E

28) Which of the above statements is the **third** best response in your opinion?

   A   B   C   D   E

29) Which of the above statements is the **fourth** best response in your opinion?

   A   B   C   D   E

30) Which of the above statements is the **fifth** best response in your opinion?

   A   B   C   D   E