To The Graduate Council:

I am submitting herewith a dissertation written by Ammar Hassan Safar entitled "Selective Perspectives of Implementing Computer Technology in K-12 Education in the State of Kuwait." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

Edward L. Counts, Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:

Interim Vice Provost and
Dean of The Graduate School

SELECTIVE PERSPECTIVES
OF IMPLEMENTING COMPUTER TECHNOLOGY
IN K-12 EDUCATION
IN THE STATE OF KUWAIT

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Ammar Hassan Safar

August 2001

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DEDICATIONS

This dissertation is dedicated with love and appreciation to the people who mean so much to me--my beloved wife, Nada, and beautiful daughters, Noor Al-Zahraa and Hawraa, who have been a magnificent source of support, encouragement, inspiration, patience, loyalty, honesty, advice, fervent prayers, and unconditional love. I am deeply grateful to my wife who has instilled the importance of faith, love, education, appreciation, and perseverance in my life; to my family and honest friends for their continued support; and to my country, the State of Kuwait, for its generosity. I could never have come this far without your devotions. Thank you all.

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ABSTRACT

Through this research, the author examined the opinions and attitudes of virtually every segment of the Kuwaiti society (i.e., administrators, teachers, students, parents, and community members) toward the use of computers and technology in K-12 education. A Likert scale questionnaire was the primary vehicle for data collection. This questionnaire was designed to find out value judgments for issues such as implementing computer technology as an independent subject in K-12 schools versus integrating computer technology in all other subjects.

A stratified random sample was secured from all five Kuwaiti governorates (i.e., regions) from 70 schools. The overall number of participants who received the study's survey was 1,190. Of the questionnaires distributed, 1,165 were returned, for a return rate of 97.89 percent. Both descriptive statistics procedures (e.g., frequency, mean, and standard deviation) and inferential statistics procedures (e.g., factor analysis, analysis of variance (ANOVA), Tukey's HSD multiple comparisons, and t-test) were conducted.

The study yielded interesting findings. The use of computers and technology appeared to be highly supported by most of the participants polled in this research. The results clearly showed that their attitudes were consistently positive. The results also revealed that Kuwaitis do value computers and related technologies. Kuwaiti people believe that they should be used in K-12 schools. They also believe that computers should be taught as an independent discipline area and (at the same time) they should be integrated into all other subject matters. Moreover, the study yielded few demographic differences when comparisons were conducted between the computer technology attitude

scores and other relevant demographic variables such as governorate, computer ownership, computer usage, and age.

The study was an educational context evaluation research. Indeed, it was actually the first part of an educational evaluation research design called "STUFFLEBEAM" or "CIPP" model. For this study, the author used a selected aspect of a context evaluation method. While context evaluation involves all aspects of the situation (e.g., materials, guidelines, resources, and individuals), this study focused on only the perceptions of people. Thus, it must be viewed as being the first step in a series of investigations.

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CHAPTER I

INTRODUCTION

Purpose of the Study

In today's society, technology is everywhere around us. It is part of virtually every career and even integrated throughout our personal lives. Technology must, therefore, be an essential component throughout children's school lives as well.

To put it somewhat differently, it is impossible to deny the tremendous effect rapid technological growth has had on our society. This explosion of new technologies has changed the way we live, from the way we do business to the way we communicate with each other. Technological advancements are also affecting the way we teach and learn. New skills needed in the workplace are catalysts that spur technology use in the classroom (National Council for Accreditation of Teacher Education, 1997).

Experts agree that technology should not be separated from teaching and learning. As a result of implementing technology into education, students will more likely possess a strong academic understanding and appreciation of the technology, arts, communication, mathematics, history and the social sciences, natural sciences, languages, and values deemed important by the community, such as honesty, respect for people and property, and work ethics (Xenia School City District, 1996).

As we approach the twenty-first century, schools and communities across the globe are embarking with renewed determination to restructure K-12 education. Many educators, parents, and students already believe that technology should be an integral part of K-12 education. To them, the reasons seem so obvious that they feel that everyone should recognize them. This common-sense rationale for using technology is based on two

major points. First, technology is everywhere; and secondly, technology has been shown to be effective as an instructional or educational tool (Roblyer & Edwards, 2000).

The fundamental purpose of incorporating technology into our schools is to enhance the education of the students. Technology that does not advance a student's learning has little value in the classroom. Technology used in conjunction with the most recent research and development findings on learning, however, may help all students achieve more in school (Illinois State Board of Education, 1995).

The use of computers in educational institutions has the potential to revolutionize teaching and learning. In fact, the use of computers has already revolutionized many other aspects of modern living. Simply stated, computers are effective and flexible tools that are applied to an unlimited variety of important problems and human endeavors (Maddux, Johnson, & Willis, 1997).

According to Sumner (1988), computers are so well integrated into daily life that they are transparent. That is, computers are used in banking, business, transportation, manufacturing, design, retailing, health, medicine, research, government, legal fields, and education to such an extent, that we do not even see them. No matter what career one might choose, no matter where one lives, his/her future will involve computers and computing. An important place in that future belongs to people who can operate computers and interpret computer-generated information.

Indeed, computer knowledge and skills will be needed for a growing population of tomorrow's workforce. According to the last United States Presidential Task Force report, the number of jobs requiring computer skills increased from 25 percent of all jobs in 1983 to 47 percent in 1993. By the next decade, the report estimates 60 percent of the

nation's jobs will demand these skills and pay an average of 10 to 15 percent more than jobs involving no computer work (Oppenheimer, 1997).

According to Maddux, Johnson, and Willis (1997), the computer has the potential to be education's single most useful teaching and learning tool. All areas of education can benefit from the use of computer technology. Many students find interactive learning interesting, informative, and enjoyable; therefore, using the computer as a tool greatly benefits the learning process.

Much of the literature dealing with the use of computers in education substantiates computer technology as a reality in the educational and social environments. Further, much of the literature reveals a wide array of evidence relating to the effectiveness of computer technology on students' education.

An increasing number of countries recognize the importance of information, computers, and technology for their citizenry. Thus, they must plan to move toward the infusion of technology in their schools, governments, and businesses. The economic and technological "playing field" is not always level. The advantage favors those schools and countries that have technological resources, if not now, surely in the not-too-distant future. As a result of this obvious fact, the issue of technology in education is of paramount importance in this writer's country, the State of Kuwait.

The initial reason for this research was to provide a needs assessment map that could be used to discover the route of technology's infusion in Kuwaiti schools. This study was undertaken in an effort to investigate, analyze, and help understand what administrators, teachers, students, parents, and community members in the State of Kuwait think about the idea of implementing computer technology in K-12 education. In support of this goal, the research examined the opinions and attitudes of virtually every segment of the

Kuwaiti society toward the use of computers and technology in Kuwaiti schools. This study evaluated the technology climate in the State of Kuwait and provided an insight into how extensively the Kuwaiti people value computer technology.

Problem Statement

The problem of this study was the opinions of administrators, teachers, students, parents, and community members in the State of Kuwait concerning their perceptions of implementing computer technology in K-12 education. The following research questions guided the investigation:

1. Do Kuwaitis have a vision of computer technology potentials in education and the workforce?
2. Should computers (if advocated) be used as an independent discipline area, or integrated into all other subject matters, or both?
3. Should a national computer technology program be developed?
4. Should national technology standards be developed?
5. Should universities, colleges , and other post secondary institutions prepare computer teachers?
6. Should teachers (both inservice and student) be given much attention to training?
7. Should fund raising for computers and related technologies in K-12 schools be shared among all sectors (i.e., governmental, public, and private) of society?
8. Are there any demographic differences with regard to how Kuwaiti people feel about computer technology?

Assumptions

This study is based on two assumptions. The first assumption was that all the respondents answered the Likert scale survey truthfully, thoughtfully, and honestly. The second assumption was that all the research participants were acquainted with computers.

Limitations

One of the limitations of the study was the inability to survey a large population of people (i.e., administrators, teachers, students, parents, and community members) due to the fact that the writer resides in the United States. Findings might have been more representative with larger number of participants. Another limitation of the study was the limited amount of knowledge that the Kuwaiti people had about the issue of implementing computer technology in K-12 education.

The writer chose the Likert scale questionnaire format as the tool to gather the pertinent information for the study. A limitation of the Likert scale questionnaire was the vulnerability of the variance to biasing response sets. For example, Isaac and Michael (1995) claim that individuals have a tendency to rate high in one response on the rating scale. A fourth limitation was that the phrase "computer technology" might have been interpreted differently by those who were surveyed.

Definition of Terms

Achievement is the amount of gain or difference in pre- and post-test scores as measured by computer testing software or standardized test.

Attitude is a feeling or reaction towards something such as an issue, an idea, or an act.

A positive attitude may be indicated by an individuals's enthusiasm, while a negative attitude may be indicated by an individual's frustration or anger (Heller et al., 1988).

CAI (computer-assisted instruction) is software designed to help teach information and/or skills related to a topic. It is also known as "computer-based instruction" (CBI) or "courseware" (Roblyer & Edwards, 2000). Thus, CAI and CBI are interchangeable terms used to describe the use of computer programs (e.g., drill and practice, tutorial, and simulations) as a learning process tool. These programs either teach students new information, reinforce concepts they have learned previously, or change their attitudes in some predetermined way (Simonson & Thompson, 1997). The programs often include personalized tutoring which allow students to progress through the materials at their own rate with immediate feedback, correctives, and reinforcements.

CIPP model is a mechanism for making decisions by delineating, obtaining, and providing useful information for judging decision alternatives. Put somewhat differently, the "CIPP" model provides a service function by supplying data to administrators and decision-makers charged with conduct of program. The CIPP model is divided into four evaluation research components. They are: context evaluation, input evaluation, process evaluation, and product evaluation research. This model also called "STUFFLEBEAM" evaluation model in honor of Daniel Stufflebeam who created it (Isaac & Michael, 1995).

Computer is an electronic device controlled by commands stored in its internal memory that can accept and store data, perform arithmetic and logic functions, and output information without the need for human intervention. A computer is also a device that can receive and store a set of instructions in a predetermined and predictable fashion. The definition implies that both the instructions and the data on which the instructions

act can be changed; a device whose instructions cannot be changed is not a computer (Simonson & Thompson, 1997).

Computer education is the study of computers and related technologies as an independent subject with related objectives and skills in K-12 education. Computer education teaches students to understand, use, and manage computers and related technologies. The curriculum covers the development of computers and related technologies (their history) and their effects on people, the environment, and society. It also focuses on topics such as computer-assisted instruction (CAI), computer awareness (i.e., the understanding of how a computer works, its parts and uses), programming (i.e., the ability to instruct the computer in a formal language that tells it how to perform a certain task), keyboarding and typing skills, and so forth.

Computer literacy refers to the knowledge (i.e., what we should know), skills (i.e., what we should be able to do), and perceptions about computers and related technologies (i.e., any machine, object, or item that is used with or without computers) that are needed to function effectively in a society or segment of society that is dependent on computers and information technology. Simply stated, computer literacy is the ability to use, manage, understand, and assess technology.

Computer technology, unless specifically stated otherwise, will refer to computer literacy.

Disciplines are the different academic subjects, including but not limited to computer literacy, language arts, mathematics, science, and social studies.

Distance learning is using some means, electronic or otherwise, to connect people with instructors and/or resources that can help them acquire knowledge and skills (Roblyer & Edwards, 2000). Stated differently, distance learning is an umbrella term

describing the practice of educating learners who are separated from the teacher or trainer and each other by space, time, or both (Moller, 1998).

Drill and practice is an instructional software function that presents items for students to work (usually one at a time) and gives feedback on correctness; designed to help users remember isolated facts or concepts and recall them quickly (Roblyer & Edwards, 2000).

Education is designed to enable individuals to grow on all levels (e.g., spiritually, morally, intellectually, socially, and physically) as much as their aptitudes and abilities allow related to the nature, philosophy, and aspirations of the Kuwaiti society and in accordance with the principles of Islam, Arab, and contemporary culture. The aim is to strike a balance between individual's interests and the society needs for positive participation in the progress of the Kuwaiti society in particular, the Arab society, and the world in general (State of Kuwait: Ministry of Education, 1976).

Electronic mail (e-mail) is a type of software that provides for the easy sending and receiving of messages (e.g., letters or notes) from one computer to another, or from one person to one or more other people via telecommunications (Simonson & Thompson, 1997) (Roblyer & Edwards, 2000).

Governorate is one of five regions in the State of Kuwait. It is roughly equivalent to counties or parishes in the United States.

Integration is the combining of two or more subject areas into the same lesson or project.

Internet is a complex interconnection of networks which links millions of computers in thousands of networks on all continents. Networks connected through the Internet use

a particular set of communications standards to communicate, known as TCP/IP (Simonson & Thompson, 1997).

Likert scale survey is a simple and widely-used method for measuring attitudes. Usually, respondents indicate their attitudes by selecting one of five options (strongly agree, agree, undecided, disagree, and strongly disagree) for each statement in the attitude inventory.

Low-ability/aptitude student is defined, for the purpose of this study, as a student who has been assigned, by reason of previous achievement and/or standardized test scores, to a homogeneously grouped "low-track" or fundamental level class.

Multimedia is a computer system or computer system product that incorporates text, sound, pictures/graphics, and/or video (Roblyer & Edwards, 2000).

Simulation is a type of software that models a real or imaginary system in order to teach the principles on which the system is based (Roblyer & Edwards, 2000).

Technology, unless specifically stated otherwise, will refer to a computer, its software, and hardware tools used in the educational field. Stated differently, technology refers to tools that can be used by the teacher to instruct, supplement, or enhance lessons with the use of computers, scanners, CD-ROMs, DVD-ROMs, laser discs, televisions, VCRs, video cameras, presentation equipment, graphic calculators, and the Internet on-line services such as the World Wide Web (WWW), bulletin board systems (a.k.a. usenet, or discussion groups, or newsgroups), chat rooms, e-mail, gopher, telnet, and anonymous FTP services.

Technology can also be defined as "human innovation in action" (Technology for All Americans Project, 1996, p. 16). It is often identified as just tools or devices such as computers, scanners, CD-ROMs, DVD-ROMs, laser discs, PDAs, fax machines, cell

phones, televisions, VCRs, video cameras, presentation equipment, graphic calculators, Internet, and so forth. This vision of technology as electronic platforms is narrow and reflects only a small part from the overall technology domain. Technology also consists of an endless array of knowledge (i.e., what we should know) and skills (i.e., what we should be able to do) everyone should acquire or possess in order to be technologically literate. These skills and knowledge enable us to use, manage, understand, assess, create, and control devices and systems (i.e., technology) (Technology for All Americans Project, 2000).

Technology literacy, unless specifically stated otherwise, will refer to computer literacy and technology.

Telecommunications is communications over a distance made possible by a computer and a modem or a distance learning system such as broadcast TV (Roblyer & Edwards, 2000).

Traditional instruction is predicated on the fundamental assumption that teachers are responsible for enabling student learning, that all students are capable of learning what teachers present, and that student success requires thoughtful, and explicit teacher practice.

Tutorial is a form of CAI, or CBI, where the computer carries on a dialogue with the student, presenting new information and giving the student a chance to practice becoming proficient at the new skill or concept (Simonson & Thompson, 1997).

CHAPTER II

REVIEW OF THE RELATED LITERATURE

Computer technology has an almost forty year history in education since it was first introduced as an educational tool in the late 1950's and the beginning of 1960's. Since then, a myriad of research and conceptual papers have documented the paramount importance of computer technology on students' education. For instance, research in this section indicates that computer technology has the potential to increase student achievement in standardized tests, increase student motivation toward learning, and increase student engagements in schools.

Because of the large number of studies undertaken in the last forty years since the first appearance of computers as an educational tool, the review of literature presented in this section is divided into six sections: (a) do computers really make a difference?, (b) the contribution of new technologies to education, (c) computer-assisted instruction (CAI), (d) a perspective on Internet uses for education, (e) distance learning at a glance, and (f) learning, teaching, and technology: making the connection.

Do Computers Really Make a Difference?

A 1989 report by the Office of Technology Assessment stated that children who used computers were between 1 and 8 months educationally higher than children who did not use computers (Marsh, 1993). According to researchers, studies show computer use increased test scores, increased time on task, decreased learning time, created more positive attitudes (Kulik, 1983), and built self esteem. Other researchers claim that visual learners learn more effectively by computer than traditional methods of teaching (e.g., lecture and recitation).

While many educators agree that computers make a difference, they also acknowledge that funding for educational technology is scarce because technology is expensive. As computers are purchased, districts and schools must make sure that the money is spent wisely.

Over the last 10-12 years, experts and non-experts have discussed factors that will provide a degree of assurance that computers will have a positive effect in student learning outcomes. This section will discuss those factors considered by the author to be the most important.

Vision

The first item of consideration should be to create a vision and develop ways to achieve that vision. The school administrator or principal is the logical person to initiate the process. He or she can encourage, affect, support, direct monies, generate enthusiasm, and generally keep things in order (Donahoo, 1986). Consideration must be given in this first planning stage to administrators', teachers', students', and parents' wants and needs as to how computers will be used in education (Branscum, 1992).

There are several ways that a principal can be a visionary by providing leadership and support in integrating computers and technology in education. For instance, a principal can (a) encourage, short, 15-minute, bag-lunch software inservices, (b) start a computer software party, or (c) offer a substitute and give teachers time to attend a computer seminar. By generating enthusiasm and generating support in relation to computers, teachers and students will "catch the fever."

Educator "Buy-In"

Educators who are computer illiterate cannot and will not use computers, according to Cowles, Larabee, and Hothem (1986); therefore, they must "buy-in." That is, each educator must have a computer at his/her desk and have extensive training in computer use. Further, he/she must understand the software involved, and how to effectively integrate that software into curriculum (Branscum, 1992). To maintain current knowledge and technology-comfortable educators, in-servicing must be on an on-going basis. Because computers are a technological innovation, perhaps even more emphasis than usual needs to be given to the human factors in their adoption and use in schools (Donahoo, 1986).

Involving educators in computer groups that plan and implement changes will decrease the amount of resistance and anxiety felt by the users of the new technology, and will create a sense of ownership (Donahoo, 1986). When there is ownership there is enthusiasm to use and share the knowledge. Ownership and excitement about the process is created when educators are empowered to make a difference that is not mandated or ordered; when the drive and enthusiasm comes from the inside. A good example is when educators share lesson plans with other educators and share software that has been successful in the classroom with other teachers. If teachers serve on the committees that pick the software curriculum guidelines, then they are more inclined to use the software themselves.

Paradigm Shift

There must be a paradigm shift to teacher as facilitator in order to integrate technology in the classroom. That is, the teacher develops goals for students and helps students develop responsibility for their own learning; thereby allowing students to

inquire and form ways to interact with subject matter. This also trains teachers to integrate software and computers into subjects they teach and learn how to use the computer as a tool (Marsh, 1993). Teachers can learn how to direct students in retrieving information and using that information to expand their minds.

Location of Computers: Classrooms vs. Labs

According to research, the first choice of many teachers is to locate computers in a computer lab, while their second choice is to split the computers between classrooms and a lab. Having computers in the computer lab gives students access to more computers, prevents computers from being "owned" by a teacher and thereby preventing other classroom's students from having access, and allows students to go to the lab for special help when they have time (Cowles, Larabee, & Hothem, 1986).

However, other sources claim that when computers are placed in a lab they are not considered part of the classroom curriculum. This view suggests that dispersing the computers among classrooms is a better idea to maximize use (Marsh, 1993). According to Marsh, computers should be placed in classrooms which allows them to be more thoroughly integrated into the curriculum (1993). In addition, if computers are placed in classrooms, no additional personnel would have to be hired (Merrill et al., 1996).

Other benefits of having computers in a lab are that students in one class can access computers at the same time thereby utilizing the computers continually. Software and components can be shared, and if one computer breaks down, it is not critical. However, there are drawbacks such as teachers are less likely to do clerical work on the computer, the computer will not be integrated into the curriculum, and the computers are more frequently used by the more advanced students (Merrill et al., 1996). Thus, having all the

computers in a lab can be a hindrance to the teacher (Marsh, 1993). However, before computers can be widely used in the classroom, funding must be more easily accessible (Maddux, Johnson, & Willis, 1997).

There are obviously differing opinions about where computers should be located in the educational setting. In light of the pros and cons surrounding computers in the classroom or lab, it appears that the best solution is an agreement among the district, administrators, teachers, and students.

Hardware

It is imperative to have reliable hardware. Computer hardware will often break down, but if there is support accessible for when these breakdowns occur, the negative effects will be less. When purchasing a computer make sure repair, maintenance terms, and rates are included (Cowles, Larabee, & Hothem, 1986). The hardware should be chosen after its use has been identified, such as compatibility with peripherals and necessary software programs (Merrill et al., 1996).

It is important to keep in mind that choosing hardware depends on the programs you intend to use. When choosing hardware, consideration should be given to future technology and what changes are forecast. Visiting other sites that have purchased hardware, for inquiries, may help in the decision.

Curriculum and Software

Certain curriculum requirement guidelines must be taught for each grade level. A teacher must have the option to choose software that will be used in the classroom just as that teacher determines ways to best meet and teach the curriculum requirements. Therefore, the curriculum would be more successful, and the students would find the

program more interesting, if the teacher was allowed to choose software. Many companies make software decision easier by providing catalogs to schools and visiting teachers in schools to demonstrate the software.

Summary of Do Computers Really Make a Difference?

We are in an information age and want immediate access to massive amounts of information. Computers impact our lives on a daily basis, giving us that information and making it easy and interesting to expand our minds. Educators, therefore, have the responsibility to ensure computer literacy in their students. Students will be better prepared and more effective as a result. Computers can transport students into an exciting world of new ideas and places. Children can become well-rounded and educated persons without learning computers, and if that is our only goal, then we should stick to traditional teaching methods, but computers allow educators to individualize the learning process.

Computers are not magical, but with the right software, they can have a remarkably positive influence on children's attitudes toward learning and their ability to comprehend and affect the world around them. Because of the computer's potential to help and to delight children, we should invest in computers and good software (Salpeter, 1992).

The Contribution of New Technologies to Education

Technology is an important and integral part of the entire industrialized world; its influence is felt in most every nation and has changed the way people work, play, and interact. Technological advances are the driving force behind changes in the workplace; changing not only what is being produced, but changing how a product is developed and marketed. As these technological advances change the workplace, the need to change the

education curricula to that of preparing students for a technologically driven environment has arisen (Bitter, Camuse, & Dubin, 1993). This gives students the maximum amount of exposure to technology and provides a foundation for applying their skills in the business world.

Today, it is no surprise that the most important workplace tool is the computer (Cannings & Finkel, 1993). Computers have become such an integral part of our environment that it would be difficult to imagine a world without them. Computers are used in everything from bookkeeping to robotics. However, people must have a working understanding of the computer as a workplace tool in order to maximize the benefits that computers offer. Learning computers as a tool is as important for students as it is for those already in the workforce.

One of education's main goals has always been to provide students with skills that would help them become lifelong learners. Students who become lifelong learners continue to increase their knowledge while growing and advancing, not only in the business world, but in society as well (Bitter, Camuse, & Dubin, 1993).

In order to prepare students for the challenges that face them in the workplace, educators need to create scenarios and projects in the educational environment that will stimulate a student's learning skills. The computer is an effective tool to help educators develop such programs and activities that will, in turn, stimulate student's skills.

According to a report by the Kellogg Commission on the Future of State and Land-Grant Universities, institutions of higher education must encourage lifelong learning skills, in part by ensuring that students have access to distance learning technology. Therefore, universities and colleges need to invest in technology; they need to prepare students to continue their education by using interactive and collaborative teaching methods to teach

critical thinking skills (National Association of State Universities and Land-Grant Colleges, 1999).

The report by the Kellogg Commission goes on to say that in order to create a "learning society," education should be available to everyone and that lifelong learning should be encouraged for students of all ages. To make resources available to everyone and to further the goal of lifelong education, the report suggests a team effort between universities, elementary and secondary schools, and governments and businesses. In addition, the report supports the creation of accredited groups whose purpose it would be to set standards for technology education and lifelong learning programs (National Association of State Universities and Land-Grant Colleges, 1999).

Reasons for Using Computer Technology

Several sources described reasons for using computer technology in education. One source states that, in this generation of rapid technological advances, it is only logical that teachers be provided with the most effective instructional methods available. Computers can be a highly motivating and instructional tool. However, to use this tool effectively, educators must be made aware of its benefits in the classroom (Miller & Olson, 1994).

Another reason for using computer technology in education is the computer's flexibility. Because the computer is meant to be a teaching and learning tool, a teacher does not have to change teaching methods; but merely adapt the computer to particular instructional formats.

Despite the fact that computers are new and exciting for many students, they may easily be "turned off" by them. One way to motivate students to use the computer is through the use of software programs. Usually it is not the computer that is the

problem; it is the software. While decent software should exist, the fact is that most educational programs are poor imitations of books, or good imitations of quizzes which are not seen as a good form of instruction (Schank, 1995).

Some good forms of instruction include tutorial programs. According to Schank (1995), the idea of being told to do this and that, and then being told to click a button to continue to the next page was not education. Educational software should allow the student to do the learning and not just be a passive participant. However, software developers are becoming more aware of the existing curriculum and the role of the teacher, which has led to changes in the development of educational software.

Another factor that motivates students to learn is the potential of failure. What will be learned if everything that will occur is expected? According to Schank (1995), there will be no need to change mental structures. However, learning means changing these structures. People who do fail are less apt to mind if they are by themselves. It is for this reason that computers make good teachers.

Cost-effectiveness is another reason to use computer technology. According to Fletcher, Hawley, and Piele (1990), using technology in the classroom has become more cost effective. Student to computer ratios have dropped to 15:1 from 125:1 ten years ago (Allison, 1995). "Ten years ago the limited access to computers and the limited knowledge about computers led educators to teach about computers. Today, knowing about computers is not enough. We must find ways to effectively use the technology as a tool in the learning environment," stated Allison (1995, p. 33-34). Everyday classroom applications exist as computers become more widely accessible and used by teachers and students (Ross, Anand, & Morrison, 1988). Teachers, however, must be aware of how to use this new technology as an effective teaching and learning tool.

Another reason to use computers is because computers are non-judgmental and they never lose patience (Miles & Weaver, 1986). Also, students can continue to review material until it is mastered, unlike regular classroom instruction where a teacher must move on due to time constraints. Higher achieving students progress at their own pace, minimizing boredom in the regular classroom. Thus, one of many reasons for using technology in the classroom is to individualize student's learning.

Summary of the Contribution of New Technologies to Education

Technology permeates every aspect of our everyday lives; whether in the home or the workplace. Incredible advances in technology have changed the way everyone, including students, live, study, and work. That is why it is more important than ever to give students access to the newest computer technology. This will not only give students the opportunity to develop lifelong learning skills, it will give them the opportunity to learn how to use the remarkable technological advances to their advantage in the future.

Computer-Assisted Instruction (CAI)

In reviewing the literature the writer found several studies concerning the use of computer-assisted instruction (CAI). As usage of technology in classrooms will increase, so will research into the effectiveness of these new programs. Studies have been done using students as young as preschool to college age students. Various areas have been studied from mathematics to music. Students have been studied in different countries, of varying socioeconomic backgrounds and abilities. The methods employed in these studies vary greatly, but the basis is the same, to determine the effectiveness of CAI. Does this technology deliver what it promises?

While a wealth of formal and informal computer attitude surveys and studies were examined for this study, the overwhelming majority of them have nothing but positive attitudes and attitude improvements to report from incorporating CAI. Critics of CAI implementation built their cases around issues not related to student-attitude status such as costs, teacher training, amount of computer access time, appropriate utilization standards, and so forth.

A Brief History of CAI

In the 1950's CAI was first designed in the United States, United Kingdom, and Japan with output frames of text for students to respond to based on their prior knowledge or by trial and error. Two of the original concepts of CAI are still present today—students work at their own pace and are provided immediate feedback. The 1960's saw the development of branching programs which helped students learn concepts at their-own appropriate level of difficulty. The 1970's, 1980's, and 1990's brought about increased CAI research resulting in high levels of program design and eventually expanded them to the sophisticated varieties of interactive software that saturate today's educational market.

The Effects of CAI on Student Education

A myriad of studies and conceptual papers have documented the significant role that CAI has had on student education in all disciplines and among all grade levels in the last four decades. Many researchers have undertaken studies which show computers help increase test scores. In addition, many students seem to spend more time-on-task even though there is a decrease in the amount of time necessary to learn. Finally, students seem to have more positive attitudes toward subject matter (Kulik, 1983). One can thus

imagine that such developments might well build higher self-esteem.

In 1977, Hartley used a meta-analysis, a study that reviews other studies, of CAI as it impacted on mathematics education in elementary and secondary schools. This analysis reported that the effect of CAI in mathematics raised student achievement scores 16 percent. She also concluded in her study that elementary students did better than secondary students with CAI (Hartley, 1977).

Burns and Bozeman (1981) conducted a meta-analysis of forty studies to determine the effectiveness of CAI mathematics in elementary and secondary schools. They also investigated the relationship between CAI and academic achievement. Their review indicated that CAI should be used for either the tutorial or drill-and-practice mode or as a supplement to instruction. CAI mathematics is not a replacement for traditional classroom instruction. Among other findings in support of CAI, drill-and-practice and tutorials CAI were more effective than the use of traditional methods alone. CAI also seemed more effective at the elementary than at the secondary level.

The results reported in Kulik, Bangert, and Williams (1983) indicated that 51 previous studies of CAI in various content areas in grades six through twelve were similar to those of Burns and Bozeman (1981). They examined five variables in their study: drill-and-practice, tutorial, computer-managed teaching, simulations, and programming. Both of these studies of CAI, 39 of the 48 studies, found a positive effect on student learning, student retention, and student attitudes. These effects seem to be "especially clear in studies of disadvantaged and low-aptitude students" (p. 25). A total of 23 studies favored CAI, and only two favored traditional teaching methods. Twenty-seven of their studies involved mathematics classes. Thus, while the studies were not unanimous the edge clearly appears to support the use of CAI.

In 1983, Bradley conducted a study of high school students studying United States history using CAI. He used the computer to help assist his instruction in class. Bradley used a standardized pre- and post-test to assess student achievement. He noted that there were no substantial differences in the attitudes of the group using CAI compared to a control group that received only traditional instruction. He concluded that student achievement was better with the group using CAI compared to the control group (Bradley, 1983).

Simulations offer the opportunity for the learner to gain content knowledge by virtue of their high level of involvement in the simulation experience. In a 1985 review of college business simulations, Joseph Wolfe concluded that a positive correlation existed between academic achievement levels and participation in simulation games, partially as a result of this interactive element. Research has demonstrated also that simulations are helpful in increasing interest in learning. Students with low academic achievement scores report much greater interest in learning when simulations are utilized (Butler, 1988). Other students reported that they enjoy learning more from simulations as opposed to other teaching methods because of the novelty factor of simulations (Klein & Freitag, 1991).

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 CAI. The control group received traditional social studies instruction. The results of Marsh's study concluded that CAI was effective and better than traditional teaching methods (Marsh, 1986).

A study by Dalton and Hannafin (1988) examined the relationship between CAI and traditional instruction with respect to remediation in mathematics. Their subjects were divided into four groups. Half of the students initially received traditional instruction, the other half were taught by CAI. For remediation purposes each group was then subdivided so that half of them were given CAI remediation and half received traditional worksheets. An analysis of variance indicated that neither method of initial instruction was better than the other but "there was significant interaction between initial instruction and remedial strategy" (p. 30). Put somewhat differently, students benefited more when the delivery system for remediation was different from the one employed for initial instruction. It did not appear to matter whether the initial instruction was traditionally taught or presented using CAI. Using a variety of remedial systems seemed to result in higher achievement.

A later review and analysis carried out by Roblyer (1989), used more recently developed methods of calculating effect sizes (measures of impact) to examine the results of 81 previous studies. His study casts doubt on the differential effect of CAI on students of different abilities noted by Kulik et al. (1983). Nevertheless, it did support the positive effect of computer-use on student achievement and on attitude toward school and subject matter.

In 1989, the Office of Technology Assessment reported that elementary children who used computers showed gains in achievement between one and eight months higher than non-computer using peers (Marsh, 1993).

Furthermore, when using a self constructed computer attitudes study, Knight & Hawes (1990) found that practicing reading at the computer ranked second and reading stories on the computer ranked sixth among their second graders when comparing attitudes toward 27 different reading instruction strategies.

In a different type of study done using third grade students CAI was used as an aid in learning music reading skills. This study used the pre- and post-test method. The music reading skills included staff identification, pitch identification, and duration identification. Two different elementary schools were used in this study, one urban and one rural. Since a standardized test was not available to test these areas, the researcher had to design her own test. There was also a control group utilized in this test. Data was analyzed using a series of 2 x 2 analyses of variance, as well as a t-test. Although both groups achieved gains, the results showed significant gains of the CAI groups over the control group (Roach, 1990). This study appears to indicate that CAI not only can be used effectively in the traditional classroom areas, but also in other areas.

Houghton (1990) reported increases in student achievement and attitudes among second graders when she incorporated computer activities designed to aid visual memory of spelling words and heighten student motivation during a ten week practicum intervention.

Over a three year period, Beyer, Richard, and Lancaster (1991) looked at small rural schools in Maryland, Pennsylvania, and New Jersey to examine the potential of CAI in improving academic performance and attitude. Attitude surveys at the ends of the first and second school years showed that students attitudes were consistently positive as they indicated they found computers fun to work with and easy to use, and they reported that they learned a lot on computers. Perhaps one of the most important aspects to their research was that the survey conducted at the end of the third year indicated that students perception of the positive impact and exposure to CAI had not dissipated over time (Beyer & Dusewicz, 1991).

Several researchers have conducted multi-school-analysis on the attitudes of students using CAI. Gilman (1991) compared pre- and post-measurements of student attitudes in four elementary schools in Mount Vernon, Indiana involving students in grades 1-6. His study found that highly significant increases in positive attitudes toward instructional technology occurred in all grades except first between the beginning and the end of the school year with the use of integrated CAI.

In 1992, Despot reported that the computers used by second graders in a low socioeconomic suburban school for authentic literacy experiences, such as developing the writing process and word processing, resulted in 90.3 percent of participants expressing positive attitudes and feelings in their writing logs.

In 1992, Boone and Higgins adapted a social studies textbook to a hypermedia format. They wanted to increase the quality of instruction time, decrease the demand for individualized teacher instruction, and promote a change in which the way their subject was taught. The study consisted of two groups, the experimental group and the control group. The experimental groups used either a combination of classroom lecture and computerized instruction, or a computerized instruction only, whereas, the control group only received traditional classroom lecture. Boone and Higgins 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 lecture or just used computerized instruction (Boone & Higgins, 1992).

In meteorology, Gardner (1992) conducted a study on third grade students in the Atlanta, Georgia area. She concluded that a combination of "hands-on" and CAI activities appeared to increase both her students' knowledge and positive attitudes toward this area of study.

Student education has been affected by the computer-assisted instruction not only in the United States, but also internationally (e.g., Japan, Germany, Netherlands, Austria, and Greece). For instance, in the Netherlands, Doornekamp (1993) reported that students had positive enthusiasm for using computers in the classroom. He also discovered that secondary students who were not interested in an academic subject matter when presented in ordinary lessons reported that they enjoyed learning about the same subject matter when doing so by computer.

Computers are the most common technological tools used in schools today. However, there are other technological tools (which may be used either with or without computers) that are effective in improving students' achievements, learning, and attitudes. For example, in 1994, Rock and Cummings conducted a study of fifteen schools of different ethic, socioeconomic status, and grade levels to see if laser videodiscs could improve student outcomes in science. The students who participated in this study ranged from grades 1 to 12. 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 results showed 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 outcome (Rock & Cummings, 1994).

Several studies have addressed the attitudes of specific groups of students toward CAI including students at-risk of dropping out of school, gifted students, low ability learners, those diagnosed with reading difficulties, and students for whom English was a second language. In general, studies with these specific groups have indicated positive attitudes toward CAI. Specifically, Newman (1995) found positive attitude changes in 86 percent of the students in grades 1-5 diagnosed with reading difficulties who read one or more levels below their grade level after a three-year study of reading intervention techniques employing CAI at a Cincinnati, Ohio public school.

Another study conducted by Zoni on seventh grade at-risk students (i.e., disinterested, unmotivated, and likely to leave school). The results of the study showed that attitudes toward writing and written assignments by seventh grade at-risk students improved when microcomputers, word processing, and telecommunications technology, such as e-mail, were incorporated into language arts assignments. An additional benefit was a dramatic improvement in the amount of time the students spent on-task (Zoni, 1992). Furthermore, Su (1990) conducted a 30-week study. He concluded that gifted fourth grade mathematics students reported that the inclusion of CAI in the introduction and review of math concepts to be both motivational and confidence-building.

Proponents of CAI are confident that the integration of computers into the classroom will, with proper use of the appropriate drill-and-practice or tutorial software, improve student academic achievement and, at the same time, acclimate them to the use of technology which is playing an ever-increasing role in society (Burns & Bozeman, 1981; Garrett, 1995).

Another study in which CAI served as a supplement to traditional classroom instruction involved urban high school students in two business education classes (Din, 1996). The two classes received five-to-ten minutes of daily lecture followed by individual work. Each class was divided in half, with one half using drill-and-practice CAI while the other half read the text and did related assignments. After twenty-five minutes, the students who had been using the computers went to their seats and the other students went to the computers. Din looked at two variables. First, he compared the achievement of students in each group, then, he compared the amount of time each student spent off-task. Achievement was measured by comparing grades received on-seat work assignments with those received on CAI. Off-task behavior was measured by recorded observations. Din concluded that student achievement with CAI was significantly higher and off-task time for the CAI group consistently shorter. Students also exhibited fewer disruptive behaviors during CAI, although no causal relationship was proven.

Likewise, Enix (1996) conducted a similar study with sixth grade creative writing students with the results showing a similar positive influence in attitudes toward the writing process when students were given the opportunity to work on computers.

Summary of Computer-Assisted Instruction (CAI)

There is no longer a question about whether CAI will be used in schools. Nearly everyone agrees that CAI has had a significant role on students' education in all disciplines and among all grade levels in the last four decades. Research indicates that CAI seems to have the potential to increase student achievement in standardized tests, increase student motivation toward learning, and increase student engagement in schools. With the rapid pace of software publication and the influx of technology in the classrooms more study

will need be done to determine if these programs are up to the promised standards. Teachers will need to be familiar with these programs and the use of technology. The more knowledgeable and involved in technology teachers become, the more accepting and effective they can be.

A Perspective on Internet Uses for Education

Today is a new world of education where traditional classroom walls have been removed for educational tools such as computers, CD-ROMs, DVD-ROMs, laserdiscs, telecommunications, and multimedia. These tools help create projects in partnerships with peers and people around the world. Teachers have at their touch, access to the technology that could challenge students in ways never thought of before.

But this change in educational technology does not occur overnight; it comes about through a commitment of continuing education and through a change in the way traditional instruction has been delivered. Although a monumental task, the results can be most satisfying and exciting.

It is not possible to clone all the different software and hardware configurations that educators use. However, what should be of prime concern is how to match the tool to the task. It does not make a difference whether a school utilizes an Apple or IBM, Windows or Mac; what is important is how the new technology can help educators perform their jobs better. Thought should be given as to how the technology can influence teaching and how the technology can help students become better writers, problem solvers, readers, and thinkers (Gardner, 1996).

Telecommunications

A complete understanding of telecommunications is necessary to better understand

the Internet. Telecommunications is the ability for information to be exchanged over distance (Thorson, 1998). Telecommunication technology brings information resources from around the world and places it into the classrooms, thereby turning the classroom into a true learning center.

Teachers can use technology to stay in touch with colleagues around the world, and maintain large volumes of data. In addition, teachers could have access to the problem-solving experts of the higher education and industrial world. Students would then be given timely instruction that is not currently available in an isolated classroom, as well as access to information and resources worldwide with those who have similar likes and dislikes (Roblyer & Edwards, 2000).

What is the Internet?

Most people think of the Internet and think only of computers. But it is more than that; it is computers, people, information sharing, and communication. The Internet is a worldwide network that is linked electronically; it is a system of people, information sources, and computers linked together (Hahn, 1996). Think of the Internet as an electronic superstore of information that is made up of thousands of independent, interconnected, small and large "stores" which are accessed from a central location, which is your computer. This network gives a person access to a wide range of resources. No one person or group controls Internet information; it is like a large electronic democracy (Land & Turner, 1997).

In 1969, the Internet began as a network of computers between four universities and was called ARPAnet, for the Advanced Research Project Agency (ARPA), which was a U.S. Department of Defense agency. Since then the Internet has grown immensely, to say

the least. Although the Internet had approximately 10,000 networks in 1993, most experts now believe that the number to be in the hundreds of thousands. Each connected network can consist of tens of thousands of computers. Thus, the total number of Internet users probably totals in the millions (Thorson, 1998).

The World Wide Web (WWW) is the slice of information from the Internet that is seen as text and graphics. Most people refer to it as the Web. The Web has become the "hot spot" for users because it lets anyone advertise a certain cause , or even themselves, visually and graphically twenty-four hours a day, seven days a week. The Internet also includes chat rooms, bulletin board systems (a.k.a. usenet, or discussion groups, or newsgroups), e-mail, telnet, gopher, and anonymous FTP services.

The Internet provides immediate access to a world of information on any topic imaginable. And this information is constantly being updated; the newest and freshest information is always available at the touch of our fingertips. While simply sitting in front of the computer, users can "browse" for information, read about favorite hobbies, make new friends, ask questions of experts, make travel arrangements, and make purchases, such as buying a home and ordering tickets; virtually anything one can think of is available on the Internet. This "information superhighway" takes Internet users virtually anywhere they want to go at anytime. In addition, educational resources are readily available on the Internet. Documents concerning virtually any subject can be researched as well as lesson plans, activities, and educational materials; the possibilities of education on the Internet are amazing and endless.

The Internet dynamically links information into a seamless whole. It makes information available to anyone from anywhere in the world. It is like being able to open any book in any local library from a computer--with a click of a mouse. You may start

your information hunt next door and finally track down your quarry somewhere in Australia. From where you sit, however, the distance between the two online data sources makes no difference. For instance, a teacher can use this technology to look at and print articles, documents, and pictures, as well as review current facts about news, weather, and sports that may be used in the classroom, without ever leaving his/her desk (Thorson, 1998).

But there is more to the Internet than information. The Internet is also a tool that allows users to communicate electronically via e-mail, talk on-line in real time on chat rooms, or even through video conferencing (Thorson, 1998).

To explore the Internet, one must have four things: (1) a computer with Internet capabilities, (2) a telephone line, or cable line, or satellite line access (in other words, an Internet service provider), (3) a Web browser such as Microsoft Internet Explorer or Netscape Navigator, and (4) a destination.

Why Use the Internet in the Classroom?

Internet technology really came into its own in the 1990's, spilling from technical labs and business offices into living rooms with amazing speed. This sudden increase in the use of the Internet was a result of the growing interest in technology by people of all ages and cultures (Roblyer & Edwards, 2000).

Some people still think the Internet is a passing fad. However, these are the same people who thought the desktop computers in schools during the 1970's and 1980's were just a fad also and would not last (Land & Turner, 1997).

The Internet has gained everyone's interest, including educators. It is the most popular technological tool available for finding information and communicating with others. The

most important benefit of Internet is the complete and thorough availability of information and services. Students and teachers alike can connect to the Internet and exchange messages and files and can locate information from virtually any region of the world. The site that is accessed need only be connected and provide an online list of available resources to be a part of this growing phenomenon (Roblyer & Edwards, 2000).

The Internet provides parents, students, and teachers a way to access information at a quantity and quality never before realized. It allows users to retrieve information from around the world; information that can be used individually or as a cooperative effort (Thorson, 1998). However, due to the lack of quality control on the Internet and because large volumes of material are available, students should be taught not to memorize the information but to find, organize, and evaluate information retrieved (Land & Turner, 1997).

Gathering information is but one tool of the Internet; the other is communication. The Internet extends one's ability to communicate with other people around the world. Professionals in business, higher education, industry, manufacturing, and the military use the Internet to perform daily tasks relevant to their professions (Land & Turner, 1997).

Once a teacher has access to the Internet, he/she has access to all the users of the Internet--teachers sharing and collaborating with other teachers, students with other students, scientists, and business people, everyone. Distance, class, race, and culture are no longer barriers to the sharing of ideas. People can simply communicate (Thorson, 1998).

According to Land and Turner (1997), the following are types of resources available on the Internet that teachers may choose to explore:

- Classroom and curriculum activities and resources

- Lessons and lesson plans
- Content area resources
- Online libraries, tutorials, periodicals, museums, and field trips
- Assessment and evaluation resources
- Teacher information and support

Some uses of the Internet in the classroom include, but are not limited to, the following:

- Study of other cultures and languages
- Facilitate collaborative learning with other students, classrooms, teachers, and experts from anywhere in the world
- Solicit advice and information from experts in various fields
- Collect and exchange information on a wide variety of topics throughout the world
- Join discussion groups
- Search for real-world data and information contained in various electronic databases
- Find a vast amount of instructional materials such as graphics, maps, video and sound clips, articles, and other support materials relevant to classroom instruction
- Practice communicating in a foreign language
- Participate in online instructional activities
- Publish student' work online
- Participate in electronic expeditions and field trips
- Use telementoring selectively
- Experience success in learning to do research

- Convert your classroom into an information resource center in which you collect and share data with each other
- Locate and retrieve timely information (breaking news) as needed for your classroom
- Utilize government information which is not easily accessible outside the Internet to the general public

Most items in the above list come from Land and Turner (1997), but some have been added by this author.

What are Other Schools Doing?

In a study by Dyrli and Kinnaman (1996b, p. 60), conducted in schools in 21 states, the most popular Internet activities were as follows, in order of decreasing occurrence:

- Searching for specific information online
- Browsing with applications such as gopher or a WWW browser
- Electronic keypad exchanges between individual students
- Electronic field trips to museums, science centers, or with adults conducting a scientific or creative activity
- Publishing class or individual products on the network
- Collaborative science investigations with classes in other places
- Collaborative writing projects with classes in other places
- Cultural exchanges with classes in other places

What Can Educators Do on the Internet?

Instructional uses on the Internet seem to be growing as fast as the Internet itself. They are growing at an astronomical rate. As connections to the Internet become easier

and as more resources of interest to educators become available, the Internet should become a major resource in linking for learning (Roblyer & Edwards, 2000). There is a massive amount of trivia and information on many topics available on the Internet. In addition to this information, according to Harris (1996), there are eighteen Internet activity structures that can be useful for teaching and learning and that are particularly interesting to teachers. Harris classifies these structures into three genres. Following is a brief description of each of the structures:

I. Problem-Solving Projects

Either competitive or collaborative, these types of activities are community problem-solving projects that can include people from around the world:

(a) Electronic Process Writing: With a focus on writing, e-mail is used to communicate between students. Students may also communicate with other students, teachers or writers, sometimes asking others to critique their writing and/or content of their writing.

(b) Information Searches: In this type of activity, students receive clues to which they apply electronic or classroom skills to formulate a response.

(c) Virtual Gatherings: A real-time computer-mediated meeting is set up between students in different locations. One variation of this is when students participate in similar activities at different sites without direct electronic contact "in spirit" (Harris, 1996, p. 173).

(d) Sequential Creations: Students create a written text of some sort, or create a graphic image which is sent electronically to other students who then add to it and send it on to yet other students.

(e) Parallel Problem Solving: Students from two or more sites are given a similar

problem. They then solve the problem and share their approaches electronically.

(f) Simulations: Although probably the most educational activity, simulation is the most difficult to plan and carry out. Students try to solve real-world problems online.

(g) Social Action Projects: The idea with this activity is to give students the responsibility for learning about and solving important worldwide issues by creating "collaborative, meaningful social action projects" (Harris, 1996, p. 177).

II. Information Collections

In information collection, students locate, collect and compare data on a either a topic assigned to them or a topic of their choice:

(a) Database Creation: Data is collected and organized in database format; the database can then grow and be used by subsequent classes in studying a certain topic. Depending upon the topic studied, the project can involve district, city, region, state, national or international areas.

(b) Electronic Publishing: Documents, such as newspaper, magazines, stories, or poems are collected and exchanged electronically.

(c) Tele-Field Trips: In their own classroom, teachers and students from around the world can take part in observations of actual field trips. An example is MayaQuest, where a team of archeologists and cyclists took a trip to Central American to study the Mayan culture. Pictures and descriptions of their experience were sent back electronically while the group continued the expedition.

(d) Information Exchanges: Information is exchanged on any subject of educational value. The range of topics is endless, curbed only by the imagination of students and teachers.

(e) Pooled Data Analysis: Data, that can be as simple as a survey on one topic to more complex topics involving earth, behavioral and life science, is collected from various sites and analyzed.

III. Interpersonal Exchanges

Students communicate with others electronically via e-mail, newsgroups, and electronic bulletin boards and lists:

(a) Electronic Appearances: Students or guests can use e-mail, newsgroups, bulletins boards or electronic lists to make electronic appearances. Participants can exchange ideas and questions, as well as responses. Scientists, politicians, newsmakers and specialists currently make use of this technique.

(b) Electronic Monitoring: This technique is a form of mentoring between students and specialists from industry, businesses, universities or the military. Ask Dr. Math is an example of this technique. Questions and answers that are available electronically can create an archive which can be built upon which can, in turn, benefit others.

(c) Global Classrooms: Two or more classrooms participate in this activity by studying and sharing the same topic. Topics include literature, science, language culture and news.

(d) Impersonations: Someone in this activity plays the role of a famous individual and answers questions that are submitted electronically. A professor or a graduate student, for example, could play a character that could range from historical figures to literature characters.

(e) Keypals: Similar to the old fashioned pen pal, this activity involves two students that communicate electronically. They can discuss pre-assigned topics or choose one

themselves. This form of activity works wells for language and cultural activities in other counties, states or even countries.

(f) Q-and-A Services: Students submit questions to experts via e-mail or an electronic list.

In addition to Harris (1996) Internet activities structures, a good resource for finding out more about Internet uses for education is through "Learning and Leading with Technology" (formerly "The Computing Teacher"), a magazine published by the International Society for Technology in Education (ISTE), which has a monthly column called "Mining the Internet." This column has tips on late-breaking developments and products, as well as lesson ideas and reports of how educators are using the Internet successfully in their classroom activities (Roblyer & Edwards, 2000). Other good resources for finding out more information about Internet uses for education are through "Technology & Learning," a magazine published by Miller Freeman, Inc.; "Syllabus," a magazine published by Syllabus Press, Inc.; and "Technological Horizons in Education Journal" (T.H.E. JOURNAL), a magazine published by T.H.E. JOURNAL, L.L.C. A special issue of "Electronic Learning," a magazine published by Scholastic, Inc. (1996), also has good resource lists and suggestions.

Summary of a Perspective on Internet Uses for Education

Today is a new era of education where traditional classroom walls have been removed for educational tools such as computers, CD-ROMs, DVD-ROMs, laserdiscs, telecommunications, and multimedia. Therefore, a discussion of telecommunications in general and the Internet in particular cannot be separated from computers and related technologies knowledge and skills discussion.

While the influence of telecommunications on education will be more dramatic than some hope for, it will not be as dramatic as some believe. Telecommunications is pervasive in our society and, therefore, will have an impact on our schools. Telecommunications impacts all aspects of our society, whether it is the military, higher education, business, or industry. For example, compare the references to the Internet, in magazines, books, and newspapers, on television and radio, to references as recent as 1995. There is no doubt that there is a telecommunications revolution occurring in industry; our schools cannot help but be a part of that revolution (Land & Turner, 1997).

Traditional curriculum becomes outdated quickly; it is not individualized and is not connected directly to the lives of most students. Telecommunications in general and the Internet in particular, on the other hand, brings individualization and immediacy into the classroom. It brings current materials, including databases, map, articles, reports, surveys, diagrams, photographs, video and sound clips, directly to us (Dyrli & Kinnaman, 1996a, p. 65). Telecommunications is dynamic and ever changing, and has the potential to transform the typical curriculum into something wonderful and exciting.

Distance Learning at a Glance

Imagine the traditional college graduation where students who are dressed up in gowns and caps walk up to receive their diploma as proud relatives look on. Now, imagine a ceremony without teachers; a ceremony in which the students have never met the professors. One may ask how could this happen. It is all possible through the teaching method known as distance learning; through the use of personal computers and modems.

Today, learning and technology are in an interesting position. Teachers are looking for better ways to educate students using the tremendous advances in computer technology.

And technologists see learning as an important part of yielding productivity, with the ultimate goal of having a computer in every office and home (Masie, 1998).

As technological advancements are increasingly available to universities and the K-12 grades, technology quickly becomes the main ingredient in all levels of education. Faculty and students alike are expected to integrate themselves into this technological time known as the "Information Age" (Parker, 1997).

In the latter part of the twentieth century, society focused on technology as a form of communication. For example, a trip to the bank, video store, doctor's office, or the grocery store could be a trip to an electronic digital world in which individuals and information technology interact. This electronic digital world depended on a web of databases and spreadsheets that supported communication. As communication technology has become a reality, so too will distance learning; it will be another bridge of communication between learner and educator.

If the technological breakthroughs are going to improve the learning environment, it is important that educators understand and use the technology themselves. It would be wasteful to recreate the present only in a more efficient manner. Technology in education by itself is not the answer. Educational strategies and tools must be combined in ways that would increase the potential to learn; thereby giving meaning to that technology. People learn, but it is technology that carries the information. Moreover, it is human to encourage, communicate, and share with others because we are social creatures. These qualities are the foundation of our society and are the same qualities that need to be available in distance learning (Moller, 1998).

The Nature of Distance Learning Today

Distance learning is a rapidly growing field whose roots extend back to correspondence courses of the nineteenth century. Telecommunication technology and the Internet have fostered rapid growth in recent years. Technological advances have given distance learning students online access to graphics, text, video, audio, and libraries of information. Today, more and more distance learning courses are being offered, and the number is growing at an incredible rate (United States Copyright Office, 1999).

Some may ask why distance learning is becoming popular. Below is a list of "drivers" of why organizations, both non-profit and for-profit, are either looking into, or currently utilizing, distance learning: (1) fear extinction: there is evidence that distance learning is becoming the norm for instruction for postsecondary schools and degree programs. Often, student recruitment depends on distance learning availability and many institutions fear extinction if they do not offer the distance learning programs (Roblyer, 1999); (2) time shifting: organizations want to "shift time" available for learning and be able to extend the classroom experience after the class is over; (3) cycle time: when a change occurs, a company wants to be able to distribute learning, skills, and knowledge more rapidly through the company; (4) distance distribution: organizations want to provide learning experiences and common information to every part of the operation; (5) logistical cost suppression: organizations want to allocate a high percentage of the learning budget to direct learning activities, spending less on travel and lodging elements; (6) granularization: companies want to offer more granular and reusable learning activities; and (7) performance aiding: organizations want to be able to offer continual performance support to the workforce (Masie, 1999).

"The technologies used in distance learning, the populations served, the institutions offering such distance learning programs, and the partnerships that have emerged among providers are ever-changing and quite different in nature and scale from earlier models" (United States Copyright Office, 1999, p. 9).

What is Distance Learning?

Distance learning is a general term used to describe the practice of teaching students who are separated from the instructor by time, space, or both. With distance learning, initially the student interacts with the course content and instructions individually. This eliminates the need for the larger classroom atmosphere where the teacher must interact with many students at one time. There is a lot of research that supports distance learning as being as effective a learning technique as face-to-face instruction (Moller, 1998). According to Moore and Kearsley (1996), however, there is not enough evidence to support the idea that classroom instruction is the best form of teaching. Moller (1998) adds that there is always the chance that distance learning can create learning opportunities not feasible in the regular classroom atmosphere.

There are two major goals of distance learning: (1) to extend access to learners, whether they bypassed a formal education when they were young, or whether they were unable to attend a university, and (2) to extend access to professionals, who want more training in their area of expertise, and for children who want to augment their education. In addition to playing an important part of continuing education, distance learning provides another alternative for learners to get a formal education. However, according to Eastmond and Soulier (1999), sound distance learning necessitates good technology and effective design strategies.

In order to have high quality distance learning, administrators must be willing to spend the money to implement state of the art facilities, equipment, and training. The faculty must adapt a new methodology that redistributes power in the classroom. Students also must be willing to assume responsibility for their own learning. To make up for the potential loss of the personal student-professor relationship, professors and students need to be clever in creating new ways to compensate for the loss. In addition, money, commitment, and time from the correct people are required to create a high quality distance learning program (Schuttloffel, 1998).

Distance learning is used at every educational level. However, each level requires a different form. According to the "Report on Copyright and Digital Distance Education," higher education uses distance learning to the greatest extent (United States Copyright Office, 1999). The U.S. Department of Education released a report in February 1998 that studied distance learning in postsecondary schools over a two year period. The study's results showed that more than half of the schools offered distance learning courses (Lucas, 1998). And the trend, according to Roblyer (1999), is expected to grow and accelerate rapidly.

However, distance learning is not always separate from on-campus education. Any given course could include both classroom and distance learning instruction. Today, uses of digital technology vary depending on the cost and availability of the technology, as well as the intended audience for the course. New technology has created a "virtual classroom" by providing interactive experiences that more closely parallels face-to-face professor-student teaching. According to "Report on Copyright and Digital Distance Education," distance learning courses have become more convenient and suited to student's needs (United States Copyright Office, 1999).

In spite of the fact that distance learning "was a popular and practical choice for many students and institutions long before the emergence of the Internet. However, the popularity of the Internet in general and the World Wide Web in particular in recent years at all levels of society and education has accelerated interest in distance learning to an unprecedented degree" (Roblyer, 1999, p. 157). Distance learning systems are more powerful, flexible, and affordable than ever before, thanks to the rapid growth in the computer industry, telecommunications, the Internet, and the World Wide Web (United States Congress, 1989). Digital technology, in general, and the Internet, in particular, have led to expanded audiences and exciting new pedagogical possibilities. Distance learning is reaching wider audiences, covering all segments of the population (United States Copyright Office, 1999). This means that the merging of technologies has created an "information technology revolution," which makes possible the rapid growth of distance learning options. According to Connick (1999), distance learning is a new education culture with its own distinct traits.

In the past, most distance learners were working adult females (Moore & Kearsley, 1996; Hardy & Boaz, 1997). As distance learning becomes more mainstream, and less an alternative choice, these demographics may change (Wallace, 1996; Guernsey, 1998). Guernsey stated that in a study of 608 students taking distance learning course at the University of Colorado, 500 of them were also taking face-to-face courses. Guernsey believes the "typical" distance learner in the future will be the traditional younger, full-time student (Roblyer, 1999).

Today, the normal college audience typically consists of an older population and those from other countries, instead of the more traditional student population. Students also include professionals and retirees. This trend in college audience growth has

prompted an increase of distance learning courses offered by non-profit and for-profit institutions, educational institutions and companies. In addition, the federal government has actively promoted distance learning through legislation offering funding and recognition in various forms. Educational institutions that offer distance learning use library resources to provide support for online courses and to provide access to additional materials in digital form. Education institutions engage in training the faculty and staff, adopting copyright policies, educating students about the copyright laws, and are always seeking to gain formal accreditation (United States Copyright Office, 1999).

The Effectiveness of Distance Learning

The literature review revealed a wide range of factors relating to the effectiveness of distance learning. According to the author, the factors are grouped into two domains: student and faculty. The classification of "effectiveness" is pertinent to factors that influence teaching and learning.

I. Student Domain

A common question in the student domain is, "Is the distance learning teaching method effective for the learner?" Apparently there is "no significant difference," according to research, in achievement levels between traditional and distance learners (Johnstone, 1991). A study, conducted by Tjaden and Martin (1995), of 28 students in a college level computer course, substantiated that claim. In that study, students were randomly assigned into one of two groups. The control group received material through the traditional lecture method while the treatment group used a computer assisted learning tutorial in a computer lab. A pre-test on computer knowledge demonstrated similar results for all students. The average post-test results showed no significant difference in

the amount of material learned. However, the students in the treatment group realized a time savings, on average, of 38 percent to accomplish the same amount of learning. In addition, 71 percent of the treatment group stated they preferred computer instruction to the traditional lecture method. The instrumental finding in this study was the efficient use of time by the treatment group. Although there was no significant difference in content learning, there was a substantial difference in time.

Another question is, "What about the development of the student's social skills?" According to Verduin and Clark (1991), insufficient socialization is a common criticism. Outside of the classroom, the college campus offers social interaction for full-time students. However, the typical distance learning student is a part-time adult student, whose social life is independent of the college environment.

Physical limitations or logistics pose a problem for some students. Civic responsibilities, limited free time, and family obligations are just some of the factors that impede traditional classroom enrollment. Distance learning alleviates some of the restrictions of traditional classroom instruction. For the hectic adult learner, the asynchronous classroom provides convenience, flexibility, and accessibility. Course Web pages list assignments, resources, project examples, and on-line discussion dates, allowing the students to access the information whenever or wherever he/she wishes.

The social atmosphere inside the traditional classroom and the distance learning classroom is similar; communication is a dominant issue. The instructional tool indicates the platform of communication in distance learning, whether it is verbal communication or written communication in computer conferencing software, or a combination of both. With computer conferencing the learners' physical appearance, race, social status, and creed are typically unknown. The asynchronous distance learning atmosphere often

includes a social cross section of ages, culture, religions, and professions. The literature describes the distance learner as having the motivation to succeed and accomplish educational goals. This personality characteristic can makes for a successful educational environment.

In 1995, Watabe, Hamalainen, and Whinston assimilated 24 students who attended the British Open University. The students, from four countries, gathered to discuss social factors related to the effectiveness of asynchronous distance learning, and collaborated on activities such as, role-playing, joint document production, and exploring a virtual world. Watabe, Hamalainen, and Whinston thought that the collaborative method fostered enjoyment, feelings of togetherness, and motivation (Kimball, 1995). The student stated that it was sometimes a problem, however, for e-mail message exchange because the messages did not always provide immediate clarification; therefore, the exchange between teacher and student became confused and misunderstood. An electronic face icon on the computer helped students overcome the lack of face to face communication. Seven out of ten students said they felt that collaboration was an effective use of their time and it improved their motivation (average response 7.8). The literature confirmed a healthy social environment in the distance learning classroom.

Another question in the student domain is, "Can gender be a factor that relates to the effectiveness of distance learning?" Robertson, Calder, Fung, Jones, and O'Shea (1995) reviewed 98 studies that looked at differences in attitudes toward the computer between males and females. They discovered that 48 males and 14 females had a more positive attitude, while the remaining 36 had similar attitudes, which indicated that males had a more positive attitude toward computers than females. According to Loyd, Loyd, and

Gressard (1987), a positive attitude toward computers is directly related to amount of computer experience.

II. Faculty Domain

The faculty domain considers factors that affect the distance learning environment and the faculty.

One common question from faculty members is, "Do distance learning faculty receive training and support?" Distance learning departments are set up in colleges and universities. These departments are responsible for hiring, training, and supporting the distance learning faculty. The University of Wyoming, for instance, has distance learning veterans who teach new faculty members the pedagogical and technical support strategies that have proven successful for them (Shaeffer & Farr, 1993). Faculty support is also available on the Internet. In addition, scholarly discussion groups, newsgroups, and teacher networks offer support, as well as the opportunity to share resources.

Another question often asked by faculty members is, "What distance learning strategies are effective?" According to the literature, distance learning strategies use those strategies similar to the traditional classroom: peer teaching, case studies, collaborative learning, and class discussion. However, teachers may change implementation according to the presentation method. Distance learning educators place more emphasis on helping the student in the process of learning versus the proliferation of facts and subject material implemented in the traditional classroom. The technological emphasis, according to Rutherford and Grana (1995), is more on the process based on utility rather than on knowledge for its own sake. The instructor directs the students to use the technology to locate information (Albrektson, 1995). Collaborative or individual learning occurs in the

gathering of knowledge in the learning assignment. The information then becomes knowledge when the person is able to use the knowledge to gain a desired result (Simonson & Thompson, 1997).

Faculty members also ask, "Is there a substantial time commitment to change to distance learning methods?" Distance learning faculties admit that they spend a lot of time preparing the course design. The perfect distance learning course should use a mixture of technological tools for the student to investigate. Combining the correct teaching strategies and technological matches remains a challenge for distance learning educators. One solution would be faculty collaboration, which would allow teachers to share teaching and on-line strategies, while building competence and conserving time. At the University of Wyoming, faculty members and students implement an evaluation program that provides the required data necessary to implements changes in the methods and designs. According to the evaluations, 90 percent of the distance learning students would take another distance learning course, and recommend them to a friend.

Distance learning also encompasses some fears and concerns by the faculty, such as, time commitment, the belief that they are too old to change, appearing incompetent, and the fear of change itself (Rutherford & Grana, 1995). The time commitment necessary to keep pace goes beyond the normal job requirements. Perhaps rewards and/or incentives can be used to entice teachers to try the distance learning method.

Summary of Distance Learning at a Glance

The literature supports distance learning in universities for the following reasons: (1) distance learning and traditional student's achievement scores show no significant difference, (2) distance learning offers the adult learner another educational alternative, and

(3) distance learning utilizes the unlimited amount of educational resources available on the Internet. However, distance learning has its problems as well: (1) the cost to the university to upgrade hardware, software, and Internet charges, (2) faculty biases and concerns which include, technology training, support and compensation, in addition to additional time that would need to be spent, and (3) the university's decision to choose the correct technological mix to balance the faculty teaching strategies.

Computer technology has become a reality in the social and educational environment, and changes in this technology, which are occurring on a daily basis, are inevitable. That is why, for distance learning to be successful, it involves the collective ability of the faculty and university administration to identify and solve challenges, while monitoring and supporting progress.

Learning, Teaching, and Technology: Making the Connection

Literature and research reviews on this topic have shown that computer education is becoming an increasingly more important part of the total school curriculum. In many schools computer education has already been incorporated into every grade level, from preschool to the post college graduate level. Computers have become part of our everyday lives affecting most avenues of our society, and one cannot walk into a grocery store, bank, or public library, for instance, without being touched by some forms of computer technology. According to Stevens (1981), "computers are so integrated into present and future life styles that schools cannot exclude them from the curriculum. Educators acknowledge that computer literacy is essential for students and that computers have the potential to enhance the instructional process" (p. 21). Therefore, it is not only recommended, but necessary, to develop computer skills, and to set goals,

objectives, and classroom curriculum that are essential to living in the technological world of computers.

Long ago, John Dewey (1916) recognized that education must be based on reality for the betterment of society. Education should intertwine the process of living with the process of learning because, in essence, they are a joint process. Since Dewey's statement over eighty years ago, many studies have been conducted, particularly in the last four decades, and the results have indicated, either overtly or implicitly, the need for teaching computer technology knowledge and skills, specifically to students.

These studies, along with related research, have shown that computer literacy, computer technology knowledge and skills, are some of the most valuable assets that students can acquire in today's educational setting. It will benefit them in their education as well as when they join the workforce (Lammel, 1995). Today, it is necessary for students to have more than a working knowledge of word processing programs; they are expected to use various technologies and resources for research and multimedia presentations (Brunner, 1992). And in the workplace, employees are expected to have some forms of computer skills (Mahmood & Hirt, 1992). Without more advanced computer skills, students who will make up the future workforce, will be at a disadvantage and will not be prepared for what lay ahead of them.

However, in considering the teaching of computer technology, Hope (1996) emphasizes the importance of teaching technology that is not overly complex. A beginning computer user can become frustrated by trying to learn too much too fast. Williams and Williams (1984) stated that in the elementary school level technologically oriented training may have the most far-reaching effects. To help in the process, the government's Goals 2000: Educate America Act, under Title III of the reauthorization of

the Elementary and Secondary Education Act, began in 1995 to give $10 million in grants for the development and demonstration of technology education (United States: President, 1996).

Data Supporting the Need for Teaching Computer Technology

Today, in order to prepare students for a society which requires knowledge of information systems, computer skills are being taught in schools (Brummelhuis, 1994). What some one thought of as a fad that would go away with time has taken a firm hold in schools. Now more and more teachers are seeing the need to acquire and teach computer knowledge and skills to students (Eben, 1996).

The question then is, "What should K-12 teachers teach and what should students learn about computers?" According to Tobin (1983), computer literacy is a gradual growth experience that should cross disciplines and grade levels and involve computer-assisted instruction (CAI) as well as computer awareness and programming.

For example, one problem that many students face is the keyboard. They have to "hunt and peck" for the keys they want, which wastes a lot of time and can be very frustrating. According to Williams and Williams (1984), "teachers feel that elementary-aged children who use computers might benefit from learning how to type" (p. 70). Therefore, keyboarding and typing skills should be an integral part of a computer classroom curriculum. Having such skills would benefit students in other subjects as well.

Computer awareness develops an appreciation for computer capabilities and an understanding of how a computer works. This, in turn, would give the students the necessary prerequisites for advanced computer skills and enable them to use the computer more effectively in their daily lives.

However, according to Williams and Williams (1984), "one of the most promising uses of computers in the instructional sense occurs when students apply the computer as a tool for problem solving, almost "teaching the computer," rather than vice versa" (p. 10). After all, teaching the computer is what programming is all about! Hill (1983) stated that, "even in the early stages of the classroom use of microcomputers, children should not be confined to just executing programs and responding to computer commands. They should have the experience of trying to construct programs, however simple, for only in this way can they learn to really communicate with computers and to incorporate computer language into their own" (p. 55).

For instance, there are two basic programming languages recommended for children in elementary school: "Logo" and "BASIC." Designed by Seymour Papert and his colleagues at MIT, Logo is based on the learning ideas of Jean Piaget. Papert (1980) sees the computer as an "object to think with," and "in teaching the computer how to think, children embark on an exploration about how they, themselves think" (p. 19). Logo is known as a "procedural" language because the user teaches the computer how to do something using his/her own definitions and procedural names. BASIC, which stands for Beginners' All-Purpose Symbolic Instruction Code, is widely used as a beginner's computing language and was included as a standard feature in most microcomputers.

Between the two languages, Logo, with its more appealing "turtle graphics" and simplistic programming structure is seemed to be the most favored computing language on the elementary level. However, Bearden (1988) commented that educators walk a fine line between promoting self-discovery and preplanning their curriculum. They should not overlook the fact that great discoverers spend a lot of time in preparation for lightning bolt insights. However, Bearden also says that Logo should not be squeezed and shaped

into the "traditional curricula." According to Bearden, Logo promotes insights if all the ingredients are there, including: significant problems that challenge and entice student to think hard, steps towards understanding, and time to get in tune with creativity.

Thus, typing and keyboarding skills, computer awareness, and computer programming are not only desirable goals, but they are the much needed goals for a computer curriculum. A computer curriculum guide would develop certain skills progression so that students could achieve these goals. In other words, a computer curriculum guide would progressively develop skills that would enable students to achieve their goals.

Computer Technology Curriculum

There are some published computer curriculum guides available, but these seemed too general in content and directed towards only one or two goals in computing. To be of the most benefit, a computer curriculum guide must be developed by those who are familiar with the schools' and students' needs.

If the proper curriculum was developed, there would be more opportunities for teachers in other academic areas to integrate their materials into the computer classroom. By doing this, students would be able to use the computer as an educational tool in other academic areas as well.

As an educational tool, the computer gives students the opportunity to become more powerful and better prepared to be independent learners (Ohio State Board of Education, 1992). Educational environments should be developed, by schools, that would empower the students to be more independent in research, data collection and organization, locating resources, expressing thoughts and ideas, and storing information.

The computer curriculum, and any other academic curriculum area, needs to emphasize the efficient use of the student's mind. The curriculum needs to emphasize thinking skills and steer away from repetition. Schools should allow more "mind on task" time for students (Ohio State Board of Education, 1992). A critical component in a school's resources, which would allow the student more "time on task," is the curriculum set-up.

A curriculum must take into account those students with little computer working experience, as well as those with a great deal of experience. Consideration should also be given to the future needs of students, both in the educational environment and the workplace.

There is evidence that when certain characteristics are present in the curriculum, students seem to get more involved in their own education. One of those characteristics is that the curriculum must be purposeful. The student needs to be able to see and comprehend the value that the assignment or activity has for him/her in the relationship with learning how to use the computer as an educational tool. Another characteristic is that the curriculum needs to be important. The student needs to see the educational value at his/her own level in order to benefit from the learning. Another curriculum characteristic is that the curriculum needs to be interesting to the student. By maintaining the student's interest an interactive educational environment will be created. In addition, the student will approach challenges with a more active problem solving attitude. These three characteristics are essential, and should be present, for the learner to get the best possible educational growth from the curriculum (Florkey, 1995).

Teaching Methods and Learning Styles

Since all children do not learn in the same way, a variety of teaching methods have had to be developed (Forest, 1995). In the following section, I would like to examine some of these methods.

The first method is that of training. It is unfortunate that training is not valued by students if it is not connected to subject matter or have immediate instructional purpose (Thomas et al., 1996). Knowledge and training are not the same thing. Training is showing a person how to do a particular task while education is imparting knowledge that will prepare a person for a wide range of possibilities. Teachers with insight must realize that learners must have the knowledge and skills to create their own futures. Technical knowledge and skills must be developed by coordinated activities that support learning throughout a child's education. They must be introduced and reinforced until they are mastered and integrated into the individual's personal learning and social framework (International Society for Technology in Education, 1991).

Another approach is to show students what to do, then give them the opportunity to practice and perfect. This way, more information is retained because learners can instantly apply the new knowledge they have acquired ("Beyond One-Shot Training," 1996).

Methods tried in computer and technical education can also be applied to other areas of learning. A study in mathematics was done with seven students in second through seventh grades. They attended three different schools in Tel Aviv, Israel, and had varied backgrounds regarding socioeconomic status, type of school, and achievement in mathematics. Four observers experienced in mathematics studied these students. The data collected included observation; interviews with students, teachers, parents, and siblings;

questionnaires of teachers; computer-generated reports; paper and pencil tests; and tutoring.

The study evaluated the effectiveness of CAI with mathematics students of low ability and high ability. The conclusion reached was that higher-achieving students were more able to adjust to the special environment of computer work and derive greater benefits from it. Thus, learning styles seemed to play an integral part in the student's ability to effectively use the CAI (Hativa, 1988).

Another study done with fifth and sixth graders was conducted at Hurst Hills Elementary School in Hurst, Texas. Hurst Hills participated in a nationwide study done by Dr. Henry Jay Becker of Johns Hopkins University. The school was chosen because of its implementation of a high-tech curriculum. They were participating in Apple Computer's model school program.

All fifth and sixth grade students were pretested with the California Achievement Test (CAT). They were then assigned to a CAI group or a control group. Hurst Hills expected that the CAI group would make greater gains than the traditional group, but were surprised by the results. Goode (1988) indicated that both the fifth- and sixth-grade computer groups gained an additional year of achievement over their classmates in the traditional group. Pre- and post-test results also indicated that computer students at both extremes of the ability-level spectrum showed greater gains. This seems to conflict with the conclusion of Hativa (1988), who found that lower-achieving students did not gain as much as higher-achieving ones. The writer felt that because Hurst Hills was a high-tech school, maybe more emphasis was placed on the CAI group with higher expectations. Also, the type of software used by Hurst Hills may have been more conducive to the learning styles of lower-ability students than the ones used in Hativa's study.

Summary of Learning, Teaching, and Technology: Making the Connection

The tremendous advancement and rapid development of sophisticated technologies brought about by the advent of the computer is having important implications both in the job market and in the field of education as its precursor (Levin & Gordon, 1989). Many educators believe that the most important task for educational systems is to prepare students for the world they have to live in.

The idea that computers play an important role in the life of every citizen is no longer disputed. Today, as a consequence of this world-wide technological influence, there is no doubt that computers are quickly becoming an integral part of our world, whether it is in the workplace or educational environments. In order to better prepare students to work effectively in an information systems' society, computers have been incorporated into all educational levels, down to the primary level (Brummelhuis, 1994). Only by incorporating computers in the curriculum will younger students be given the opportunity to be a part of the rapidly expanding technological world that is a part of our everyday lives; thereby, giving them the skills necessary to build a better future.

Although the results of the above studies were contradictory in terms of ability level, the important result was the success of students who had prior computer technology knowledge and skills. The students who were more knowledgeable and computer literate did better than those who did not. Thus, it is clear that computer technology knowledge and skills should be acquired at an early age, the sooner the better. That is, by understanding computer technology at a young age, children, as they grow and learn, will be better prepared to integrate into adulthood and society. However, care must be used in determining the correct method for teaching children computer technology knowledge and skills. In fact, what is often overlooked is that there is no "best" teaching method for all

children. Each child is different; they must be viewed as individuals, and each one must be placed in the program best suited to him/her.

CHAPTER III

METHODOLOGY

The procedure used in the completion of this project is discussed in this chapter which consists of four sections. They are: subjects, setting, data collection, and research design.

Subjects

For the purpose of this study, the author stratified the sample population into five main categories that represent the educational system. These categories are: administrators, teachers, students, parents, and community members. Then, the participants were randomly selected for this study from the five governorates (i.e., Al-A'sema, Hawalli, Al-Ahmadi, Al-Farwaniya, and Al-Jahra) of the State of Kuwait. (This was done using a table of random numbers.)

For a sample to be random, all possible participants in the population must have the same chance of being selected and all possible samples must have the same chance of being selected. The author used random sampling to produce representative samples. Representative means the characteristics of the sample accurately reflect the characteristics of the population (Heiman, 1996).

The sample breakdown was: 10 kindergarten schools (2 from each governorate), 20 elementary schools (4 from each governorate), 20 middle schools (4 from each governorate), 20 high schools (4 from each governorate), and 50 community members (10 from each governorate).

Put somewhat differently, a total of 14 schools from each governorate, of the five governorates of the State of Kuwait, took part in this study. The breakdown of schools in

each governorate was: 2 kindergarten schools, 4 elementary schools, 4 middle schools, and 4 high schools.

The participants in each kindergarten school were as follows: 1 principal, 1 associate principal, 5 teachers, and 5 parents. This meant that there was a total of 12 participants in each kindergarten school. Therefore, there was a total of 120 participants in all kindergarten schools in all five governorates.

The participants in each elementary, middle, and high school were as follows: 1 principal, 1 associate principal, 5 teachers, 5 students, and 5 parents. This meant that there was a total of 17 participants in each elementary school, or middle school, or high school. Therefore, the overall number of participants in all elementary schools, or middle schools, or high schools, in all five governorates, was 340 (i.e., elementary schools 340, middle schools 340, and high schools 340) participants.

There was a total of 50 community members, 10 from each of the five governorates, who participated in this study. Thus, the overall number of participants who received the survey questionnaire was 1,190. Stated differently, 140 administrators, 350 teachers, 300 students, 350 parents, and 50 community members were surveyed. Thus, 1,190 surveys were distributed. (See either Figure 1 located in Appendix B or Table 1 located in Appendix C for more details about the participants.)

Setting

The State of Kuwait

The State of Kuwait is located in Middle East, bordering the Persian Gulf, between Iraq and Saudi Arabia. The capital is Kuwait City, and the type of the government is nominal constitutional monarchy. The total area of the State of Kuwait is 17,818 square

kilometers. In other words, it is slightly smaller than New Jersey. The climate is dry desert with intensively hot summers, and short, cool winters. According to 2001 estimate, the population is approximately 2,274,980 (Kuwaitis 859,958 and non-Kuwaitis 1,415,022) (CIA Publications, 1999) (State of Kuwait: Ministry of Planning, 2000).

The ethnic divisions is: Kuwaitis 45 percent, other Arabs 35 percent, South Asians 9 percent, Iranians 4 percent, and others 7 percent. The fundamental religion of the State of Kuwait is Islam. Muslims are considered 85 percent (Shi'a 40 percent and Sunni 45 percent) of the entire population, Christians, Hindus, Paris, and others constitute the remaining 15 percent of the population. Arabic is the official language of the State of Kuwait. However, English is widely spoken as the second language (CIA Publications, 1999).

According to 2001 estimate, the total population of females in the State of Kuwait is 887,016 (Kuwaitis 435,139 and non-Kuwaitis 451,877), and the total population of males is 1,387,964 (Kuwaitis 424,819 and non-Kuwaitis 963,145) (State of Kuwait: Ministry of Planning, 2000).

The administrative divisions of the State of Kuwait is divided into five governorates; Al-A'sema, Hawalli, Al-Ahmadi, Al-Farwaniya, and Al-Jahra. According to 1998 estimate, the total population in each governorate is as follow: Al-A'sema 388,663 (Kuwaitis 167,088 and non-Kuwaitis 221,575); Hawalli 631,109 (Kuwaitis 224,446 and non-Kuwaitis 406,663); Al-Ahmadi 373,494 (Kuwaitis 161,078 and non-Kuwaitis 212,416); Al-Farwaniya 591,264 (Kuwaitis 152,716 and non-Kuwaitis 438,548); and Al-Jahra 282,731 (Kuwaitis 80,555 and non-Kuwaitis 202,176) (State of Kuwait: Ministry of Planning, 2000). (See Appendix I for more details about the population in the State of Kuwait.)

Education in the State of Kuwait is connected with the nature of the Kuwaiti society, its philosophy, future prospects, and the contemporary educational trends to cope with the nature of this change. It is also connected with the needs of the educated and their characteristics. From this point of view, the Ministry of Education of the State of Kuwait has reached the general principle as an emblem by which the general educational objectives have to abide.

According to the document issued (in Arabic) in March 1976 by the Ministry of Education, the general educational objectives (education) in the State of Kuwait is defined as follows: to create favorable opportunities enabling individuals to grow on all levels (e.g., spiritually, morally, intellectually, socially, and physically) in as much as their aptitudes and abilities could permit relevant to the nature, philosophy, and aspirations of the Kuwaiti society and in accordance with the principles of Islam, Arab, and contemporary culture. The aim is to strike a balance between individual's interests and the society needs for positive participation in the progress of the Kuwaiti society in particular, the Arab society, the Islamic society, and the world in general (State of Kuwait: Ministry of Education, 1976).

Schools

According to 1999 estimate, in 1999/2000 school year the total number of schools in the State of Kuwait is 1,056 schools; the total number of classrooms is 13,728 classrooms; the total number of students is 451,330 students (Kuwaitis 303,078 and non-Kuwaitis 148,252); the total number of teachers is 37,567 teachers (Kuwaitis 19,813 and non-Kuwaitis 17,754) (State of Kuwait: Ministry of Education, 1999).

Public Schools

According to 1999 estimate, in 1999/2000 school year the total number of public schools is 613 (149 kindergarten schools, 182 elementary schools, 164 middle schools, and 118 high schools) schools; the total number of classrooms is 8,889 (1,735 kindergarten schools, 3,257 elementary schools, 3,042 middle schools, and 1,155 high schools) classrooms; the total number of students is 310,108 (44,217 kindergarten schools, 96,771 elementary schools, 94,614 middle schools, and 74,506 high schools) students; the total number of teachers is 28,207 (3,015 kindergarten schools, 7,787 elementary schools, 8,606 middle schools, and 8,799 high schools) teachers (State of Kuwait: Ministry of Education, 1999).

Private Schools

According to 1999 estimate, in 1999/2000 school year the total number of private schools is 336 (74 kindergarten schools, 86 elementary schools, 97 middle schools, and 79 high schools) schools; the total number of classrooms is 4,171 (541 kindergarten schools, 1,425 elementary schools, 1,267 middle schools, and 938 high schools) classrooms; the total number of students is 124,773 (15,453 kindergarten schools, 43,461 elementary schools, 38,803 middle schools, and 27,056 high schools) students; the total number of teachers is 7,172 (779 kindergarten schools, 2,383 elementary schools, 2,090 middle schools, and 1,920 high schools) teachers (State of Kuwait: Ministry of Education, 1999).

Vocational and Special Schools

According to 1999 estimate, in 1999/2000 school year the total number of public schools is 40 (8 religious schools or institutions and 32 special education schools or institutions) schools; the total number of classrooms is 310 (101 religious schools or

institutions and 209 special education schools or institutions) classrooms; the total number of students is 4,722 (2,865 religious schools or institutions and 1,857 special education schools or institutions) students; the total number of teachers is 959 (327 religious schools or institutions and 632 special education schools or institutions) teachers (State of Kuwait: Ministry of Education, 1999).

Educational and Cultural Care in the State of Kuwait

Following are examples of the constitutional principles of educational care in the State of Kuwait:

Article 13: Education is a fundamental requisite for the progress of society, assured and promoted by the State.

Article 14: The State shall promote science, letters and the arts and encourage scientific research therein.

Article 40: Education is the right of Kuwaitis, guaranteed by State in accordance with law and within the limits of public policy and morals. Education in its preliminary stages shall be compulsory and free in accordance with law.

- Law shall lay down the necessary plan to eliminate illiteracy.
- The State shall devote particular care to the physical, moral and mental development of youth.

Literacy

According to 1998 estimate, 88.7 percent of the total population are literate. Put somewhat differently, every person at age 15 and over can read and write. Furthermore, gender in the State of Kuwait does not play a significant role regarding to literacy. As a matter of fact, 89.9 percent of all males are literate, and 86.6 percent of all females are

literate. By looking to the figures we can say that males and females are almost close to each other regarding the issue of literacy (State of Kuwait: Ministry of Planning, 1999).

Data Collection

Construction of the Data Collecting Instrument

A questionnaire was the primary vehicle for data collection. This questionnaire was designed to find out value judgments for issues such as implementing computer technology as an independent subject in K-12 Kuwaiti schools versus integrating computer technology in all other subjects.

The measurement instrument used in this study was a Likert scale survey questionnaire. The Likert scale used is a valid measure in educational opinion gathering research (Best & Kahn, 1993).

In developing this survey, the researcher investigated several other instruments formulated by other researchers and incorporated some of their ideas into his survey's design. Put somewhat differently, the instrument was constructed by the author using information gathered from the review of the literature which established content validity for the statements in the questionnaire. Eighteen statements were included in the questionnaire. These statements dealt with feelings, beliefs, and opinions toward computer technology. Before starting the survey, the participants provided certain demographic information about themselves such as name (optional), governorate, category, gender, age, degree, years of experience with computers, and so forth. (See Appendix H for a copy of the survey.)

The author also submitted a pilot version of this survey to several faculty members at The University of Tennessee, the University of Dayton, Felician College, and Kuwait

University in order for them to provide a feedback on the instrument before the actual data were gathered. The researcher-developed survey was then modified somewhat in order to construct the survey presented in Appendix H.

Responses to the questions were given on a five-point Likert scale (strongly agree [5], agree [4], undetermined [3], disagree [2], and strongly disagree [1]). All questions were stated positively with responses converted to numbers: 1 to 5. Accordingly, the higher the score, the more positive one's attitude toward computer technology.

Administration of the Instrument

The survey was faxed to a community leader, Dr. Hassan A. Safar, an expert in the Kuwait National Committee for Education, Science, and Culture, and a visiting professor in the College of Education at Kuwait University. The survey was translated to Arabic language, with the help of the community leader, and hand carried by the researcher and the community leader to all participants of the sample. A concerted effort was made to collect as many completed surveys as possible; in some cases, as many as four trips were made to the same schools because the surveys were completed at different times. Then, the results were carried by the researcher to the United States.

Research Design

The study was an educational context evaluation. Evaluation research can be considered close to applied research, because evaluation research results aid in decision making in a specific situation as with applied research (Wiersma, 1995).

Educational evaluation research, like any evaluation, involves making value judgments about the worth of something educational such as a curriculum or a program. Put

somewhat differently, typically, the function of educational evaluation research is to assess the merits of a practice or program in a specific situation (Wiersma, 1995).

Educational research and educational evaluation research have considerable overlap in methodology. Evaluators use many of the same methods, designs, measurement tools, and analyses, both qualitative and quantitative, as researchers. When the term evaluation research is used, it means using research procedures for the process of evaluation, that is, collecting data and making decisions (value judgments) about some educational program, policy, phenomenon, or the like (Wiersma, 1995).

Indeed, the study was a part of an educational evaluation research design called "STUFFLEBEAM" or "CIPP" model. This model provides a basis for making decisions by delineating, obtaining, and providing useful information for judging decision alternatives. That is, the CIPP model provides a service function by supplying data to administrators and decision-makers charged with the conduct of programs. The three most valuable contributions of the CIPP model are: (1) it is sensitive to feedback; (2) it allows for evaluation to take place at any stage of the program; and (3) it is a holistic. The CIPP model is divided into four evaluation research components. They are: context evaluation, input evaluation, process evaluation, and product evaluation research (Isaac & Michael, 1995).

Particularly, the study was actually the first part of the CIPP model which is educational context evaluation research. This kind of research provides information to develop systematic rationale for objectives largely through analysis of unrealized needs and unused opportunities and through diagnosis of those difficulties preventing needs being met and contributing to discrepancies between intentions and actualities. In other words, the researcher who would conduct context evaluation research faces at least three

challenges: (1) to define the operating context; (2) to identify and assess needs and opportunities in the context; and (3) to diagnose problems underlying the needs and opportunities. Educational context evaluation research was used in this study to yield information regarding needs (the extent to which discrepancies exist between what is and what is desired relative to certain value expectations, areas of concern, difficulties, and opportunities) in order that goals and objectives may be formulated. Thus, it serves the planning decisions stage which influence selection of goals and objectives (Isaac & Michael, 1995).

There are several methods for implementing context evaluation research. These methods include: (1) describing the context; (2) comparing actual and intended inputs and outputs; (3) comparing probable and possible system performance; and (4) analyzing possible causes of discrepancies between actualities and intentions (Isaac & Michael, 1995).

For this study, the author used a selected aspect of a context evaluation method. While context evaluation involves all aspects of the situation (e.g., materials, guidelines, resources, and individuals), this study focused on only the perceptions of people. Thus, it must be viewed as being the first step in a series of investigations.

CHAPTER IV

RESULTS

In Chapter IV of this research study, the results of the computer technology survey are presented and discussed in a more detail. This chapter consists of three sections. They are: methods of analysis, results of the data collection, and answers to the research questions.

Methods of Analysis

A variety of statistical techniques were used. Both descriptive statistics procedures (e.g., frequency, mean, and standard deviation) and inferential statistics procedures (e.g., factor analysis, analysis of variance (ANOVA), Tukey's HSD multiple comparisons, and t-test) were conducted. When performing inferential tests, an alpha level (significance level) of .05 was selected.

Each research question is presented, analyzed, and discussed consecutively. The eighteen major statements on the computer technology survey questionnaire were analyzed using SPSS (for Windows version 10 or Macintosh version 6). These statements were analyzed according to the responses of the five main categories (i.e., administrators, teachers, students, parents, and community members) in the five governorates (i.e., Al-A'sema, Hawalli, Al-Ahmadi, Al-Farwaniya, and Al-Jahra) of the State of Kuwait.

The results are presented in tables. Each table is labeled to indicate the type of data being analyzed. The tables include the number of responses (frequencies) and the percentages for the responses (i.e., strongly disagree, disagree, undetermined, agree, and strongly agree) to each statement. These tables are accompanied with simple frequency

bar graphs showing the frequencies of the responses to each of the eighteen major statements on the survey. These tables and figures are located throughout this chapter. These tables and figures are presented with the narrative of this chapter so readers can more easily follow the points presented.

The researcher applied factor analysis on the eighteen major statements of the questionnaire. This was done as a data reduction or structure detection method. Combining two or more correlated variables into one factor or expressing two or more variables by a single factor or variable, illustrates the basic principle or idea of factor analysis. Thus, the main purposes of factor analysis were: (1) to reduce the number of variables, and (2) to detect structure in the relationships between variables, that is to classify variables of the eighteen major statements of the survey.

The results of the factor analysis procedure revealed only one "Eigenvalue" greater than one (11.031). This was uncovered because of the overwhelming number of participants who agreed on almost every statement on the survey. (See Table 6 located in Appendix C for more details about the results of factor analysis.) Thus, the results indicated that only one factor or latent variable could be derived from the eighteen major statements of the questionnaire. This factor or variable represents the combination of all possible research variables from the eighteen major statements. This variable or factor was used in future data analyses.

Because of the factor analysis results, the researcher ended up averaging the participants' responses to the eighteen major statements. This particular technique helped in measuring the overall attitudes toward implementing computer technology in K-12

schools in the State of Kuwait. It also provided an insight into how extensively the Kuwaitis value computer technology.

This approach defined the single factor or variable that was originally derived from the eighteen major statements of the questionnaire. The factor was labeled "computer technology attitudes" by the researcher as an indication of the overall responses to the computer technology survey. In a sense, the researcher reduced the eighteen variables to one factor. Note that the new factor is actually a linear combination of the eighteen variables. Participants' single scores on this new factor were then used in future data analyses to represent that essence of the eighteen statements.

In addition, comparisons between the computer technology attitude scores and other relevant demographic variables were conducted. For instance, comparisons were made between the five main categories of the study (i.e., administrators, teachers, students, parents, and community members) and overall attitude scores. Another example, comparisons were made between the five governorates (i.e., Al-A'sema, Hawalli, Al-Ahmadi, Al-Farwaniya, and Al-Jahra) of the State of Kuwait based on participants' attitudes.

The specific parametric analyses used in this study included the analysis of variance (ANOVA), Tukey's HSD multiple comparisons, and t-test. These techniques met the basic parametric assumptions required for their application. A series of analyses of variance (ANOVAs) were used to test for differences between more than two groups. When significant differences were found, the Tukey post hoc procedure was used to

determine which groups differed. A series of t-tests was also used to test for differences between two groups.

The results of these comparisons are presented in tables. Each table is labeled to indicate the type of data being analyzed. They are located throughout this chapter. These tables are presented with the narrative of this chapter so that readers can more easily follow the points presented.

The comparisons presented in this chapter clarified how different constituencies felt toward computers and their uses in K-12 education in the State of Kuwait. They also unveiled whether or not there were any demographic differences between the research groups. The results of these comparisons can help administrative and technology leaders determine appropriate next-steps to meet perceived needs.

Results of the Data Collection

The overall number of participants who received the study's survey was 1,190. Of the questionnaires distributed, 1,165 were returned, for a return rate of 97.89 percent. A total of 25 questionnaires were either incomplete ($n = 1$) or not returned ($n = 24$). A total of 139 administrators, 337 teachers, 289 students, 350 parents, and 50 community members completed the survey. (See Tables 2 and 3 located in Appendix C for more details about the participants who completed and returned the survey.)

Answers to the Research Questions

In this section of this research study, each research question is presented, analyzed, and discussed separately.

Research Question No. 1

The first research question was concerned with vision of computer technology. Specifically, this research question asked, "Do Kuwaitis have a vision of computer technology potentials in education and the workforce?" Three items from the survey addressed this research question: 4, 10, and 18.

Collectively, these three items suggest that Kuwaitis do have this kind of vision. Over 90 percent of the respondents either agreed or strongly agreed with each item. These items stated "Computers and related technologies have the potential to improve education and student achievement and learning," "Knowing about computers gives people an advantage at work," and "Computers can help make learning fun." (See Table 7.1 and Figure 2.1.)

Research Question No. 2

The second research question was concerned with the implementation of computer technology in K-12 schools. Specifically, this research question asked, "Should computers (if advocated) be used as an independent discipline area, or integrated into all other subject matters, or both?" 9 items from the survey addressed this research question: 1, 2, 3, 7, 8, 9, 13, 14, and 15.

This research question had three parts. They were: using computer technology, teaching computer technology, and integrating computer technology. Each part is presented and analyzed separately.

Table 7.1 Frequencies and percentages of participants' responses to questions no. 4, 10, and 18.

	Q.4 Achievement & Learning		Q.10 Work		Q.18 Fun to Learn	
	Frequency	%	Frequency	%	Frequency	%
Strongly Disagree	27	2.3	31	2.7	33	2.8
Disagree	21	1.8	13	1.1	10	.9
Undertermined	65	5.6	56	4.8	24	2.1
Agree	418	35.9	353	30.3	268	23.0
Strongly Agree	634	54.4	712	61.1	830	71.2

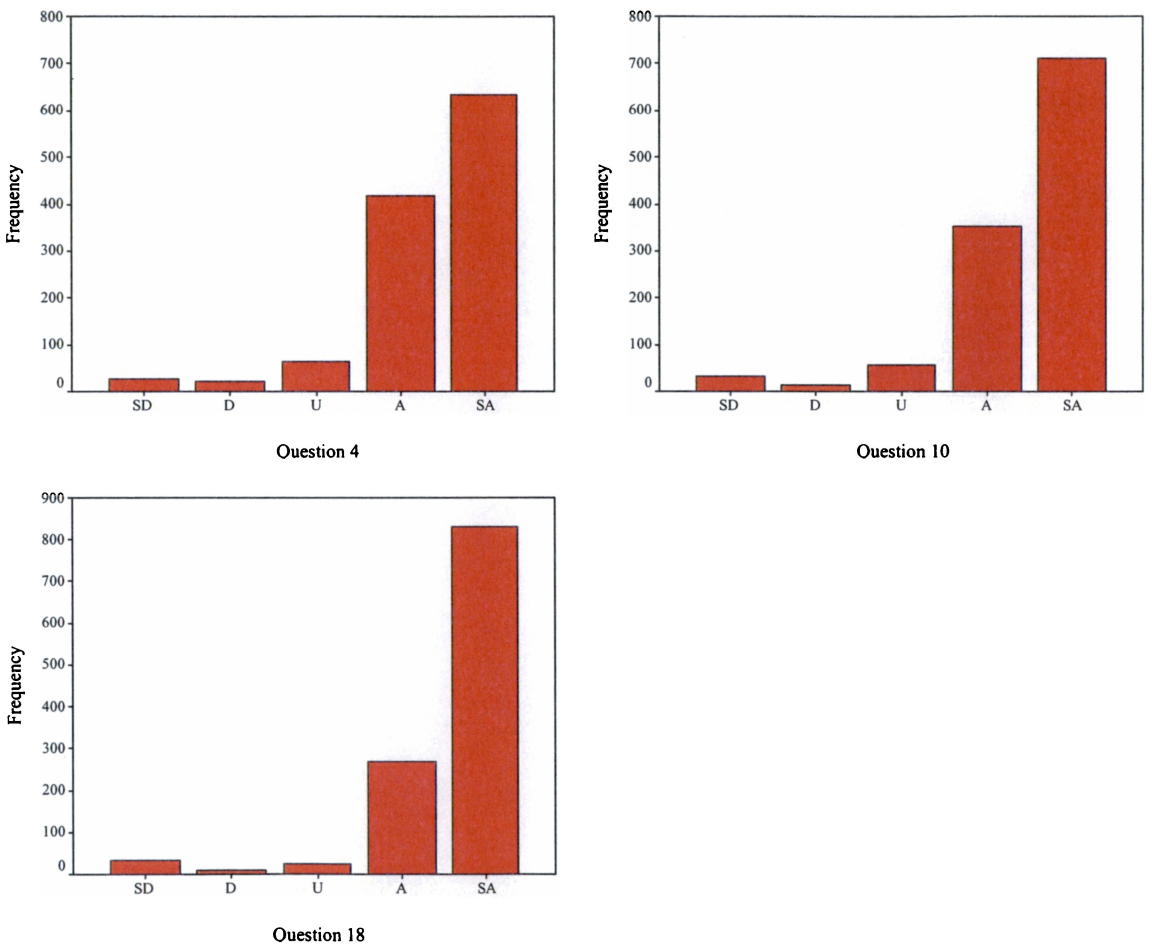


Figure 2.1 Bar graphs showing the results of participants' responses to questions no. 4, 10, and 18.

The first part of the second research question was concerned with the usage of computer technology in K-12 schools. Three items from the survey addressed this part of the second research question: 1, 8, and 15.

Collectively, these three items suggest that Kuwaitis do believe that computers and related technologies should be used in K-12 schools. Over 85 percent of the respondents either agreed or strongly agreed with each item. These items stated "School is a better place with computers," "Computer technology knowledge and skills should be utilized in K-12 education," and "Computer technology knowledge and skills are as important today as the knowledge and skills of reading, writing, science, and mathematics." (See Table 7.2 and Figure 2.2.)

The next part of the second research question was concerned with teaching computer technology in K-12 schools. Three items from the survey addressed this part of the second research question: 2, 7, and 14.

Collectively, these three items suggest that Kuwaitis do believe that computers should be taught as an independent subject in K-12 schools. Over 89 percent of the respondents either agreed or strongly agreed with each item. These items stated "Computer technology knowledge and skills should be taught as an independent subject in all grade levels," "Learning about computers is interesting," and "The study of computer technology as an independent subject in all grade levels in our schools is a good idea." (See Table 7.3 and Figure 2.3.)

Table 7.2 Frequencies and percentages of participants' responses to questions no. 1, 8, and 15.

	Q.1 Better Schools		Q.8 Computers in K-12		Q.15 Computer Skills vs. Other	
	Frequency	%	Frequency	%	Frequency	%
Strongly Disagree	34	2.9	36	3.1	32	2.7
Disagree	15	1.3	19	1.6	32	2.7
Undertermined	44	3.8	43	3.7	100	8.6
Agree	375	32.2	403	34.6	407	34.9
Strongly Agree	697	59.8	664	57.0	594	51.0

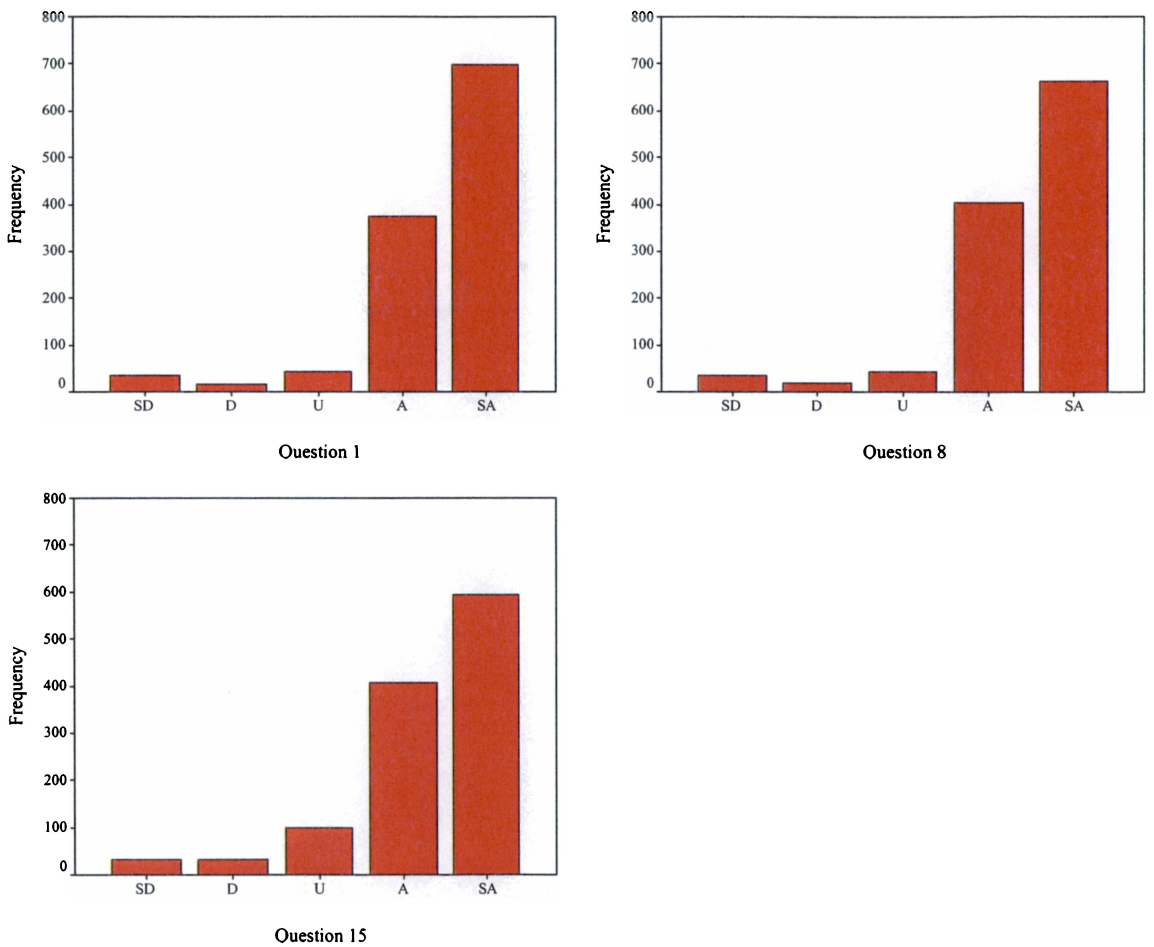


Figure 2.2 Bar graphs showing the results of participants' responses to questions no. 1, 8, and 15.

Table 7.3 Frequencies and percentages of participants' responses to questions no. 2, 7, and 14.

	Q.2 Independent Subject		Q.7 Interest to Learn		Q.14 Teaching Good Idea	
	Frequency	%	Frequency	%	Frequency	%
Strongly Disagree	48	4.1	32	2.7	40	3.4
Disagree	33	2.8	13	1.1	27	2.3
Undertermined	44	3.8	40	3.4	46	3.9
Agree	299	25.7	359	30.8	463	39.7
Strongly Agree	741	63.6	721	61.9	589	50.6

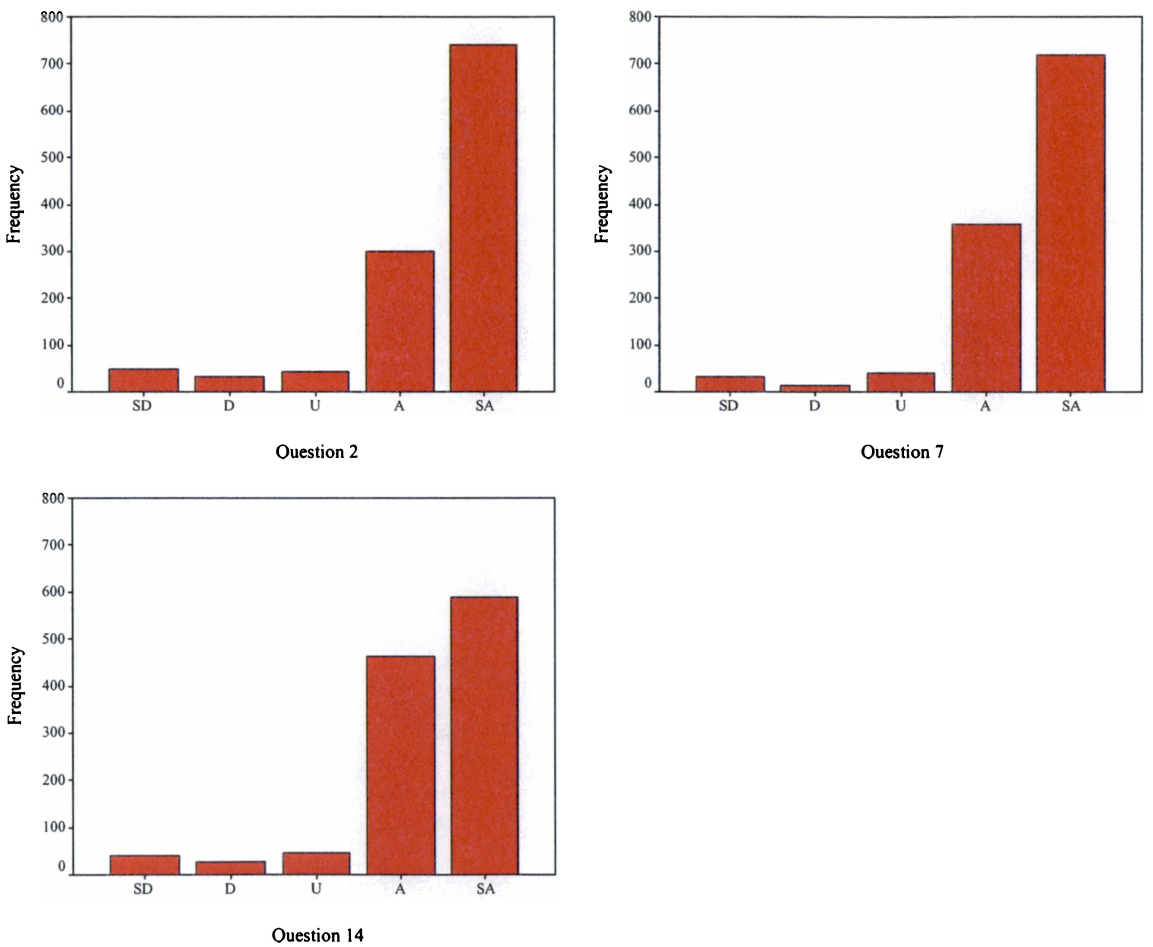


Figure 2.3 Bar graphs showing the results of participants' responses to questions no. 2, 7, and 14.

The final part of the second research question was concerned with integrating computer technology in K-12 schools. Three items from the survey addressed this part of the second research question: 3, 9, and 13.

Collectively, these three items suggest that Kuwaitis do believe that computers should be integrated into all subject matters in all grade levels in K-12 schools. Over 84 percent of the respondents either agreed or strongly agreed with each item. These items stated "Computer technology knowledge and skills should be integrated into all subjects in all grade levels," "Using computer technology as a tool for teaching and learning is a good idea," and "Computer technology knowledge and skills are useful in most classes." (See Table 7.4 and Figure 2.4.)

All in all, these nine items from the survey that addressed the second research question suggest that Kuwaitis do value computers and related technologies. Kuwaiti people believe that computers and related technologies should be used in K-12 schools. They also believe that computers should be taught as an independent discipline area and (at the same time) they should be integrated into all other subject matters.

Research Question No. 3

The third research question was concerned with computer technology program. Specifically, this research question asked, "Should a national computer technology program be developed?" Two items from the survey addressed this research question: 6 and 16.

Collectively, these two items suggest that Kuwaitis do believe that a national computer technology program should be developed. Over 89 percent of the respondents

Table 7.4 Frequencies and percentages of participants' responses to questions no. 3, 9, and 13.

	Q.3 Integration		Q.9 Educational Tool		Q.13 Use in Classes	
	Frequency	%	Frequency	%	Frequency	%
Strongly Disagree	40	3.4	28	2.4	30	2.6
Disagree	40	3.4	25	2.1	23	2.0
Undertermined	100	8.6	41	3.5	66	5.7
Agree	399	34.2	437	37.5	490	42.1
Strongly Agree	586	50.3	634	54.4	556	47.7

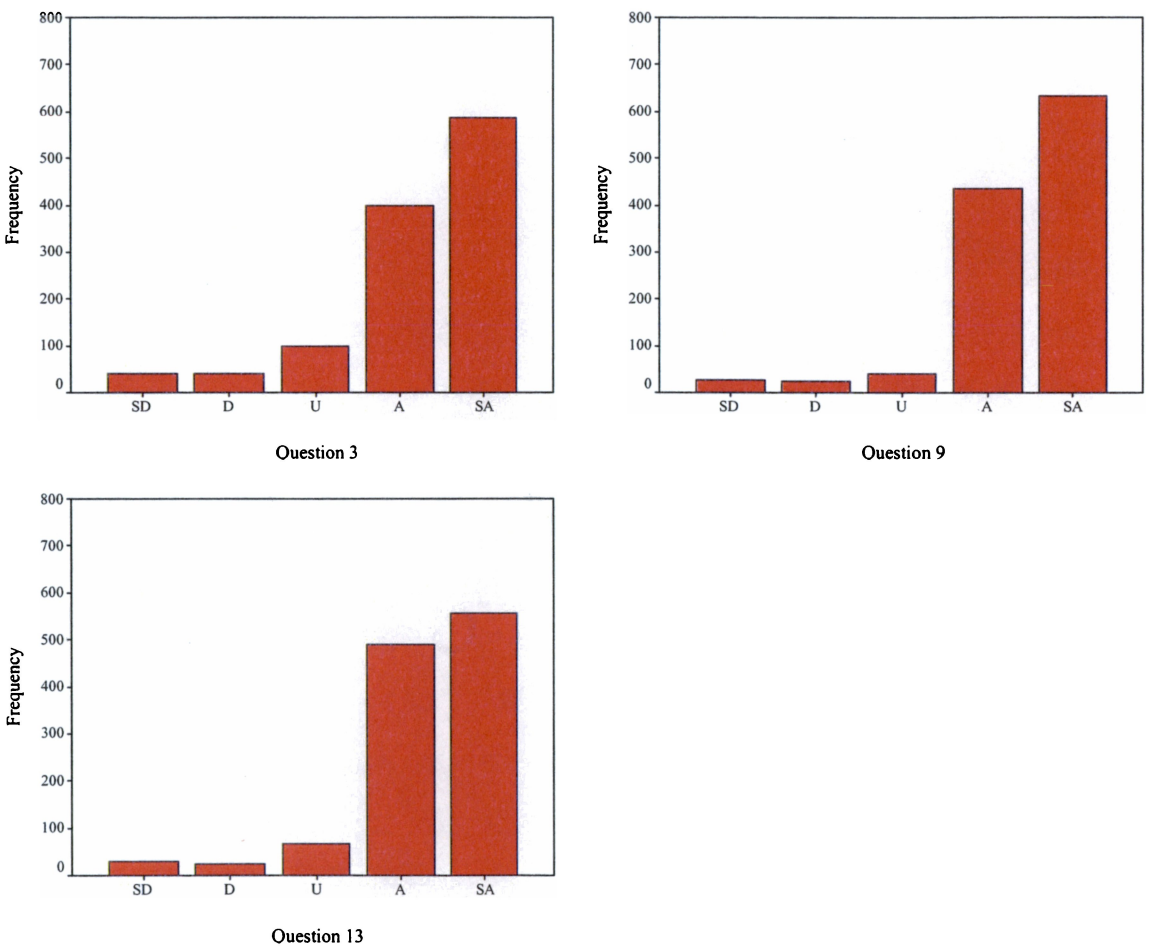


Figure 2.4 Bar graphs showing the results of participants' responses to questions no. 3, 9, and 13.

either agreed or strongly agreed with each item. These items stated "The success of a computer technology program depends on an ongoing partnership among administrators, teachers, students, parents, and the community," and "A well-planned and flexible computer technology program is needed for our K-12 educational system." (See Table 7.5 and Figure 2.5.)

Research Question No. 4

The fourth research question was concerned with computer technology standards. Specifically, this research question asked, "Should national technology standards be developed?" One item from the survey addressed this research question: 11.

Collectively, this item suggests that Kuwaitis do believe that national computer technology standards should be developed. Over 84 percent of the respondents either agreed or strongly agreed with this item. The item stated "We should develop national technology standards in order to effectively utilize computers and related technologies in our schools." (See Table 7.6 and Figure 2.6.)

Research Question No. 5

The fifth research question was concerned with computer teacher preparation. Specifically, this research question asked, "Should universities, colleges, and other post secondary institutions prepare computer teachers?" One item from the survey addressed this research question: 17.

Collectively, this item suggests that Kuwaitis do believe that institutions of higher education should prepare computer teachers. Over 93 percent of the respondents

Table 7.5 Frequencies and percentages of participants' responses to questions no. 6 and 16.

	Q.6 Technology Program Partnerships		Q.16 Flexible Program	
	Frequency	%	Frequency	%
Strongly Disagree	33	2.8	37	3.2
Disagree	18	1.5	22	1.9
Undertermined	44	3.8	59	5.1
Agree	350	30.0	370	31.8
Strongly Agree	720	61.8	677	58.1

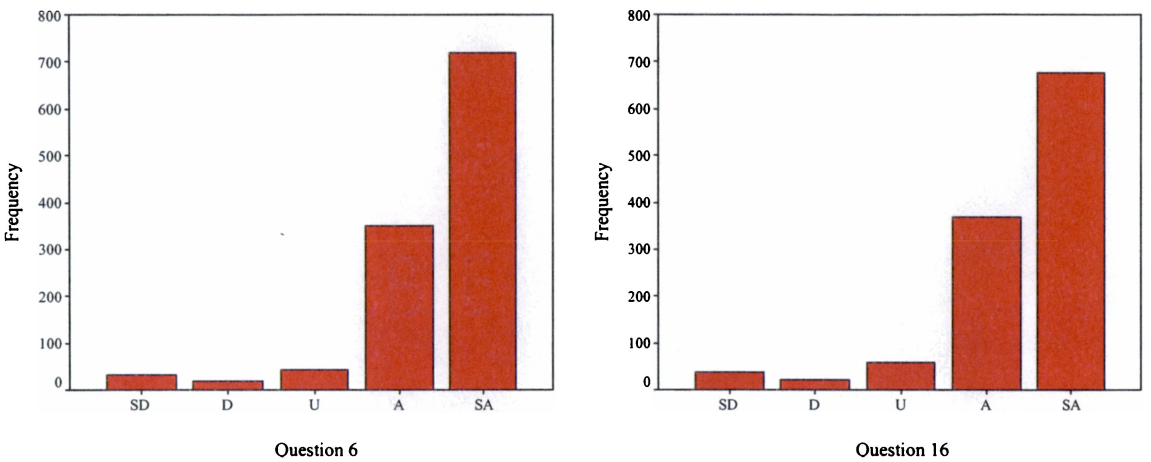


Figure 2.5 Bar graphs showing the results of participants' responses to questions no. 6 and 16.

Table 7.6 Frequencies and percentages of participants' responses to question no. 11.

	Q.11 Technology Standards	
	Frequency	%
Strongly Disagree	32	2.7
Disagree	21	1.8
Undertermined	132	11.3
Agree	424	36.4
Strongly Agree	556	47.7

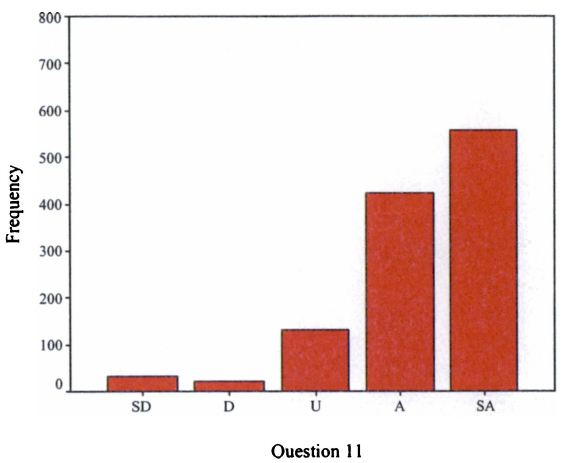


Figure 2.6 Bar graph showing the results of participants' responses to question no. 11.

either agreed or strongly agreed with this item. The item stated "Universities, colleges, and other post secondary institutions should prepare computer teachers in addition to preparing mathematics teachers, science teachers, art teachers, and so on." (See Table 7.7 and Figure 2.7.)

Research Question No. 6

The sixth research question was concerned with teachers training. Specifically, this research question asked, "Should teachers (both inservice and student) be given much attention to training?" One item from the survey addressed this research question: 12.

Collectively, this item suggests that Kuwaitis do believe that much attention should be given to training teachers how to effectively use computers and related technologies in K-12 schools. Over 91 percent of the respondents either agreed or strongly agreed with this item. The item stated "As much attention should be given to training teachers as is given to design and acquisition of computer hardware, software, and the infrastructure." (See Table 7.8 and Figure 2.8.)

Research Question No. 7

The seventh research question was concerned with computer technology financing. Specifically, this research question asked, "Should fund raising for computers and related technologies in K-12 schools be shared among all sectors (i.e., governmental, public, and private) of society?" One item from the survey addressed this research question: 5.

Collectively, this item suggests that Kuwaitis do believe that financing for computers and related technologies in K-12 schools should be shared among all sectors of society.

Table 7.7 Frequencies and percentages of participants' responses to question no. 17.

	Q.17 Teacher Preparation	
	Frequency	%
Strongly Disagree	33	2.8
Disagree	15	1.3
Undertermined	30	2.6
Agree	309	26.5
Strongly Agree	778	66.8

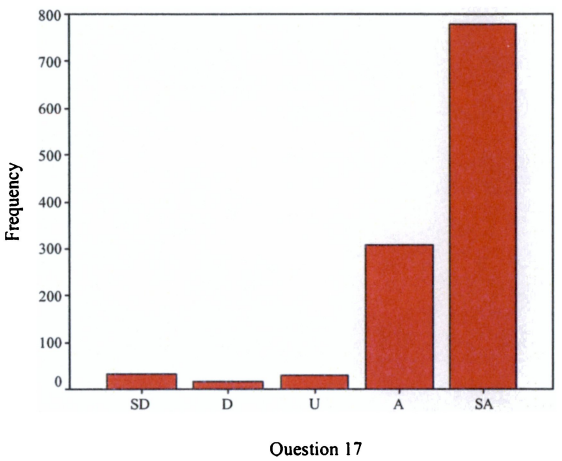


Figure 2.7 Bar graph showing the results of participants' responses to question no. 17.

Table 7.8 Frequencies and percentages of participants' responses to question no. 12.

	Q.12 Training vs. Hardware/Software	
	Frequency	%
Strongly Disagree	37	3.2
Disagree	16	1.4
Undertermined	47	4.0
Agree	285	24.5
Strongly Agree	780	67.0

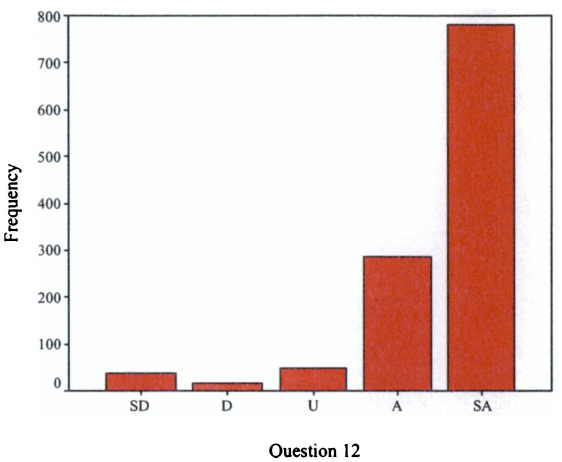


Figure 2.8 Bar graph showing the results of participants' responses to question no. 12.

Over 88 percent of the respondents either agreed or strongly agreed with this item. The item stated "Fund raising for computers and related technologies in K-12 schools should be shared among all sectors (i.e., governmental, public, and private) of society." (See Table 7.9 and Figure 2.9.)

Research Question No. 8

The eighth research question was focused on possible differences in the way subgroups responded to the survey. Specifically, this research question asked, "Are there any demographic differences with regard to how Kuwaiti people feel about computer technology?" The demographic variables examined were Governorate, Category, School Type, Computer Ownership, Computer Training, Computer Usage, Years of Computer Usage, and Age. In each analysis, one of these demographic variables served as the independent variable, with the dependent variable always being the attitude scores derived from the factor analysis.

The first demographic variable was "Governorate" (i.e., region). Since there were five governorates (i.e., Al-A'sema, Hawalli, Al-Ahmadi, Al-Farwaniya, and Al-Jahra), an ANOVA was used to compare the subgroup means. This analysis yielded a statistically significant result, $F(4,1160) = 3.323$, $p = .01$. (See Table 8.2.) A post hoc investigation indicated that only one pairwise comparison was significant, with the mean for Al-A'sema ($M = 4.5087$) being significantly higher than the mean for Al-Farwaniya ($M = 4.2818$). The other three governorates had mean scores between these two extremes. (See Tables 8.1 and 8.3.)

Table 7.9 Frequencies and percentages of participants' responses to question no. 5.

	Q.5 Shared Financing	
	Frequency	%
Strongly Disagree	37	3.2
Disagree	16	1.4
Undertermined	80	6.9
Agree	317	27.2
Strongly Agree	715	61.4

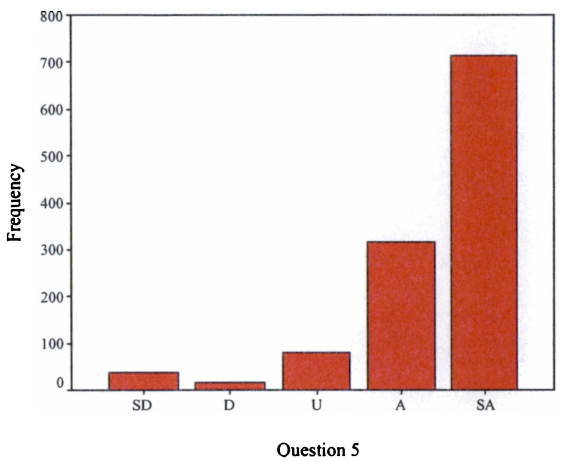


Figure 2.9 Bar graph showing the results of participants' responses to question no. 5.

Table 8.1 Means and standard deviations of computer technology attitudes by governorate.

	N	Mean	Std. Deviation
Al-A'sema	237	4.5087	.5899
Hawalli	232	4.4301	.6962
Al-Ahmadi	232	4.4210	.6323
Al-Farwaniya	234	4.2818	.8959
Al-Jahra	230	4.3850	.6080
Total	1165	4.4056	.6964

Table 8.2 Analysis of variance of computer technology attitudes for governorate differences.

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	6.395	4	1.599	3.323	.010
Within Groups	558.126	1160	.481		
Total	564.521	1164			

Table 8.3 Tukey's HSD multiple comparisons for governorate differences.

(I) Governorate	(J) Governorate	Mean Difference (I-J)	Std. Error	Sig.
Al-A'sema	Hawalli	7.860E-02	6.406E-02	.736
	Al-Ahmadi	8.770E-02	6.406E-02	.648
	Al-Farwaniya	.2269*	6.392E-02	.004
	Al-Jahra	.1236	6.420E-02	.303
Hawalli	Al-A'sema	-7.8597E-02	6.406E-02	.736
	Al-Ahmadi	9.100E-03	6.440E-02	1.000
	Al-Farwaniya	.1483	6.427E-02	.143
	Al-Jahra	4.505E-02	6.454E-02	.957
Al-Ahmadi	Al-A'sema	-8.7696E-02	6.406E-02	.648
	Hawalli	-9.0996E-03	6.440E-02	1.000
	Al-Farwaniya	.1392	6.427E-02	.193
	Al-Jahra	3.595E-02	6.454E-02	.981
Al-Farwaniya	Al-A'sema	-.2269*	6.392E-02	.004
	Hawalli	-.1483	6.427E-02	.143
	Al-Ahmadi	-.1392	6.427E-02	.193
	Al-Jahra	-.1032	6.441E-02	.496
Al-Jahra	Al-A'sema	-.1236	6.420E-02	.303
	Hawalli	-4.5052E-02	6.454E-02	.957
	Al-Ahmadi	-3.5953E-02	6.454E-02	.981
	Al-Farwaniya	.1032	6.441E-02	.496

*. The mean difference is significant at the .05 level.

The second demographic variable was "Category" (i.e., constituencies). Since there were five categories (i.e., administrator, teacher, student, parent, and community member), an ANOVA was used to compare the subgroup means. This analysis yielded a nonsignificant result, $F(4,1160) = .799, p = .526$. (See Table 8.5.) The highest mean was 4.4444; the lowest was 4.3437. (See Table 8.4.) No post hoc analysis was conducted because the ANOVA result was nonsignificant.

The third demographic variable was "School Type." Since there were four types of schools (i.e., kindergarten school, elementary school, middle school, and high school), an ANOVA was used to compare the subgroup means. This analysis yielded a nonsignificant result, $F(3,1111) = .806, p = .490$. (See Table 8.7.) The highest mean was 4.4704; the lowest was 4.3628. (See Table 8.6.) No post hoc analysis was conducted because the ANOVA result was nonsignificant.

The fourth demographic variable was "Computer Ownership." Respondents either did or did not own a computer. Since this variable was dichotomous, an independent-samples t-test was used to compare the two subgroup means. This analysis yielded a statistically significant result, $t(648.946) = 3.740, p < .001$. Computer owners ($M = 4.4663$) had a more positive attitude toward implementing computer technology in K-12 education than those who did not own a computer ($M = 4.2925$). (See Tables 8.8 and 8.9.)

The fifth demographic variable was "Computer Training." Respondents either did or did not have computer training. Since this variable was dichotomous, an independent-samples t-test was used to compare the two subgroup means. This analysis yielded a nonsignificant result, $t(1163) = .954, p = .340$. Computer technology attitude scores

Table 8.4 Means and standard deviations of computer technology attitudes by category.

	N	Mean	Std. Deviation
Administrator	139	4.4089	.9247
Teacher	337	4.4228	.7086
Student	289	4.3437	.7045
Parent	350	4.4332	.5819
Community Member	50	4.4444	.5561
Total	1165	4.4056	.6964

Table 8.5 Analysis of variance of computer technology attitudes for category differences.

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	1.550	4	.388	.799	.526
Within Groups	562.971	1160	.485		
Total	564.521	1164			

Table 8.6 Means and standard deviations of computer technology attitudes of administrators, teachers, students, and parents by school type.

	N	Mean	Std. Deviation
Kindergarten School	120	4.4704	.6096
Elementary School	324	4.3628	.7959
Middle School	333	4.4224	.6751
High School	338	4.4012	.6626
Total	1115	4.4038	.7022

Table 8.7 Analysis of variance of computer technology attitudes of administrators, teachers, students, and parents for school type differences.

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	1.193	3	.398	.806	.490
Within Groups	548.094	1111	.493		
Total	549.288	1114			

Table 8.8 Means and standard deviations of computer technology attitudes by computer ownership.

Computer Ownership	*N*	Mean	Std. Deviation
Yes	758	4.4663	.6089
No	407	4.2925	.8242

Table 8.9 t-test of computer technology attitudes for computer ownership differences.

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	*t*	*df*	Sig. (2-tailed)
Equal variances assumed	16.771	< .001	4.088	1163	< .001
Equal variances not assumed			3.740	648.946	< .001

between respondents who had computer training ($M = 4.4278$) and those who did not ($M = 4.3886$) does not differ. (See Tables 8.10 and 8.11.)

The sixth demographic variable was "Computer Usage." Respondents either did or did not use a computer. Since this variable was dichotomous, an independent-samples t-test was used to compare the two subgroup means. This analysis yielded a statistically significant result, $t(478.660) = 3.337$, $p = .001$. Those respondents who used a computer ($M = 4.4537$) had a more positive attitude toward the use of computers and technology in K-12 schools than those who did not ($M = 4.2834$). (See Tables 8.12 and 8.13.)

The seventh demographic variable was "Years of Computer Usage." Since there were three choices (i.e., 5 or less, 6-10, and 11-15), an ANOVA was used to compare the subgroup means. This analysis yielded a statistically significant result, $F(2,833) = 17.408$, $p < .001$. (See Table 8.15.) A post hoc investigation indicated that two pairwise comparisons were significant, with both the mean for 6-10 ($M = 4.5799$) and the mean for 11-15 ($M = 4.6684$) being significantly higher than the mean for 5 or less ($M = 4.3384$). (See Tables 8.14 and 8.16.)

The eighth demographic variable was "Age." Since there were nine choices (i.e., 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45 or more), the age variable was collapsed into the following choices: 5-19, 20-29, 30-39, and 40 or more. An ANOVA was used to compare the new subgroup means. This analysis yielded a marginally significant result, $F(3,1161) = 2.569$, $p = .053$. A post hoc analysis or investigation was conducted and it indicated that only one pairwise comparison was close to being significant ($p = .066$). The two means involved in this comparison were the ones

Table 8.10 Means and standard deviations of computer technology attitudes by computer training.

Computer Training	*N*	Mean	Std. Deviation
Yes	505	4.4278	.7325
No	660	4.3886	.6675

Table 8.11 t-test of computer technology attitudes for computer training differences.

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	*t*	*df*	Sig. (2-tailed)
Equal variances assumed	1.402	.237	.954	1163	.340
Equal variances not assumed			.942	1029.984	.346

Table 8.12 Means and standard deviations of computer technology attitudes by computer usage.

Computer Usage	*N*	Mean	Std. Deviation
Yes	836	4.4537	.6259
No	329	4.2834	.8383

Table 8.13 t-test of computer technology attitudes for computer usage differences.

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	*t*	*df*	Sig. (2-tailed)
Equal variances assumed	11.656	.001	3.779	1163	< .001
Equal variances not assumed			3.337	478.660	.001

Table 8.14 Means and standard deviations of computer technology attitudes by years of computer usage.

	N	Mean	Std. Deviation
5 or less	449	4.3384	.7321
6-10	354	4.5799	.4287
11-15	33	4.6684	.5315
Total	836	4.4537	.6259

Table 8.15 Analysis of variance of computer technology attitudes for years of computer usage differences.

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	13.125	2	6.563	17.408	< .001
Within Groups	314.029	833	.377		
Total	327.154	835			

Table 8.16 Tukey's HSD multiple comparisons for years of computer usage differences.

(I) Years of Computer Usage	(J) Years of Computer Usage	Mean Difference (I-J)	Std. Error	Sig.
5 or less	6-10	-.2415*	4.364E-02	< .001
	11-15	-.3299*	.1107	.008
6-10	5 or less	.2415*	4.364E-02	< .001
	11-15	-8.8469E-02	.1118	.708
11-15	5 or less	.3299*	.1107	.008
	6-10	8.847E-02	.1118	.708

*. The mean difference is significant at the .05 level.

for age 30-39 (M = 4.4728) and age 5-19 (M = 4.3418). (See Tables 8.17, 8.18, and 8.19.) These two means were the highest mean but not the lowest. This surprising result was caused by differences in the sample sizes. The group with the lowest mean (age 20-29; M = 4.3385; n = 151) was only half as large as the group with the next highest mean (age 5-19; M = 4.3418; n = 294). (See Table 8.17.)

Table 8.17 Means and standard deviations of computer technology attitudes by age.

	N	Mean	Std. Deviation
5-19	294	4.3418	.6994
20-29	151	4.3385	.7331
30-39	407	4.4728	.6120
40 or more	313	4.4104	.7696
Total	1165	4.4056	.6964

Table 8.18 Analysis of variance of computer technology attitudes for age differences.

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	3.723	3	1.241	2.569	.053
Within Groups	560.799	1161	.483		
Total	564.521	1164			

Table 8.19 Tukey's HSD multiple comparisons for age differences.

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.
5-19	20-29	3.353E-03	6.958E-02	1.000
	30-39	-.1310	5.320E-02	.066
	40 or more	-6.8529E-02	5.645E-02	.618
20-29	5-19	-3.3526E-03	6.958E-02	1.000
	30-39	-.1344	6.622E-02	.177
	40 or more	-7.1881E-02	6.886E-02	.724
30-39	5-19	.1310	5.320E-02	.066
	20-29	.1344	6.622E-02	.177
	40 or more	6.247E-02	5.225E-02	.630
40 or more	5-19	6.853E-02	5.645E-02	.618
	20-29	7.188E-02	6.886E-02	.724
	30-39	-6.2471E-02	5.225E-02	.630

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The word computer is a recent addition to the English language, but it is now used with great frequency. The objects that this word refer to are examples of how technology is changing us, not only in the way we speak but in the way we work and live each day. Technological advancements are also affecting the way we teach and learn.

Computers are used in many career areas at the present time. Computer technology knowledge and skills will continue to become even more important for most individuals. As millions of dollars are being spent every year to integrate computers and related technologies into the public schools it is important to consider what role these technologies should take.

Most of the literature substantiates computer technology as a reality in the educational and social environments. The literature also uncovers a wide array of evidence relating to the effectiveness of computer technology on students' education. According to Maddux, Johnson, and Willis (1997), the computer has the potential to be education's single most useful teaching and learning tool. All areas of education can benefit from the use of computer technology. Many students find interactive learning interesting, informative, and enjoyable; therefore, using the computer as a tool greatly benefits the learning process. It is helpful to remember that the use of computer technology as a tool in no way lessens or negates the role of the educator in the process of learning. The computer is not meant to replace the teacher, but instead is one way to enhance concepts already presented.

Although the literature to support computer technology in today's society and indeed most areas of human life is plentiful, the question of technology's place in education is yet to be universally supported. With the pervasive existence of computers and related technologies everywhere in our lives in today's society, there is no doubt that these technologies are not a fad. There is no longer a question about whether computer technology will be used in schools. Nearly everyone agrees that students must have access to computers, Internet, televisions, videos, and other technologies in the classroom (National Council for Accreditation of Teacher Education, 1997). Even the President of the United States has launched a national effort to make every young person technologically literate by the dawn of the twenty-first century. President Clinton stated that in American schools, every classroom must be connected to the information superhighway with computers, good software, and well-trained teachers (Winters, 1996).

An increasing number of countries recognize the importance of information, computers, and technology for their citizenry. Thus, they must plan to move toward the infusion of technology in their schools. governments, and businesses. The economic and technological "playing field" is not always level. The advantage favors those schools and countries that have technological resources, if not now, surely in the not-too-distant future. As a result of this obvious fact, this writer feels that the issue of technology's place in education is of paramount importance to his country, the State of Kuwait.

The initial reason for this research was to provide a needs assessment map that could be used to discover the route of technology's infusion in Kuwaiti schools. The main purpose of this study was to investigate, analyze, and help understand what administrators, teachers, students, parents, and community members in the State of Kuwait think about the idea of implementing computer technology in K-12 education.

In support of this goal, the research examined the opinions and attitudes of virtually every segment of the Kuwaiti society toward the use of computers and technology in Kuwaiti schools.

To accomplish this task, a Likert scale survey questionnaire was developed by the researcher, translated to Arabic language, and administered, with the help of a community leader, Dr. Hassan A. Safar, to various members of the educational system in the five governorates (i.e., Al-A'sema, Hawalli, Al-Ahmadi, Al-Farwaniya, and Al-Jahra) of the State of Kuwait. A concerted effort was made to collect as many completed surveys as possible; in some cases, as many as four trips were made to the same schools because the surveys were completed at different times. Then, the results were carried by the researcher to the United States.

The questionnaire was the primary vehicle for data collection. It was designed to find out value judgments for issues such as implementing computer technology as an independent subject in K-12 schools versus integrating computer technology in all other subjects. Responses to the questions were given on a five-point Likert scale (strongly agree [5], agree [4], undetermined [3], disagree [2], and strongly disagree [1]). All questions were stated positively with responses converted to numbers: 1 to 5. Accordingly, the higher the score, the more positive one's attitude toward computer technology.

A stratified random sample was secured from all five Kuwaiti governorates (i.e., regions) from 70 schools. The overall number of participants who received the study's survey was 1,190. Of the questionnaires distributed, 1,165 were returned, for a return rate of 97.89 percent. A total of 25 questionnaires were either incomplete ($n = 1$) or not

returned (n = 24). A total of 139 administrators, 337 teachers, 289 students, 350 parents, and 50 community members completed the survey.

A variety of statistical techniques were used for data analyses. Both descriptive statistics procedures (e.g., frequency, mean, and standard deviation) and inferential statistics procedures (e.g., factor analysis, analysis of variance (ANOVA), Tukey's HSD multiple comparisons, and t-test) were conducted. When performing inferential tests, an alpha level (significance level) of .05 was selected. The comparisons clarified how different constituencies felt toward the use of computers and technology in K-12 schools. They also unveiled whether or not there were any demographic differences between the research groups. The results of these comparisons can help administrative and technology leaders determine appropriate next-steps to meet perceived needs. These results can be found in a series of tables and figures located throughout Chapter IV of this research study and in Appendices C and D.

Prior to this study, it was anticipated that there would be a definite distinction in the results among the five main categories (i.e., constituencies) and the five governorates. This did not occur mostly. The study yielded interesting findings. The results were almost similar. The use of computers and technology appeared to be highly supported by most of the participants polled in this research. The results clearly showed that their attitudes were consistently positive. The results also revealed that Kuwaitis do value computers and related technologies. Kuwaiti people believe that computers and related technologies should be used in K-12 schools. They also believe that computers should be taught as an independent discipline area and (at the same time) they should be integrated into all other subject matters. Moreover, the study yielded few demographic differences when

comparisons were conducted between the computer technology attitude scores and other relevant demographic variables.

For instance, an ANOVA indicated that there was a statistically significant difference, $F(4,1160) = 3.323$, $p = .01$, between the computer technology attitude scores and governorate. However, a post hoc investigation (i.e., Tukey's HSD multiple comparisons) contended that only one pairwise comparison was significant, with the mean for Al-A'sema ($M = 4.5087$) being significantly higher than the mean for Al-Farwaniya ($M = 4.2818$). The other three governorates (i.e., Hawalli, Al-Ahmadi, and Al-Jahra) had mean scores between these two extremes.

Furthermore, there was a statistically significant difference, $t(648.946) = 3.740$, $p < .001$, between the overall attitude scores and computer ownership, with the mean for those respondents who owned a computer ($M = 4.4663$) being significantly higher than the mean for those respondents not owning a computer ($M = 4.2925$). In addition, there was a statistically significant difference, $t(478.660) = 3.337$, $p = .001$, between the participants' overall attitude scores and computer usage, with the mean for those respondents who used a computer ($M = 4.4537$) being significantly higher than the mean for those respondents not using a computer ($M = 4.2834$). This result affirms what Loyd, Loyd, and Gressard (1987) stated, a positive attitude toward computers is directly related to the amount of computer experience.

The study was an educational context evaluation research. Indeed, it was actually the first part of an educational evaluation research design called "STUFFLEBEAM" or "CIPP" model. This model provides a basis for making decisions by delineating, obtaining, and providing useful information for judging decision alternatives. Thus, it serves the planning decisions stage which influence selection of goals and objectives.

For this study, the author used a selected aspect of a context evaluation method. While context evaluation involves all aspects of the situation (e.g., materials, guidelines, resources, and individuals), this study focused on only the perceptions of people. Thus, further research as a part of future investigations is anticipated.

Recommended modifications include more careful translation of the questionnaire. Perhaps a separate questionnaire should have been used for students. They had a slightly lower subgroup mean than the other subgroups. It might be the case that students possessed less vision of computer technology potentials in education and the workforce. Younger students might well lack the developmental awareness of the other adult groups. In addition, based on the researcher's experience in this study, the data collection stage ought to commence/start in either the beginning or the middle of a school year, not in April. This recommendation is especially important when dealing with a large number of participants and schools.

Recommendations

The general educational objectives in the State of Kuwait are connected to the culture and nature of the Kuwaiti society. Kuwait's philosophy, future prospects, and the contemporary educational trends will all be based on technology changes. With this in mind, and as the nation moves through the twenty-first century, the researcher proposes several recommendations.

Most of the recommendations are based upon this study's empirical results. However, some deal with issues not directly examined in the research questions; they emanate from the researcher's general involvement in this project. These recommendations are ordered in terms of their perceived importance.

1. Every Kuwaiti should become technologically literate and possess the technological knowledge (i.e., what he/she should know) and skills (i.e., what he/she should be able to do) necessary to compete in a forever changing modern society, to become part of the new global economy, and to meet the challenges of the twenty-first century.

2. In order to stimulate the effective use of technology in teacher education, the Ministry of Education and Higher Learning should consider requiring schools, colleges, and departments of education to develop both a technology vision and a strategic information technology plan that reinforces that vision. Appropriate dissemination of that vision is a vital part of any valid vision. Educators and community members must believe that computers and telecommunication technologies, if properly implemented, will offer the greatest potential to right the wrongs of our schools. Anti-technology pockets should be identified and educated on the appropriateness of technology by developing or procuring programs that will help to make technology user-friendly. Work is needed to ensure that technology opponents have what the researcher call a "vision alignment." Only when a common vision is shared and all work toward a common goal can the educational team harness the full educational potential of computers and technology.

3. Computer technology literacy (i.e., knowledge and skills) should be taught as an independent subject in K-12 schools as early as possible. Therefore, the Ministry of Education and Higher Learning should continue the implementation process of computer or technology education in grades K-12 in every school.

4. The Ministry of Education and Higher Learning should consider integrating computers and related technologies into all discipline areas throughout grades K-12 in all schools.

5. No amount of technology will fix what's wrong with education without a strategic technology plan properly disseminated. For technology to better serve the students' education and lives, we should all agree to have content standards that provide an ambitious framework for guiding student learning. The standards should describe what the content of technology education should be in grades K-12. The standards should not be static and immutable. Rather, they should undergo periodic reassessment and reevaluation. Examples we can review are current technology plans such as:

A. The National Educational Technology Standards (NETS) Project which is an International Society for Technology in Education (ISTE) initiative funded by the U.S. Department of Education; the National Aeronautics and Space Administration (NASA); the Milken Exchange on Education Technology; and Apple Computer, Inc.. The NETS Project has already established a consensus on technology standards for students in grades PK-12 and recently published the long-awaited book, "National Educational Technology Standards for Students: Connecting Curriculum and Technology" (International Society for Technology in Education, 2000a). In addition, ISTE has initiated a new project called the National Educational Technology Standards for Teachers (NETS•T) Project. This project is funded by the U.S. Department of Education's Preparing Tomorrow's Teachers to Use Technology (PT^3) grant program. The NETS•T Project has released its latest booklet, "National Educational Technology Standards for Teachers." This document was presented to the educational technology community at the National Educational Computing Conference (NECC) 2000 in Atlanta, Georgia. The booklet extends the much-acclaimed work of ISTE's NETS Project to the preservice teacher arena (International Society for Technology in Education, 2000b).

B. Technology for All Americans Project (TfAAP) which is an International Technology Education Association (ITEA) initiative funded by the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA). TfAAP has already established a consensus on technology content standards in grades K-12 and recently published the long-awaited book, "Standards for Technological Literacy - Content for the Study of Technology." Hundreds of educators and professionals have participated in its development and revision. It was officially released at the first general session of ITEA's 62nd International Conference in Salt Lake City, Utah on April 6, 2000. The standards were approved by the National Research Council Standards Review Committee. The document's intended audience includes school administrators, teachers, parents, educators, curriculum developers, business leaders, and others in the educational community, as well as the community as a whole. The ITEA standards function as a "catalyst" for educational reform. They also furnish many individuals and organizations around the world committed to enhancing technological literacy with a unambiguous vision, thus resulting in the recognition of technology education as a fundamental core field of study in schools. In addition, the book contains grades K-12 content standards for the study of technology and represent what students should know and be able to do in order to become technologically literate (Technology for All Americans Project, 2000).

C. TechWorks project, which is a program published by Teacher Created Materials, provides a comprehensive approach to thoroughly and successfully integrate technology knowledge and skills into the curriculum. TechWorks helps teachers use any hardware and software to teach technology concepts and skills along with the existing K-12 curriculum. It is the first comprehensive program to introduce technology concepts and

skills at appropriate grade levels while linking them with other concepts and skills being taught. The overall TechWorks program consists of nine kits for grades K-8. The program scope and sequence covers 14 technology concepts: technological awareness; keyboarding; paint, draw, and graphics; word processing; information systems; network awareness; Internet and telecommunications; multimedia; video; electronic presentations; databases; spreadsheets; desktop publishing; and programming. Each of the technology concepts is broken down into specific skills to be introduced at appropriate grade levels. The program contains a variety of detailed lessons that provide teachers with all the information they need to teach the skills. TechWorks is of great value to any educator who truly wants to prepare students to a progressive future (Teacher Created Materials, Inc., 2000a). In addition, Teacher Created Materials published ThemeWorks, independent units with extra lessons that can be used by teachers who are familiar with TechWorks. It consists of three kits: primary, intermediate, and challenging. The kits cover a variety of topics in science, social studies, geography, and history such as weather, plants, creepy crawlies, dinosaurs, human body, oceans, native Americans, states and provinces, space, natural disasters, middle ages or medieval times, and ancient Rome (Teacher Created Materials, Inc., 2000b).

D. School Technology and Readiness (STaR) Chart is a project funded by the CEO Forum on Education & Technology. This forum is a four-year partnership between education and business leaders in the United States who are committed to evaluating and monitoring progress toward integrating technology in schools. Two types of STaR Chart have been developed by the forum: (1) K-12 STaR Chart, a self-assessment tool designed to supply schools (i.e., K-12 community) with the information they need to effectively

integrate technology into the process of teaching and learning; and (2) Teacher Preparation STaR Chart, a self-assessment tool designed to enable individual schools, colleges, and departments of education evaluate their level of readiness in preparing tomorrow's teaching force to use technology. These charts are explicit tools that can be used in determining the current standings and future directions of technology education. They include a series of questions that, once answered, provide you with immediate feedback on your institution's level of readiness in integrating technology. The charts provide a visual presentation of critical factors for the integration of technology in all aspects of teaching and learning such as: hardware, content (e.g., software), connectivity, professional development, and support (e.g., financial). Each STaR chart has four evaluative levels of profiles: (1) early technology (i.e., little or no technology use); (2) developing technology; (3) advanced technology; and (4) target technology (i.e., a comprehensive ideal model for the integration and innovative use of technology). The charts provide technology snapshots of each profile. K-12 schools, colleges, and departments of education are anticipated to fall within various levels across the spectrum. The potential educational benefits acquired from using these charts include: (1) creating individualized assessment tools for technology readiness by defining a current educational technology profile in addition to providing an analysis of where you want to be in the future; (2) setting technology plans, goals, objectives, standards, and benchmarks; (3) identifying financial priorities; (4) instructions on applying for grants; and (5) tracking or monitoring your own progress toward integrating technology in schools (CEO Forum on Education & Technology, 2000a) (CEO Forum on Education & Technology, 2000b).

Finally, these projects or programs are widely heralded technology plans. They provide practical information about technology education. They recognize and nurture innovations and have the ability to continually adapt to change ensuring that technology remains current and serviced in a timely matter. If we want to discover clues to what we must do to succeed in developing our state-of-the-art technology plan or program, we must learn from the past and current successes and failures and not repeat the errors. Therefore, the Ministry of Education and Higher Learning should review these current programs along with the previous ones, in order to prepare for the future by establishing a strategic technology plan that supports its goals and activities.

6. The Ministry of Education and Higher Learning should consider encouraging universities, colleges, and other post secondary institutions to prepare computer/technology teachers as well as teachers of mathematics, science, arts, social studies, and so forth. This can be accomplished by ensuring that computer/technology teacher preparation is a priority.

7. Computers and related technologies offer eminent potential for new and more powerful teaching and learning environments. Today's teacher preparation programs must groom tomorrow's teachers for this challenge. Therefore, the Ministry of Education and Higher Learning should consider encouraging universities, colleges, and other post secondary institutions to ensure that proficiency in using technology becomes a key requirement for all teacher preparation programs.

8. The Ministry of Education and Higher Learning should play an important role in promoting technological literacy and conveying technology content. This can be achieved

by providing more workshops, seminars, conferences, and courses in using computers and related technologies into K-12 schools. These professional development programs (i.e., initial and ongoing training) can be oriented toward school administrators, teachers, students, parents, educators, curriculum developers, decision makers, business leaders, and others in the educational community. These programs exist to enhance their professional skills, improve the performance of the field they represent, and assist them in becoming better citizens to help them keep pace with our technology-oriented world. The question should not be "Should we do this?"; the real question is "How should we deliver these services?"

9. The Ministry of Education and Higher Learning should create partnerships with other government officials, institutions, organizations (for-profit or non-profit), businesses, school administrators, teachers, students, parents, and community members. The goal of these partnerships is to facilitate, synthesize, and share information and expertise that will help the nation's task toward the use of computers and technology in K-12 schools. This task is one that cannot be accomplished alone by the Ministry of Education and Higher Learning. These partnerships are highly recommended and encouraged in an effort to provide a lifelong learning environment to our future generations and keep them abreast with the emerging technologies.

10. The Ministry of Education and Higher Learning, working with the partnerships mentioned previously, should consider providing the educational community, as well as the whole community, with several forms of support for technology such as financial, physical (i.e., hardware and buildings), intellectual (i.e., software), technical, and professional development (i.e., training).

11. The Ministry of Education and Higher Learning, working with other professional organizations such as Kuwait Foundation for the Advancement of Sciences (KFAS), Kuwait Institution for Scientific Research (KISR), and The National Committee for the Support of Education, should consider establishing pilot projects with institutions (e.g., Kuwait University, The Public Authority for Applied Education and Training, and K-12 schools) to implement and evaluate state-of-the-art uses of technology.

12. The Ministry of Education and Higher Learning, the College of Education at Kuwait University, and other post secondary institutions should begin , as soon as possible, to redesign and maintain their Web sites to provide educators and community members with the most up-to-date resources and publications for enriching and extending their information. This information must be available not only to support technology, but to provide a voice of Kuwaiti culture within the world of technology.

13. The Ministry of Education and Higher Learning should consider encouraging K-12 schools to create Web sites that serve as a "virtual learning community."

14. The Ministry of Education and Higher Learning should take into consideration the recent recommendations of other professional organizations, both nationally and internationally, regarding the issue of technology and education. However, we need not reinvent or restudy that information which is already available.

15. The Ministry of Education and Higher Learning should recognize, reward, and disseminate effective models of teaching and learning for the "Information Age." This can be achieved by encouraging teachers to provide a more self-directed, hands-on, interactive

learning environment with a focus on problem-solving and open-ended learning possibilities in order to enhance the curricula.

16. The Ministry of Education and Higher Learning should consider collaborating with K-12 schools, universities, colleges, other post secondary institutions, organizations (for-profit and non-profit), businesses, and governments to provide and disseminate the latest educational resources in the field of technology education to everyone.

17. More research should be done in order to fulfill the requirements of implementing computer technology in K-12 education in the State of Kuwait. This research should deal with more in depth details. This researcher will continue to investigate and offer data to support continued development of technology.

18. The Ministry of Education and Higher Learning should take into consideration to disseminate a message that technology is a key factor to teaching and learning growth in the twenty-first century to everyone in K-12 schools, colleges, universities, other post secondary institutions, organizations (for-profit and non-profit), businesses, and governments.

19. The Ministry of Education and Higher Learning should encourage K-12 schools to use electronic means for communication and to store and retrieve data of students, teachers, and administrators. Availability of technology to parents and community members should also be studied further.

20. Instructional technology researchers are encouraged to adopt/use the study's instrument for further research as part of future investigations.

As indicated earlier in this study, long ago, John Dewey (1916) recognized that education must be based on reality for the betterment of society. Education should intertwine the process of living with the process of learning because, in essence, they are a joint process.

Computers and related technologies have become important tools in education. They have become an integral part of learning, of curriculum development, and of staff development. We use them to engage learners, promote collaboration and communication, and deliver services. To use them effectively we must consider their uses and potentials in our schools.

"The future belongs to those with a broad education--those who know what kind of information exists, where to locate it, and how to use it. Knowledge is power and the rewards are limitless" (Future World Corporation, 1999). Education in the future will not be confined to a single place, to a specific time, to a single person, to human teachers, to memorization, to paper-based information, to linear learning, to intellectual elite, to childhood, and to controlling learners (Jukes & McCain, 1999).

In conclusion, this researcher believes that people love to learn, and they are good at it. They especially love learning when it is fun and when the drudgery is minimized. They love learning things that are interesting and relevant to them. People love learning when they are responsible for their own learning and when they are successful. Computer and related technologies can help make all that possible. Let students turn on that computer and let them turn on the world.

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APPENDICES

APPENDIX A

Authorization Documentation

Mr. Abdullah Al-Rejaib
Assistant Under Secretary
for Educational Research and Curricula
Ministry of Education
The State of Kuwait

20 February, 2000

Dear Sir,

Subject: Application of the questionnaire concerning opinions on the importance of implementing computer technology in education, from kindergarten stage until the end of the secondary stage.

1. I request your approval on applying the questionnaire mentioned above in a number of schools in the five educational areas/districts, as it is a part of my research study about the computer technology and its uses in education.

2. This study is a part of an attempt on my behalf to clarify selected standpoints about the issue of implementing computer technology in K-12 education from the perspectives of various members of the educational system (e.g, administrators, teachers, students, parents, and community members) in the State of Kuwait.

This study is being conducted as a part of the requirements for the Ph.D. degree in education at The University of Tennessee, Knoxville in the United States.

3. Please, I would like your kind instructions to the specified authorities in the five educational areas/districts to facilitate my mission in implementing the questionnaire for its importance.

This questionnaire will be distributed during the months of March and April, 2000. I ensure the fact that the names of the participants will be treated with complete confidentiality.

With great respect and my greeting to you.

Yours Faithfully,

Ammar Hassan Safar

Ph.D. Candidate in Instructional Technology
The University of Tennessee, Knoxville
U.S.A.

بسم الله الرحمن الرحيم

٢٠٠٠ / ٢ / ٢٠

السيد المحترم / عبدالله الرجيب

الوكيل المساعد لقطاع البحوث التربوية والمناهج

تحية طيبة وبعد ،

الموضوع : تطبيق استبيان آراء حول اهمية استخدام تكنولوجيا الحاسوب في التربية من مرحلة رياض الاطفال الى نهاية المرحلة الثانوية

ارجو التكرم بالموافقة على تطبيق الاستبيان المذكور اعلاه على عدد من المدارس في المناطق التعليمية الخمس حيث انه جزء من دراستي البحثية حول تكنولوجيا الحاسوب واستخداماته في التربية .

ويعتبر هذا الاستبيان جزء من محاولتي لتوضيح وجهات نظر بعض اعضاء الجهاز التربوي ممثلا بمدراء المدارس ، المدرسين ، الطلبة ، الآباء ، وافراد من المجتمع في دولة الكويت حول قضية اهمية استخدام تكنولوجيا الحاسوب في التربية من مرحلة رياض الاطفال الى نهاية المرحلة الثانوية ، هذه الدراسة البحثية هي جزء من متطلبات درجة الدكتوراه في التربية بجامعة THE UNIVERSITY OF TENNESSEE , Knoxville ، في الولايات المتحدة الامريكية .

يرجى التكرم بالايعاز للجهة المختصة في المناطق التعليمية الخمس لتسهيل مهمتي في اداء الاستبيان ، وذلك للاهمية ، وسيتم توزيع هذا الاستبيان خلال شهري مارس وابريل ٢٠٠٠ ، واؤكد ان اسماء المشاركين سيتم التعامل معها بسرية تامة .

مع خالص التحية والاحترام ،،،

عمار حسن صفر

طالب دراسات عليا - دكتوراه

مجال التخصص الرئيسي - تكنولوجيا التعليم

جامعة تينيسي - الولايات المتحدة الامريكية

7530 EA 0073730/99/5000

Ministry of Education
ASSISTANT UNDER SECRETARY FOR
EDUCATIONAL RESEARCH AND CURRICULA AFFAIRS

وزارة التربية
مكتب الوكيل المساعد
لشئون البحوث التربوية والمناهج

Date : 20 February 2000 التاريخ : ٢٠/٢/٢٠٠٠م

: الموافق : ١٣/١٠/١٤٢٠هـ

Ref : الرقم : و.ب.ج/٢٤٤

To Whom It May Concern

In response to the request from Mr. Ammar Hassan Safar, a Ph.D. candidate in Instructional Technology, at the University of Tennesee, Knoxville, U.S.A. , whose research is on: *the application of the questionnaire concerning opinions on the importance of implementing computer technology in education, from kindergarten stage till the end of the secondary stage*; I have pleasure to grant him permission to conduct the survey related to the research, as specified in his request,. Therefore, he is permitted to distribute the questionnaires among the schools in the five educational areas in Kuwait, and collect the responses,during the months of March and April 2000.

This has been issued at the request of Mr. Ammar Hassan Safar; who will be fully responsible for this study. The Ministry of Education shall not be responsible for it, whatsoever it may be.

Abdullah Al-Rejaib
Assistant Under Secretary
for Educational Research & Curricula

وزارة التربية
الوكيل المساعد لشئون البحوث التربوية والمناهج

ص. ب ٧ الصفاة – الرمز البريدي 13001 الكويت – هاتف : ٤٨٣١٠٥٣ – فاكس : ٤٨٣٨٩١٨
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وزارة التربية
مكتب الوكيل المساعد
لشئون البحوث التربوية والمناهج

التاريخ : ٢٢/٦/٢٠٠٠
الموافق : ١٤٢١/٣/٢٩
الرقم : ع و م/ ٤٤٦

Date :
:
Ref :

لمن يهمه الأمر

بناء على طلب السيد / عمار حسن صفر ، المتقدم للحصول على درجة الدكتوراه في التكنولوجيا التعليمية من جامعة تينيسي كنوكفيل بالولايات المتحدة الأمريكية ، وأن وفقاً لبحثه المتعلق بـ " **تطبيق الاستبيان المتعلق بالآراء الخاصة بأهمية تطبيق تكنولوجيا الحاسوب في التربية من مرحلة رياض الأطفال حتى نهاية المرحلة الثانوية** " ، وفي هذا الخصوص يسعدني منحه الأذن بالقيام ببحثه ودراسته المتعلقة بهذا البحث كما ورد في طلبه ، لهذا فقد سمح له بتوزيع الاستبيان على المدارس في المناطق التعليمية الخمس في الكويت ، ويقوم بجمع الردود على الاستبيان خلال شهري مارس وابريل عام ٢٠٠٠م .

وقد أعطيت هذه الشهادة بناءً على طلب السيد / عمار حسن صفر وسيكون مسؤولاً عنها مسؤولية كاملة ولا تتحمل وزارة التربية أي مسؤولية تجاهها .

عبدالله الرجيب
وكيل الوزارة المساعد
للبحوث والتربية والمناهج

وزارة التربية
وكيل المساعد لشئون البحوث التربوية والمناهج

ف ١٤ / ٢

ص.ب ٧ الصفاة - الرمز البريدي 13001 الكويت - هاتف : ٤٨٣١٠٥٣ - فاكس : ٤٨٣٨٩١٨
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وزارة التربية
مكتب الوكيل المساعد
لشئون البحوث التربوية والمناهج

Date : ..... التاريخ : ٢٠٠٠/٣/٢٢

: ..... الموافق : الخميس

Ref : ..... الرقم : و.ب.م/٢٤٥٠

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وزارة التربية
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وزارة التربية
مكتب الوكيل المساعد
لشئون البحوث التربوية والمناهج

التاريخ : ٢٠٠٠/٤/٢٣ Date : .....

الموافق : ١ المحرم ١٤٢١ : .....

الرقم : ج ت ت/ ٤٤٦ Ref : .....

لمن يهمه الأمر

بناء على طلب السيد / عمار حسن صفر ، المتقدم للحصول على درجة الدكتوراه في التكنولوجيا التعليمية من جامعة تينيسي كنوكفيل بالولايات المتحدة الأمريكية ، وأن وفقاً لبحثه المتعلق بـ " **تطبيق الاستبيان المتعلق بالآراء الخاصة بأهمية تطبيق تكنولوجيا الحاسوب في التربية من مرحلة رياض الأطفال حتى نهاية المرحلة الثانوية** " ، وفي هذا الخصوص يسعدني منحه الأذن بالقيام ببحثه ودراسته المتعلقة بهذا البحث كما ورد في طلبه ، لهذا فقد سمح له بتوزيع الاستبيان على المدارس في المناطق التعليمية الخمس في الكويت ، ويقوم بجمع الردود على الاستبيان خلال شهري مارس وابريل عام ٢٠٠٠م .

وقد أعطيت هذه الشهادة بناءً على طلب المذكور أعلاه وسيكون مسؤولاً عنها مسؤولية كاملة ولا تتحمل وزارة التربية أي مسؤولية تجاهها .

عبدالله الرجيب
وكيل الوزارة المساعد
للبحوث والتربية والمناهج

وزارة التربية

الوكيل المساعد لشئون البحوث التربوية والمناهج

ف ١٤ / ٢

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وزارة التربيـــة
مركز البحوث التربوية والمناهج
وحدة البحوث التربوية

Ministry of Education
Curricula and Educational
Research Centre
Research Unit

الرقـــم : و ت / خ / ١٥٨
مرفقات : .....

التاريـخ / / ١٤ هـ
الموافـق ٢٣/ ٢ / ٢٠٠٠ م

السيد المحترم / مدير عام منطقة العاصمة التعليمية
الأستاذ / جاسم العمر

تحية طيبة وبعد ،،

بنـــاء على الطلب المقدم مـــن الباحثان / الدكتور حسن صفر والأستاذ عمار حسن صفر وذلك لتطبيـــق اســـتبيان " آراء حـــول أهميـــة اســـتخدام تكنولوجيا الحاسوب في التربية من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية" . حيث أنه جزء من دراستهما البحثية حول تكنولوجيـــا الحاســـوب واستخداماته في التربية .

يرجى التكرم بتسهيل مهمـــة المذكوران أعلاه لزيارة جميع المـــــدارس التابعة لمنطقتكم .

شاكرين لكم حسن تعاونكم ،
مع خالص التحية ،،

مدير إدارة البحوث التربوية

إدارة البحوث التربوية

- نسخة للملف

ص.ب ١٦٢٢٢ القادســـية ٣٥٨٥٣ الكويـــت . تلفـــون ٤٨٤٢٤٠٤/٤٨٣٨٣٢١ . فاكـــس ٤٨٤٢٤٠٤/٤٨٣٧٩٠٩
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وزارة التربيـــة
مركز البحوث التربوية والمناهج
وحدة البحوث التربوية

Ministry of Education
Curricula and Educational
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الرقـــم : و ت / خ ا ٥٨٥١
مرفقات : .....

التاريـخ / / ١٤ هـ
الموافـق ٢٧ / ٤ / ٢٠٠٩ م

السيدة المحترمة / مدير عام منطقة حولي التعليمية
الأستاذة / نورية الصبيح

تحية طيبة وبعد ،،

بنـــاء على الطلب المقدم مـــن الباحثان / الدكتور حسن صفر والأستاذ عمار حسن صفر وذلك لتطبيـــق اســـتبيان " آراء حـــول أهميـــة اســـتخدام تكنولوجيا الحاسوب في التربية من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية". حيث أنه جزء من دراستهما البحثية حول تكنولوجيـــا الحاســـوب واستخداماته في التربية .

يرجى التكرم بتسهيل مهمـــة المذكوران أعلاه لزيارة جميع المـــــدارس التابعة لمنطقتكم .

شاكرين لكم حسن تعاونكم ،
مع خالص التحية ،،

مدير إدارة البحوث التربوية

- نسخة للملف

ص.ب ١٦٢٢٢ القادســـية ٣٥٨٥٣ الكويـــت . تلفـــون ٤٨٤٢٤٠٤/٤٨٣٨٣٢١ . فاكـــس ٤٨٤٢٤٠٤/٤٨٣٧٩٠٩
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مركز البحوث التربوية والمناهج
وحدة البحوث التربوية

Ministry of Education
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الرقـــم : و ت / خ / ١٥٨ .....
مرفقات : .....

التاريـخ / / ١٤ هـ
الموافـق ٢٧/ ٢ / ٢٠٠٠ م

السيد المحترم / مدير عام منطقة الأحمدي التعليمية
الأستاذ / محمود القروي

تحية طيبة وبعد ،،

بنـــاء على الطلب المقدم مـــن الباحثان / الدكتور حسن صفر والأستاذ عمار حسن صفر وذلك لتطبيـــق اســـتبيان " **آراء حـــول أهميـــة اســـتخدام تكنولوجيا الحاسوب في التربية من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية**" . حيث أنه جزء من دراستهما البحثية حول تكنولوجيـــا الحاســـوب واستخداماته في التربية .

يرجى التكرم بتسهيل مهمـــة المذكوران أعلاه لزيارة جميع المـــــدارس التابعة لمنطقتكم .

شاكرين لكم حسن تعاونكم ،
مع خالص التحية ،،

مدير إدارة البحوث التربوية

وزارة التربية
إدارة البحوث التربوية

- نسخة للملف

ص.ب ١٦٢٢٢ القادســـية ٣٥٨٥٣ الكويـــت . تلفـــون ٤٨٤٢٤٠٤/٤٨٣٨٣٢١ . فاكـــس ٤٨٤٢٤٠٤/٤٨٣٧٩٠٩
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وزارة التربيـــة
مركز البحوث التربوية والمناهج
وحدة البحوث التربوية

Ministry of Education
Curricula and Educational
Research Centre
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الرقـــم : و ت / خ/ ٥٨ / ١
مرفقات : .....

التاريـخ / / ١٤ هـ
الموافـق ٢٧ / ٥ / ٢٠٠٩ م

السيد المحترم / مدير عام منطقة الفروانية التعليمية
الأستاذ / بدر الشمروخ

تحية طيبة وبعد ،،

بنـــاء على الطلب المقدم مـــن الباحثان / الدكتور حسن صفر والأستاذ عمار حسن صفر وذلك لتطبيـــق اســـتبيان " آراء حـــول أهميـــة اســـتخدام **تكنولوجيا الحاسوب في التربية من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية**" . حيث أنه جزء من دراستهما البحثية حول تكنولوجيـــا الحاســـوب واستخداماته في التربية .

يرجى التكرم بتسهيل مهمـــة المذكوران أعلاه لزيارة جميع المـــــدارس التابعة لمنطقتكم .

شاكرين لكم حسن تعاونكم ،
مع خالص التحية ،،

مدير إدارة البحوث التربوية

وزارة التربية
إدارة البحوث التربوية

- نسخة للملف

ص.ب ١٦٢٢٢ القادســـية ٣٥٨٥٣ الكويـــت . تلفـــون ٤٨٣٨٣٢١/٤٨٤٢٤٠٤ . فاكـــس ٤٨٣٧٩٠٩/٤٨٤٢٤٠٤
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وزارة التربيـــة
مركز البحوث التربوية والمناهج
وحدة البحوث التربوية

Ministry of Education
Curricula and Educational
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Research Unit

الرقـــم : و ت / ح / ١٥٨١
مرفقات : .....

التاريـخ / / ١٤ هـ
الموافـق ٢٣/ ٤ / ٢٠٠٣ م

السيد المحترم / مدير عام منطقة الجهراء التعليمية
الأستاذ / سليمان الكوح

تحية طيبة وبعد ،،

بنـــاء على الطلب المقدم مـــن الباحثان / الدكتور حسن صفر والأستاذ عمار حسن صفر وذلك لتطبيـــق اســـتبيان " آراء حـــول أهميـــة اســـتخدام **تكنولوجيا الحاسوب في التربية من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية**" . حيث أنه جزء من دراستهما البحثية حول تكنولوجيـــا الحاســـوب واستخداماته في التربية .

يرجى التكرم بتسهيل مهمـــة المذكوران أعلاه لزيارة جميع المـــدارس التابعة لمنطقتكم .

شاكرين لكم حسن تعاونكم ،
مع خالص التحية ،،

مدير إدارة البحوث التربوية

وزارة التربية
إدارة البحوث التربوية

- نسخة للملف

ص.ب ١٦٢٢٢ القادســـية ٣٥٨٥٣ الكويـــت . تلفـــون ٤٨٤٢٤٠٤/٤٨٣٨٣٢١ . فاكـــس ٤٨٤٢٤٠٤/٤٨٣٧٩٠٩
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APPENDIX B

Figures

FIGURE 1:
STRATIFICATION OF THE SUBJECTS UNDER INVESTIGATION
1 Al-A'sema
2 Hawalli
3 Al-Ahmadi
4 Al-Farwaniya
5 Al-Jahra
14 Schools
14 Schools
14 Schools
14 Schools
14 Schools
Kindergarten Schools
Elementary Schools
Middle Schools
High Schools
Community Members
2
4
4
4
10
2 F
2 F
2 M
2 F
2 M
2 F
2 M
P 1
AP 1
T 5
S 0
PA 5
P 1
AP 1
T 5
S 5
PA 5

Notes:

1. The breakdown of schools is in each governorate.
2. The breakdown of participants is in each school.
3. "F" means Female school; "M" means Male school; "P" means Principal; "AP" means Associate Principal; "T" means Teacher; "S" means Student; and "PA" means Parent.
4. The total number of participant schools in each governorate is 14 (2 kindergarten schools, 4 elementary schools, 4 middle schools, and 4 high schools) schools.
5. The total number of participants in each kindergarten school is 12 (1 principal, 1 associate principal, 5 teachers, and 5 parents) participants.
6. The total number of participants in each elementary or middle or high school is 17 (1 principal, 1 associate principal, 5 teachers, 5 students, and 5 parents) participants.
7. The overall number of participant schools in this study is 70 (10 kindergarten schools, 20 elementary schools, 20 middle schools, and 20 high schools) schools.
8. The overall number of participants in this study supposed to be 1190 (i.e., 140 administrators, 350 teachers, 300 students, 350 parents, and 50 community members) participants.

APPENDIX C

Tables

TABLE 1

CLASSIFICATION OF THE EXPECTED PARTICIPANTS UNDER INVESTIGATION

***N* = 1190**

Participants	Administrators	Teachers	Students	Parents	Community Members	Total
Kindergarten Schools	20	50	-	50	-	120
Elementary Schools	40	100	100	100	-	340
Middle Schools	40	100	100	100	-	340
High Schools	40	100	100	100	-	340
Community Members	-	-	-	-	50	50
Total	140	350	300	350	50	1190

TABLE 2

CLASSIFICATION OF THE PARTICIPANTS WHO COMPLETED AND RETURNED THE SURVEY

***N* = 1165**

Participants	Administrators	Teachers	Students	Parents	Community Members	Total
Kindergarten Schools	20	50	-	50	-	120
Elementary Schools	40	93	91	100	-	324
Middle Schools	40	95	98	100	-	333
High Schools	39	99	100	100	-	338
Community Members	-	-	-	-	50	50
Total	139	337	289	350	50	1165

Note:

1. Of 1,190 total distributed questionnaires, 1,165 were returned, for a return rate of 97.89 percent. A total of 25 questionnaires were either incomplete (n = 1) or not returned (n = 24). A total of 139 administrators, 337 teachers, 289 students, 350 parents, and 50 community members completed the survey.

TABLE 3

CLASSIFICATION OF THE PARTICIPANTS WHO COMPLETED AND RETURNED THE SURVEY

***N* = 1165**

Participants		Frequency	%	Cumulative %
Kindergarten Schools	Administrators	20	16.7	16.7
	Teachers	50	41.7	58.3
	Parents	50	41.7	100.0
	Total	120	100.0	
Elementary Schools	Administrators	40	12.3	12.3
	Teachers	93	28.7	41.0
	Students	91	28.1	69.1
	Parents	100	30.9	100.0
	Total	324	100.0	
Middle Schools	Administrators	40	12.0	12.0
	Teachers	95	28.5	40.5
	Students	98	29.4	70.0
	Parents	100	30.0	100.0
	Total	333	100.0	
High Schools	Administrators	39	11.5	11.5
	Teachers	99	29.3	40.8
	Students	100	29.6	70.4
	Parents	100	29.6	100.0
	Total	338	100.0	
Community Members	Community Members	50	100.0	100.0

TABLE 4

DESCRIPTIVE STATISTICS – COMPUTER TECHNOLOGY QUESTIONNAIRE RESULTS (PART II)

BY MEANS AND STANDARD DEVIATIONS

	N	Minimum	Maximum	Mean	Std. Deviation
Question 1	1165	1	5	4.45	.87
Question 2	1165	1	5	4.42	.99
Question 3	1165	1	5	4.25	.99
Question 4	1165	1	5	4.38	.86
Question 5	1165	1	5	4.42	.92
Question 6	1165	1	5	4.46	.87
Question 7	1165	1	5	4.48	.85
Question 8	1165	1	5	4.41	.89
Question 9	1165	1	5	4.39	.85
Question 10	1165	1	5	4.46	.86
Question 11	1165	1	5	4.25	.92
Question 12	1165	1	5	4.51	.89
Question 13	1165	1	5	4.30	.87
Question 14	1165	1	5	4.32	.92
Question 15	1165	1	5	4.29	.93
Question 16	1165	1	5	4.40	.91
Question 17	1165	1	5	4.53	.85
Question 18	1165	1	5	4.59	.82

TABLE 5

DESCRIPTIVE STATISTICS – COMPUTER TECHNOLOGY QUESTIONNAIRE RESULTS (PART II)

BY FREQUENCIES AND PERCENTAGES

	Strongly Disagree		Disagree		Undertermined		Agree		Strongly Agree	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Question 1	34	2.9	15	1.3	44	3.8	375	32.2	697	59.8
Question 2	48	4.1	33	2.8	44	3.8	299	25.7	741	63.6
Question 3	40	3.4	40	3.4	100	8.6	399	34.2	586	50.3
Question 4	27	2.3	21	1.8	65	5.6	418	35.9	634	54.4
Question 5	37	3.2	16	1.4	80	6.9	317	27.2	715	61.4
Question 6	33	2.8	18	1.5	44	3.8	350	30.0	720	61.8
Question 7	32	2.7	13	1.1	40	3.4	359	30.8	721	61.9
Question 8	36	3.1	19	1.6	43	3.7	403	34.6	664	57.0
Question 9	28	2.4	25	2.1	41	3.5	437	37.5	634	54.4
Question 10	31	2.7	13	1.1	56	4.8	353	30.3	712	61.1
Question 11	32	2.7	21	1.8	132	11.3	424	36.4	556	47.7
Question 12	37	3.2	16	1.4	47	4.0	285	24.5	780	67.0
Question 13	30	2.6	23	2.0	66	5.7	490	42.1	556	47.7
Question 14	40	3.4	27	2.3	46	3.9	463	39.7	589	50.6
Question 15	32	2.7	32	2.7	100	8.6	407	34.9	594	51.0
Question 16	37	3.2	22	1.9	59	5.1	370	31.8	677	58.1
Question 17	33	2.8	15	1.3	30	2.6	309	26.5	778	66.8
Question 18	33	2.8	10	.9	24	2.1	268	23.0	830	71.2

TABLE 6

INFERENTIAL STATISTICS – FACTOR ANALYSIS RESULTS

	Initial Eigenvalues		
Component	Total	% of Variance	Cumulative %
1	11.031	61.285	61.285
2	.832	4.620	65.905
3	.625	3.475	69.380
4	.571	3.170	72.551
5	.475	2.640	75.190
6	.460	2.555	77.746
7	.431	2.397	80.143
8	.420	2.331	82.474
9	.415	2.303	84.777
10	.374	2.080	86.857
11	.358	1.990	88.847
12	.344	1.910	90.757
13	.336	1.865	92.622
14	.299	1.659	94.282
15	.288	1.599	95.880
16	.276	1.533	97.414
17	.260	1.443	98.857
18	.206	1.143	100.000

Extraction Method: Principal Component Analysis.

APPENDIX D

Results (Part I)

DESCRIPTIVE STATISTICS

COMPUTER TECHNOLOGY QUESTIONNAIRE RESULTS (PART I)

BY FREQUENCIES AND PERCENTAGES

Governorate

	Frequency	%	Cumulative %
Al-A'sema	237	20.3	20.3
Hawalli	232	19.9	40.3
Al-Ahmadi	232	19.9	60.2
Al-Farwaniya	234	20.1	80.3
Al-Jahra	230	19.7	100.0
Total	1165	100.0	

Category

	Frequency	%	Cumulative %
Administrator	139	11.9	11.9
Teacher	337	28.9	40.9
Student	289	24.8	65.7
Parent	350	30.0	95.7
Community Member	50	4.3	100.0
Total	1165	100.0	

Gender

	Frequency	%	Cumulative %
Female	702	60.3	60.3
Male	463	39.7	100.0
Total	1165	100.0	

Age

	Frequency	%	Cumulative %
5-9	59	5.1	5.1
10-14	132	11.3	16.4
15-19	103	8.8	25.2
20-24	41	3.5	28.8
25-29	110	9.4	38.2
30-34	208	17.9	56.1
35-39	199	17.1	73.1
40-44	163	14.0	87.1
45 or more	150	12.9	100.0
Total	1165	100.0	

Degree

	Frequency	%	Cumulative %
None	22	1.9	1.9
Elementary School Certificate	123	10.6	12.4
Middle School Certificate	140	12.0	24.5
High School Certificate	114	9.8	34.2
Diploma	218	18.7	53.0
Bachelor	531	45.6	98.5
Master	12	1.0	99.6
Doctorate	5	.4	100.0
Total	1165	100.0	

School Type

		Frequency	%	Valid %	Cumulative %
Valid	Kindergarten School	120	10.3	10.8	10.8
	Elementary School	324	27.8	29.1	39.8
	Middle School	333	28.6	29.9	69.7
	High School	338	29.0	30.3	100.0
	Total	1115	95.7	100.0	
Missing	Community Members	50	4.3		
Total		1165	100.0		

Work Experience

		Frequency	%	Valid %	Cumulative %
Valid	5 or less	136	11.7	16.0	16.0
	6-10	152	13.0	17.9	33.9
	11-15	186	16.0	21.9	55.8
	16-20	181	15.5	21.3	77.1
	21 or more	195	16.7	22.9	100.0
	Total	850	73.0	100.0	
Missing	System	315	27.0		
Total		1165	100.0		

Computer Usage

	Frequency	%	Cumulative %
Yes	836	71.8	71.8
No	329	28.2	100.0
Total	1165	100.0	

Work

	Frequency	%	Cumulative %
Yes	339	29.1	29.1
No	826	70.9	100.0
Total	1165	100.0	

Home

	Frequency	%	Cumulative %
Yes	695	59.7	59.7
No	470	40.3	100.0
Total	1165	100.0	

School

	Frequency	%	Cumulative %
Yes	352	30.2	30.2
No	813	69.8	100.0
Total	1165	100.0	

Other Places

	Frequency	%	Cumulative %
Yes	87	7.5	7.5
No	1078	92.5	100.0
Total	1165	100.0	

Hours Per Week of Computer Usage

		Frequency	%	Valid %	Cumulative %
Valid	5 or less	565	48.5	67.6	67.6
	6-10	156	13.4	18.7	86.2
	11-15	46	3.9	5.5	91.7
	16-20	26	2.2	3.1	94.9
	21 or more	43	3.7	5.1	100.0
	Total	836	71.8	100.0	
Missing	System	329	28.2		
Total		1165	100.0		

Years of Computer Usage

		Frequency	%	Valid %	Cumulative %
Valid	5 or less	449	38.5	53.7	53.7
	6-10	354	30.4	42.3	96.1
	11-15	33	2.8	3.9	100.0
	Total	836	71.8	100.0	
Missing	System	329	28.2		
Total		1165	100.0		

Letters

	Frequency	%	Cumulative %
Yes	216	18.5	18.5
No	949	81.5	100.0
Total	1165	100.0	

Internet

	Frequency	%	Cumulative %
Yes	259	22.2	22.2
No	906	77.8	100.0
Total	1165	100.0	

Daily Work

	Frequency	%	Cumulative %
Yes	556	47.7	47.7
No	609	52.3	100.0
Total	1165	100.0	

E-mail

	Frequency	%	Cumulative %
Yes	132	11.3	11.3
No	1033	88.7	100.0
Total	1165	100.0	

School Work

	Frequency	%	Cumulative %
Yes	572	49.1	49.1
No	593	50.9	100.0
Total	1165	100.0	

Other Uses

	Frequency	%	Cumulative %
Yes	370	31.8	31.8
No	795	68.2	100.0
Total	1165	100.0	

Computer Usage Assessment

		Frequency	%	Valid %	Cumulative %
Valid	Novice	374	32.1	42.4	42.4
	Intermediate	344	29.5	39.0	81.4
	Advance	140	12.0	15.9	97.3
	Professional	24	2.1	2.7	100.0
	Total	882	75.7	100.0	
Missing	System	283	24.3		
Total		1165	100.0		

Computer Ownership

	Frequency	%	Cumulative %
Yes	758	65.1	65.1
No	407	34.9	100.0
Total	1165	100.0	

Computer Training

	Frequency	%	Cumulative %
Yes	505	43.3	43.3
No	660	56.7	100.0
Total	1165	100.0	

Computer Training Assessment

		Frequency	%	Valid %	Cumulative %
Valid	Initial	237	20.3	46.9	46.9
	Moderate	205	17.6	40.6	87.5
	In Depth	63	5.4	12.5	100.0
	Total	505	43.3	100.0	
Missing	System	660	56.7		
Total		1165	100.0		

APPENDIX E

Variables Coding Sheet

RESEARCH VARIABLES CODING SHEET

ID #	1-1190	1-1190
School	1-70	1-70
Type of School	1-4	1: Kindergarten School ; 2: Elementary School ; 3: Middle School ; 4: High School
Governorate	1-5	1: Al-A'sema ; 2: Hawalli ; 3: Al-Ahmadi ; 4: Al-Farwaniya ; 5: Al-Jahra
Category	1-5	1: Administrator ; 2: Teacher ; 3: Student ; 4: Parent ; 5: Community Member
Gender	1-2	1: Female ; 2: Male
Age	1-9	1: 5-9 ; 2: 10-14 ; 3: 15-19 ; 4: 20-24 ; 5: 25-29 ; 6: 30-34 ; 7: 35-39 ; 8: 40-44 ; 9: 45 or more
Degree	1-8	1: None ; 2: Elementary School Certificate ; 3: Middle School Certificate ; 4: High School Certificate ; 5: Diploma ; 6: Bachelor ; 7: Master ; 8: Doctorate
Work Experience	1-5	1: 5 or less ; 2: 6-10 ; 3: 11-15 ; 4: 16-20 ; 5: 21 or more
Computer Use	1-2	1: Yes ; 2: No
Where - Work	1-2	1: Yes ; 2: No
Where - Home	1-2	1: Yes ; 2: No
Where - School	1-2	1: Yes ; 2: No
Where - Other	1-2	1: Yes ; 2: No
Hours Per Week	1-5	1: 5 or less ; 2: 6-10 ; 3: 11-15 ; 4: 16-20 ; 5: 21 or more
Years	1-5	1: 5 or less ; 2: 6-10 ; 3: 11-15 ; 4: 16-20 ; 5: 21 or more
Use - Letters	1-2	1: Yes ; 2: No
Use - Internet	1-2	1: Yes ; 2: No
Use - Daily Work	1-2	1: Yes ; 2: No
Use - Email	1-2	1: Yes ; 2: No
Use - School Work	1-2	1: Yes ; 2: No
Use - Other	1-2	1: Yes ; 2: No
Assessment	1-4	1: Novice ; 2: Intermediate ; 3: Advance ; 4: Professional
Computer Own	1-2	1: Yes ; 2: No
Computer Training	1-2	1: Yes ; 2: No
Assessment	1-3	1: Initial ; 2: Moderate ; 3: In Depth
Question 1	1-5	1: Strongly Disagree (SD) ; 2: Disagree (D) ; 3: Undetermined (U) ; 4: Agree (A) ; 5: Strongly Agree (SA)
Question 2	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 3	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 4	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA

RESEARCH VARIABLES CODING SHEET CONT.

Question 5	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 6	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 7	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 8	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 9	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 10	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 11	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 12	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 13	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 14	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 15	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 16	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 17	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA
Question 18	1-5	1: SD ; 2: D ; 3: U ; 4: A ; 5: SA

APPENDIX F

Educational Districts Schools' Information

AL-A'SEMA EDUCATIONAL DISTRICT SCHOOLS' INFORMATION

School Type		School Name	ID #	Address	Phone #
Kindergarten		Furat	1	Dasma, Block 6, Furat Street	2563178 / 2531741
Kindergarten		Al-Magdisy	2	Kaifan, Block 6, 63rd Street	4835608 / 4813098
Elementary	Male	Ahmadiah	3	Mansouriya, Block 2, Ibn Al-Argam Street	2532452 / 2522148
Elementary	Male	Fahad Al-Askar	4	Kaifan, Block 7, 70th Street	4813398 / 4814258
Elementary	Female	Amna	5	Dasma, Block 1, Marakish Street	2530340 / 2527640
Elementary	Female	Sumiah	6	Rawda, Block 4, Rawda Street	2511189 / 2520694
Middle	Male	Macn Bin Zaeda	7	Abdulla Al-Salem, Block 3, Ahmed Al-Ghanim Street	2512049 / 2564166
Middle	Male	Quotaiba	8	Da'iya, Block 5, 60th Street	2520593 / 2532159
Middle	Female	Al-Dasma	9	Dasma, Block 1, Markaz Street	2531525 / 2531511
Middle	Female	Nuzha	10	Nuzha, Block 3, Nuzha Street	2523246 / 2528388
High	Male	Hamad Essa Al-Rejaib	11	Kaifan, Block 1, 10th Street	4813937 / 4840934
High	Male	Ahmed Al-Bishr Al-Roumi	12	Da'iya, Block 1, 68th Street	2523267 / 2514399
High	Female	Al-Asma Bint Al-Harith	13	Nuzha, Block 1, Quraish Street	2525735 / 2548144
High	Female	Al-Yarmouk	14	Yarmouk, Block 1, Jameel Bin Mamar Street	5322438 / 5318429

منطقة العاصمة التعليمية

م	المرحلة		اسم المدرسة	اسم الناظر / الناظرة	العنوان	التلفون
١	رياض الأطفال		الفرات	صديقة حسين ششتري	الدسمة قطعة ٦ شارع الفرات	٢٥٦٣١٧٨ / ٢٥٣١٧٤١
			المقدسي	حصه جاسم كمال	كيفان قطعة ٦ شارع ٦٣	٤٨٣٥٦٠٨ / ٤٨١٣٠٩٨
٢	الإبتدائية	بنين	الأحمدية	بسمة محمد الرخيص	المنصورية قطعة ٢ شارع ابن الأرقم	٢٥٣٢٤٥٢ / ٢٥٢٢١٤٨
			فهد العسكر	نورية محمد المسبحي	كيفان قطعة ٧ شارع ٧٠	٤٨١٣٣٩٨ / ٤٨١٤٢٥٨
	الإبتدائية	بنات	آمنة	بيبي محمد المهيني	الدسمة قطعة ١ شارع مراكش	٢٥٣٠٣٤٠ / ٢٥٢٧٦٤٠
			سمية	سميرة على الصايغ	الروضة قطعة ٤ شارع الروضة	٢٥١١١٨٩ / ٢٥٢٠٦٩٤
٣	المتوسطة	بنين	معن بن زائدة	فائق على الملا	عبدالله السالم ق ٣ ش أحمد الغانم	٢٥١٢٠٤٩ / ٢٥٦٤١٦٦
			قتيبة	إبراهيم إسماعيل إبراهيم	الدعية قطعة ٥ شارع ٦٠	٢٥٢٠٥٩٣ / ٢٥٣٢١٥٩
	المتوسطة	بنات	الدسمة	سميرة عبدالرحيم معروف	الدسمة قطعة ١ شارع المركز	٢٥٣١٥٢٥ / ٢٥٣١٥١١
			النزهة	فاطمة مبارك جمعة	النزهة قطعة ٣ شارع النزهة	٢٥٢٣٢٤٦ / ٢٥٢٨٣٨٨
٤	الثانوية	بنين	حمد عيسى الرجيب	عبدالله إسماعيل العبدالله	كيفان قطعة ١ شارع ١٠	٤٨١٣٩٣٧ / ٤٨٤٠٩٣٤
			أحمد البشر الرومي	جاسم محمد مراد	الدعية قطعة ١ شارع ٦٨	٢٥٢٣٢٦٧ / ٢٥١٤٣٩٩
	الثانوية	بنات	العصماء بنت الحارث	نوال منيف الخضري	النزهة قطعة ١ شارع قريش	٢٥٢٥٧٣٥ / ٢٥٤٨١٤٤
			اليرموك	فتوح عبداللطيف الفهد	اليرموك قطعة ١ شارع جميل بن معمر	٥٣٢٢٤٣٨ / ٥٣١٨٤٢٩

HAWALLI EDUCATIONAL DISTRICT SCHOOLS' INFORMATION

School Type		School Name	ID #	Address	Phone #
Kindergarten		Jabriya	15	Jabriya, Block 8, 7th Street	5318371 / 5318370
Kindergarten		Al-Kholood	16	Salmiya, Block 5, Bahrain Street	5710565 / 5728651
Elementary	Male	Mohamed Al-Shaiji	17	Rumaithiya, Block 12, Abdulla Bin Al-Zubair Street	5617326 / 5650399
Elementary	Male	Othman Al-Othman	18	Bayan, Block 9, 1st Street	5380815 / 5380816
Elementary	Female	Atika Bint Zaid	19	Jabriya, Block 7, 103rd Street	5318076 / 5313234
Elementary	Female	Nafeesah Bint Al-Hassan	20	Sabah Al-Salem, Block 9, 2nd Street	5523185 / 5524326
Middle	Male	Al-Shaab	21	Shaab, Block 6, Zubair Bin Al-Awam Street	2655341 / 2617588
Middle	Male	Mashan Al- Mashan	22	Mishref, Block 2, Schools Street	5381427 / 5382001
Middle	Female	Asmaa Bint Abu Baker	23	Bayan, Block 4, Fahaheel Street	5382903 / 5382361
Middle	Female	Al-Zahra	24	Sabah Al-Salem, Block 11, 1st Street	5511327 / 5511326
High	Male	Farhan Al-Khalid	25	Bayan, Block 11, Main Street	5381500 / 5387024
High	Male	Rumaithiya	26	Rumaithiya, Block 10, Moath Bin Jabal Street	5624109 / 5634111
High	Female	Salmiah	27	Salmiya, Block 5, Bahrain Street	5730733 / 5755333
High	Female	Salwa	28	Salwa, Block 10, 1st Street	5653156 / 5623900

منطقة حولي التعليمية

م	المرحلة		اسم المدرسة	اسم الناظر / الناظرة	العنوان	التلفون
١	رياض الأطفال		الجابرية	فاطمة عبدالمجيد الكاظمي	الجابرية قطعة ٨ شارع ٧	٥٣١٨٣٧١ / ٥٣١٨٣٧٠
			الخلود	غنيمة خلف النجار	السالمية قطعة ٥ شارع البحرين	٥٧١٠٥٦٥ / ٥٧٢٨٦٥١
٢	الإبتدائية	بنين	محمد الشايجي	ليلى رضا اليوسفي	الرميثية ق ١٢ شارع عبدالله بن الزبير	٥٦١٧٣٢٦ / ٥٦٥٠٣٩٩
			عثمان عبداللطيف العثمان	نجاة صالح المهيني	بيان قطعة ٩ الشارع الأول	٥٣٨٠٨١٥ / ٥٣٨٠٨١٦
	الإبتدائية	بنات	عاتكة بنت زيد	وردة عبدالله السلطان	الجابرية قطعة ٧ شارع ١٠٣	٥٣١٨٠٧٦ / ٥٣١٣٢٣٤
			نفيسة بنت الحسن	زهرة عبدالمجيد الكاظمي	صباح السالم قطعة ٩ الشارع الثاني	٥٥٢٣١٨٥ / ٥٥٢٤٣٢٦
٣	المتوسطة	بنين	الشعب	سبتي سعود السبتي	الشعب ق ٦ شارع الزبير بن العوام	٢٦٥٥٣٤١ / ٢٦١٧٥٨٨
			مشعان الخضير المشعان	أحمد إبراهيم محمد	مشرف قطعة ٢ شارع المدارس	٥٣٨١٤٢٧ / ٥٣٨٢٠٠١
	المتوسطة	بنات	أسماء بنت أبي بكر	فاطمة محمود الصراف	بيان ق ٤ شارع الفحيحيل السريع	٥٣٨٢٩٠٣ / ٥٣٨٢٣٦١
			الزهراء	حبابة عباس ششتر	صباح السالم ق ١١ الشارع الأول	٥٥١١٣٢٧ / ٥٥١١٣٢٦
٤	الثانوية	بنين	فرحان الخالد	د. صادق حمزة السلمان	بيان قطعة ١١ الشارع الرئيسي	٥٣٨١٥٠٠ / ٥٣٨٧٠٢٤
			الرميثية	حيدر أسد حسين	الرميثية ق ١٠ شارع معاذ بن جبل	٥٦٢٤١٠٩ / ٥٦٣٤١١١
	الثانوية	بنات	السالمية	شفيقة خضير العبدالله	السالمية قطعة ٥ شارع البحرين	٥٧٣٠٧٣٣ / ٥٧٥٥٣٣٣
			سلوى	لطيفة محمد البدر	سلوى قطعة ١٠ الشارع الأول	٥٦٥٣١٥٦ / ٥٦٢٣٩٠٠

AL-AHMADI EDUCATIONAL DISTRICT SCHOOLS' INFORMATION

School Type		School Name	ID #	Address	Phone #
Kindergarten		Al-Tahreer	29	Riqqa, Block 3, 9th Street	3945570 / 3940670
Kindergarten		Hadiyah	30	Hadiya, Block 3, Ibraheem Mosily Street	3940656 / 3940640
Elementary	Male	Mangaf	31	Mangaf, Block 3, Main Street	3722582 / 3721875
Elementary	Male	Bin Majed	32	Ahmadi, Block 5, Schools Street	3984499
Elementary	Female	Um Omarah	33	Ahmadi, Block 3, 30th Street	3981751 / 3980260
Elementary	Female	Fatima Bint Al-Khatab	34	Sabahiya, Block 5, Schools Street	3612150 / 3615738
Middle	Male	Abdulla Sinan	35	Dahar, Block 6, Main Street	3830990 / 3830995
Middle	Male	Sayed Yasen Tabtabaee	36	Mangaf, Block 3, 101st Street	3715969 / 3715968
Middle	Female	Um Hakeem	37	Fahaheel, Block 2, 1st Street	3912170 / 3915833
Middle	Female	Hiraa	38	Ahmadi, Block 3, Matafee Street	3981185 / 3984076
High	Male	Salem Al-Mubarak Al-Sabah	39	Riqqa, Block 5, Gous Street	3940525 / 3940671
High	Male	Dahar	40	Dahar, Block 5, Main Street	3830980 / 3830981
High	Female	Um Al-Ulla Al-Ansariya	41	Hadiya, Block 3, Kisaee Street	3962591 / 3962108
High	Female	Al-Fintas	42	Fintas, Block 3, 2nd Street, 16th Road	3902511 / 3902877

منطقة الأحمدي التعليمية

م	المرحلة		اسم المدرسة	اسم الناظر / الناظرة	العنوان	التلفون
١	رياض الأطفال		التحرير	نورية عبدالله هادي	الرقة قطعة ٣ شارع ٩	٣٩٤٥٥٧٠ / ٣٩٤٠٦٧٠
			هدية	وضحة سعود العجمي	هدية ق ٣ شارع إبراهيم الموصلي	٣٩٤٠٦٥٦ / ٣٩٤٠٦٤٠
٢	الإبتدائية	بنين	المنقف	مكارم سليمان القناعي	المنقف قطعة ٣ الشارع الرئيسي	٣٧٢٢٥٨٢ / ٣٧٢١٨٧٥
			إبن ماجد	أمل محمد الرمضان	الأحمدي قطعة ٥ شارع المدارس	٣٩٨٤٤٩٩
	الإبتدائية	بنات	أم عمارة	بلقيس عبدالله علي	الأحمدي قطعة ٣ شارع ٣٠	٣٩٨١٧٥١ / ٣٩٨٠٢٦٠
			فاطمة بنت الخطاب	فوزية عبدالرسول خلف	الصباحية قطعة ٥ شارع المدارس	٣٦١٢١٥٠ / ٣٦١٥٧٣٨
٣	المتوسطة	بنين	عبدالله سنان	حميد محمد بولند	الظهر قطعة ٦ الشارع الرئيسي	٣٨٣٠٩٩٠ / ٣٨٣٠٩٩٥
			سيد ياسين الطبطبائي	فيصل سليمان السجاري	المنقف قطعة ٣ شارع ١٠١	٣٧١٥٩٦٩ / ٣٧١٥٩٦٨
	المتوسطة	بنات	أم حكيم	سعاد محمد باقر	الفحيحيل قطعة ٢ الشارع الأول	٣٩١٢١٧٠ / ٣٩١٥٨٣٣
			حراء	نورة صالح بوحمرا	الأحمدي قطعة ٣ شارع المطافي	٣٩٨١١٨٥ / ٣٩٨٤٠٧٦
٤	الثانوية	بنين	سالم المبارك الصباح	عبدالله غريب شهاب	الرقة قطعة ٥ شارع الغوص	٣٩٤٠٥٢٥ / ٣٩٤٠٦٧١
			الظهر	غريب مرزوق عبدالهادي	الظهر قطعة ٥ الشارع الرئيسي	٣٨٣٠٩٨٠ / ٣٨٣٠٩٨١
	الثانوية	بنات	أم العلاء الأنصارية	رقية علي الخميس	هدية قطعة ٣ شارع الكسائي	٣٩٦٢٥٩١ / ٣٩٦٢١٠٨
			الفنطاس	أنيسة عبدالوهاب الماجد	الفنطاس ق ٣ ش مدخل ٢ طريق ١٦	٣٩٠٢٥١١ / ٣٩٠٢٨٧٧

AL-FARWANIYA EDUCATIONAL DISTRICT SCHOOLS' INFORMATION

School Type		School Name	ID #	Address	Phone #
Kindergarten		Al-Wurood	43	Rabiya, Block 4, 9th Street	4718038 / 4742186
Kindergarten		Al-Kefah	44	Ardiya, Block 2, 6th Street	4896364 / 4893683
Elementary	Male	Omariya	45	Omariya, Block 5, 1st Street	4763201 / 4713631
Elementary	Male	Khalid Yousef Al-Nserulla	46	Rihab, Block 1, 1st Street	4321697 / 4321698
Elementary	Female	UM Al-Monther	47	Khaitan, Block 3, Abdulla Bin Al-Moganaa Street	4731298
Elementary	Female	Farwaniya	48	Farwaniya, Block 1, 76th Street	4725421 / 4710870
Middle	Male	Abdulla Bin Huthafa	49	Firdous, Block 6, Main Street	4883698 / 4883697
Middle	Male	Soud Al-Abdulrazak	50	Ardiya, Block 6, 1st Street	4880337 / 4880365
Middle	Female	Rabiya	51	Rabiya, Block 1, 26th Street	4717053 / 4742915
Middle	Female	Hothafah Bint Al-Harith	52	Jeleeb Al-Shuyoukh, Block 2, Main Street	4332063 / 4747339
High	Male	Bin Al-Ameed	53	Omariya, Block 5, 106th Street	4726390 / 4735831
High	Male	Al-Mubarakia	54	Farwaniya, Block 6, 107th Street	4742187 / 4742139
High	Female	Um Al-Hakam Bint Abi-Sofian	55	Ardiya, Block 10, 1st Street	4897261 / 4890661
High	Female	Jeleeb Al-Shuyoukh	56	Jeleeb Al-Shuyoukh, Block 4, 200th Street	4336693 / 4334964

منطقة القروانية التعليمية

م	المرحلة		اسم المدرسة	اسم الناظر / الناظرة	العنوان	التلفون
١	رياض الأطفال		الورود	مكية محمد إسماعيل	الرابية قطعة ٤ شارع ٩	٤٧١٨٠٣٨ / ٤٧٤٢١٨٦
			الكفاح	خديجة حسن خضير	العارضية قطعة ٢ الشارع السادس	٤٨٩٦٣٦٤ / ٤٨٩٣٦٨٣
٢	الإبتدائية	بنين	العمرية	نورة منصور المنصور	العمرية قطعة ٥ الشارع الأول	٤٧٦٣٢٠١ / ٤٧١٣٦٣١
			خالد يوسف النصرالله	إقبال حمد الدلالي	الرحاب قطعة ١ الشارع الأول	٤٣٢١٦٩٧ / ٤٣٢١٦٩٨
	الإبتدائية	بنات	أم المنذر	أمينة أحمد الشراح	خيطان ق ٣ شارع عبدالله بن المقنع	٤٧٣١٢٩٨
			القروانية	فضيلة عبدالله القلاف	القروانية قطعة ١ شارع ٧٦	٤٧٢٥٤٢١ / ٤٧١٠٨٧٠
٣	المتوسطة	بنين	عبدالله بن حذافة	ناصر علي دشتي	الفردوس قطعة ٦ الشارع الرئيسي	٤٨٨٣٦٩٨ / ٤٨٨٣٦٩٧
			سعود العبدالرزاق	جاسم محمد الدلامة	العارضية قطعة ٦ الشارع الأول	٤٨٨٠٣٣٧ / ٤٨٨٠٣٦٥
	المتوسطة	بنات	الرابية	مريم محمد المهيني	الرابية قطعة ١ شارع ٢٦	٤٧١٧٠٥٣ / ٤٧٤٢٩١٥
			حذافة بنت الحارث	سلوى حمد العيسى	جليب الشيوخ ق ٢ الشارع الرئيسي	٤٣٣٢٠٦٣ / ٤٧٤٧٣٣٩
٤	الثانوية	بنين	إبن العميد	أحمد شهاب أحمد	العمرية قطعة ٥ شارع ١٠٦	٤٧٢٦٣٩٠ / ٤٧٣٥٨٣١
			المباركية	عيسى أحمد كرم	القروانية قطعة ٦ شارع ١٠٧	٤٧٤٢١٨٧ / ٤٧٤٢١٣٩
	الثانوية	بنات	أم الحكم بنت أبي سفيان	عادلة رشود الرشود	العارضية قطعة ١٠ الشارع الأول	٤٨٩٧٢٦١ / ٤٨٩٠٦٦١
			جليب الشيوخ	فوزية أحمد العماني	جليب الشيوخ قطعة ٤ شارع ٢٠٠	٤٣٣٦٦٩٣ / ٤٣٣٤٩٦٤

AL-JAHRA EDUCATIONAL DISTRICT SCHOOLS' INFORMATION

School Type		School Name	ID #	Address	Phone #
Kindergarten		Housien Bin Ali Bin Seif	57	Oyoon, Block 1, Al-Kuraibe Street	4587463 / 4587452
Kindergarten		Hamzah	58	Jahra, Block 79, Marzouk Al-Meteb Street	4550420 / 4550203
Elementary	Male	Abu-Hurairah	59	Taimaa, Block 8, Najashy Street	4574296 / 4574564
Elementary	Male	Laith Bin Saad	60	Naeem, Block 1	4577083 / 4577195
Elementary	Female	Sakinah Bint Al-Husain	61	Oyoon, Block 4, Bishr Bin Awanah Street	4583570 / 4583559
Elementary	Female	Um Jameel Al-Ameriah	62	Taimaa, Block 7, Najashy Street	4571810 / 4571799
Middle	Male	Abdulla Bin Suhail	63	Taimaa, Block 8	4583273 / 4576824
Middle	Male	Bin Tofail	64	Naeem, Block 2, Beside Educational District	4571407 / 4571324
Middle	Female	Taimaa	65	Taimaa, Block 7, Najashy Street	4579152 / 4579325
Middle	Female	Haleema Al-Saadiah	66	Naseem, Block 1	4588204 / 4582276
High	Male	Sabah Al-Nasser Al-Sabah	67	Oyoon, Block 5, Markaz Al-Dhahiah Street	4583571 / 4583685
High	Male	Waha	68	Waha, Block 1, Waha Street	4553262 / 4554278
High	Female	Taimaa	69	Taimaa, Block 3, Najashy Street	4570881 / 4571894
High	Female	Jahra	70	Qaser, Block 3, 1st Street	4570980 / 4573611

منطقة الجهراء التعليمية

م	المرحلة		اسم المدرسة	اسم الناظر / الناظرة	العنوان	التلفون
١	رياض الأطفال		حسين بن علي بن سيف	خديجة جعفرنصير	العيون قطعة ١ شارع الكريبي	٤٥٨٧٤٦٣ / ٤٥٨٧٤٥٢
			حمزة	عائشة علي المحمد	الجهراء قطعة ٧٩ ش مرزوق المتعب	٤٥٥٠٤٢٠ / ٤٥٥٠٢٠٣
٢	الإبتدائية	بنين	أبو هريرة	عنود مطلق القملاس	تيماء قطعة ٨ شارع النجاشي	٤٥٧٤٢٩٦ / ٤٥٧٤٥٦٤
			الليث بن سعد	أحلام إبراهيم الجاسم	النعيم قطعة ١	٤٥٧٧٠٨٣ / ٤٥٧٧١٩٥
	الإبتدائية	بنات	سكينة بنت الحسين	آمال عبدالعزيز الثويني	العيون ق ٤ ش بشر بن أبي عوانة	٤٥٨٣٥٧٠ / ٤٥٨٣٥٥٩
			أم جميل العامرية	سعاد صالح السريع	تيماء قطعة ٧ شارع النجاشي	٤٥٧١٨١٠ / ٤٥٧١٧٩٩
٣	المتوسطة	بنين	عبدالله بن سهيل	باقر علي عباس	تيماء قطعة ٨	٤٥٨٣٢٧٣ / ٤٥٧٦٨٢٤
			إبن طفيل	عبدالنبي محمد الشيخ	النعيم قطعة ٢ قرب المنطقة التعليمية	٤٥٧١٤٠٧ / ٤٥٧١٣٢٤
	المتوسطة	بنات	تيماء	ليلى إسماعيل حسين	تيماء قطعة ٧ شارع النجاشي	٤٥٧٩١٥٢ / ٤٥٧٩٣٢٥
			حليمة السعدية	حصة بدر البسام	النسيم قطعة ١	٤٥٨٨٢٠٤ / ٤٥٨٢٢٧٦
٤	الثانوية	بنين	صباح الناصر الصباح	جمعة بلال العبيدي	العيون قطعة ٥ شارع مركز الضاحية	٤٥٨٣٥٧١ / ٤٥٨٣٦٨٥
			الواحة	ملبس عمير الشمري	الواحة قطعة ١ شارع الواحة	٤٥٥٣٢٦٢ / ٤٥٥٤٢٧٨
	الثانوية	بنات	تيماء	شريفة صالح الأمير	تيماء قطعة ٣ شارع النجاشي	٤٥٧٠٨٨١ / ٤٥٧١٨٩٤
			الجهراء	فوزية حميد سيد صالح	القصر قطعة ٣ الشارع الأول	٤٥٧٠٩٨٠ / ٤٥٧٣٦١١

APPENDIX G

Confidential Release Forms

CHILD'S ASSENT FORM

Selective Perspectives of Implementing Computer Technology
in K-12 Education in the State of Kuwait

Hello, my name is Ammar H. Safar. I am from The University of Tennessee and I am collecting data concerning the importance of applying computer technology in K-12 education in the State of Kuwait.

Your parent(s)/guardian(s) say that you are willing to help me in my research project. All you have to do is express your own feelings, opinions, and perceptions by responding to each item in the survey questionnaire with the appropriate choice which reflect your viewpoints and understanding. It will take you approximately 5-10 minutes in order to complete the questionnaire and it is really easy. I am quite sure that you will do a good job. Your opinions are very important. I think what we will learn from your responses will help other children.

If you do not want to be in the study, it's OK. If you want to be in the study now, but change your mind later and ask not to be in the study, that's OK too. If you decide that you don't want to do this anymore, all you have to do is tell me or just let me know, and that will be OK.

Now, are you willing to help with this project? (Circle) Yes / No

Great! I think you will find these things are easy and fun to do. I am the only person who will know what your answers are. I will not tell your name to anybody.

You have really worked hard today. I really appreciate your help! Thank you for helping me again.

_____

Child's Name _____ Child's Response (Circle) Yes / No

Child's Signature _____ Date _____

Researcher's Signature _____ Date _____

نموذج موافقة الطفل

آراء مختارة حول أهمية إستخدام تكنولوجيا الحاسوب في التربية
من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية في دولة الكويت

مرحباً ، إسمي عمار حسن صفر . أدرس في جامعة تينيسي ، نوكسفيل The University of Tennessee, Knoxville في الولايات المتحدة الأمريكية وأقوم بجمع معلومات عن أهمية إستخدام تكنولوجيا الحاسوب في مراحل التعليم من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية في دولة الكويت .

لقد أخبرني ولي أمرك بإستعدادك لمساعدتي في مشروع بحثي . كل ما عليك عمله هو التعبير عن مشاعرك وآرائك وتوقعاتك بالإجابة عن كل بند في هذا الإستبيان بإختيار الإجابات الملائمة التي تعكس وجهة نظرك وفهمك . سيستغرق إستكمال الإستبيان منك ما يقارب من ٥ إلى ١٠ دقائق ، وهو سهل للغاية . إنني واثق بأنك ستقوم بأداء المهمة بطريقة جيدة وأعتبر آرائك مهمة جداً . أعتقد أننا سنتعلم من إجاباتك ما سيساعد الأطفال الآخرين .

إذا لم تكن ترغب في الإشتراك في هذه الدراسة البحثية ، فهذا يرجع لك . أما إذا رغبت بالإشتراك وقمت بتغيير رأيك فيما بعد فبإمكانك طلب الإنسحاب ، فما عليك سوى إخباري بذلك وسيكون الأمر كما تريد .

الآن ، هل أنت راغب في المساعدة في هذا البحث ؟ ضع دائرة نعم / لا

عظيم ! أعتقد أنك ستجد تلك الأشياء سهلة ومسلية . سأكون الشخص الوحيد الذي سيطّلع على إجاباتك ، ولن أبوح بإسمك لأي شخص ما .

لقد بذلت جهداً مشكوراً . أقدر لك مساعدتك لي ، وأشكرك على عونك لي مرة أخرى .

إسم الطفل : .....

توقيع الطفل : ..... التاريخ : .....

توقيع الباحث : ..... التاريخ : .....

نموذج موافقة الطالب

آراء مختارة حول أهمية إستخدام تكنولوجيا الحاسوب في التربية
من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية في دولة الكويت

مرحباً ، إسمي عمار حسن صفر . أدرس في جامعة تينيسي ، نوكسفيل The University of Tennessee, Knoxville في الولايات المتحدة الأمريكية وأقوم بجمع معلومات عن أهمية إستخدام تكنولوجيا الحاسوب في مراحل التعليم من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية في دولة الكويت .

لقد أخبرني ولي أمرك بإستعدادك لمساعدتي في مشروع بحثي . كل ما عليك عمله هو التعبير عن مشاعرك وآرائك وتوقعاتك بالإجابة عن كل بند في هذا الإستبيان بإختيار الإجابات الملائمة التي تعكس وجهة نظرك وفهمك . سيستغرق إستكمال الإستبيان منك ما يقارب من ٥ إلى ١٠ دقائق ، وهو سهل للغاية . إنني واثق بأنك ستقوم بأداء المهمة بطريقة جيدة وأعتبر آرائك مهمة جداً . أعتقد أننا سنتعلم من إجاباتك ما سيساعد الطلاب الآخرين .

إذا لم تكن ترغب في الإشتراك في هذه الدراسة البحثية ، فهذا يرجع لك . أما إذا رغبت بالإشتراك وقمت بتغيير رأيك فيما بعد فبإمكانك طلب الإنسحاب ، فما عليك سوى إخباري بذلك وسيكون الأمر كما تريد .

الآن ، هل أنت راغب في المساعدة في هذا البحث ؟ ضع دائرة نعم / لا

عظيم ! أعتقد أنك ستجد تلك الأشياء سهلة ومسلية . سأكون الشخص الوحيد الذي سيطّلع على إجاباتك ، ولن أبوح بإسمك لأي شخص ما .

لقد بذلت جهداً مشكوراً . أقدر لك مساعدتك لي ، وأشكرك على عونك لي مرة أخرى .

إسم الطالب : .....

توقيع الطالب : ..... التاريخ : .....

توقيع الباحث : ..... التاريخ : .....

INFORMED CONSENT STATEMENT

Selective Perspectives of Implementing Computer Technology
in K-12 Education in the State of Kuwait

Your child is invited to participate in a research study. The primary purpose of this study is to analyze and help better understand the opinions of administrators, teachers, students, parents, and community members in the State of Kuwait regarding the issue of implementing computer technology in K-12 education. This study is being conducted as a part of the requirements for the Ph.D. degree in education at The University of Tennessee, Knoxville.

As a participant your child will be asked to take part in a survey questionnaire. It will take him/her approximately 5-10 minutes in order to complete the questionnaire. Before starting with the survey, he/she needs to provide certain information about himself/herself such as name (optional), gender, age, governorate (district), years of experience with computers, and so on. Next, we will read the survey instructions and statements together. If any instruction or statement is unclear to him/her, he/she will be able to ask for an explanation. Then, your child can begin responding to the statements on this survey questionnaire.

The questionnaire is composed of eighteen technology-in-education statements. These statements pertain to feelings, beliefs, and opinions toward the use of computers and technology in the schools of the State of Kuwait. Your child should give only one answer to each item. There are no right or wrong answers. He/she can help us most by indicating how he/she really feels about each of the statements on this survey. Indicating his/her honest opinions will help us determine how best to serve his/her needs.

There are no foreseeable risks nor direct benefits involved in your child's participation in this project. His/her participation will provide important information about the issue of implementing computer technology in K-12 education in the State of Kuwait from the perspectives of various members of the educational system. Your child may indirectly benefit from the knowledge gained from project findings.

The information in the study records will be kept confidential. The signed consent and assent forms will be stored in a secure location at The University of Tennessee for 3 years after the completion of the study. The obtained data will be used only for scientific purposes. Data will be stored securely at Kuwait University for 3 years after the completion of the study and will be made available only to persons conducting the study.

_____ Participant's Parent(s) or Guardian(s) Initials

No reference will be made in oral or written reports which could link your child to the study.

If you have questions at any time about the study or the procedures (or if your child experience adverse effects as a result of participating in this study), you may contact the researcher, Ammar H. Safar, at 422 Claxton Addition, College of Education, The University of Tennessee, Knoxville, TN 37996, U.S.A., and phone # 001-865-974-5037 in U.S.A. or 244-2431 in the State of Kuwait.

Your child's participation in this study is voluntary; he/she may decline to participate without penalty. If your child decides to participate, he/she may withdraw from the study at anytime without penalty and without loss of benefits to which he/she are otherwise entitled. If your child withdraw from the study before data collection is completed his/her data will be returned to you or destroyed.

I have read and understand the above information. I have received a copy of this form. I agree to give consent/permission for my child _____ to participate in this study.

_____

Participant's Parent(s) or Guardian(s) Name _____

Participant's Parent(s) or Guardian(s) Signature _____ Date _____

Investigator's Signature _____ Date _____

تصريح بالإعلام عن الموافقة

آراء مختارة حول أهمية إستخدام تكنولوجيا الحاسوب في التربية من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية في دولة الكويت

طفلك مدعو للمشاركة في دراسة بحثية تتعلق بقضية أهمية إستخدام تكنولوجيا الحاسوب في مراحل التعليم من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية ، ويكمن الغرض الأساسي من تلك الدراسة في التوصل لتحليل وفهم أفضل لآراء بعض أعضاء الجهاز التربوي ممثلا في الإداريين والمدرسين والتلاميذ وأولياء الأمور وأعضاء المجتمع في دولة الكويت . لقد تم إجراء هذه الدراسة البحثية كجزء من المتطلبات للحصول على درجة الدكتوراه فى التربية بجامعة تينيسي ، نوكسفيل The University of Tennessee, Knoxville .

سيطلب من طفلك كمشارك القيام بتعبئة الإستبيان الذي سيستغرق ما يقارب من ٥ إلى ١٠ دقائق لإستكمال إجابته عليه .

قبل البدء في الدراسة الإستطلاعية ، سيحتاج طفلك لتقديم معلومات معينة عن نفسه مثل الإسم (إختياري) ، الجنس ، السن ، المحافظة ، سنوات الخبرة في إستخدام الحاسوب ، وما إلى ذلك . ثم سنقوم بقراءة تعليمات المعاينة والمواضيع معاً ، فعند وجود أي تعليمات أو جملاً غير واضحة نرجوا أن لا يتردد في طلب تفسيرلها . بعد ذلك يمكنه البدء في الإجابة عن الأسئلة الموجودة في الإستبيان .

يتألف الإستبيان من ١٨ جملة عن تكنولوجيا الحاسوب وإستخداماتها في التربية . تتعلق تلك الجمل بالأحاسيس والمعتقدات والآراء فيما يخص إستخدام الحاسوب والتكنولوجيا المتعلقة بها في مدارس دولة الكويت . يجب أن يختار طفلك إجابة واحدة فقط لكل بند (سؤال) ، ولا توجد إجابة صحيحة أو خاطئة . مساعدته الكبرى لنا تكون بالتعبير الصادق عن آرائه التي ستساعدنا علي تحديد أفضل السبل لتلبية إحتياجاته .

ستمدنا مشاركة طفلك بمعلومات هامة تجاه تلك القضية المتمثلة في أهمية إستخدام تكنولوجيا الحاسوب في جميع المراحل الدراسية من الروضة حتي الثانوية في دولة الكويت من خلال وجهات نظر العديد من أعضاء النظام التربوي . لا توجد مخاطر متوقعة أو أرباح مباشرة لمشاركته في هذه الدراسة ، ولكن قد تعود عليه فوائد غير مباشرة من المعلومات التي سيكتسبها من نتائج الدراسة البحثية .

سيتم الإحتفاظ بنماذج الموافقة الموقعة بصورة سرية وفي موقع آمن داخل جامعة تينيسي لمدة ٣ أعوام بعد إستكمال الدراسة . أمّا سجلات الدراسة فسيتم الإحتفاظ بها بصورة سرية وفي موقع آمن داخل جامعة الكويت لمدة ٣ أعوام بعد إستكمال الدراسة . ستستخدم البيانات التي تم الحصول عليها في أغراض علمية فقط ،

ولن يطلع عليها أحد غير الباحث . نؤكد أن أسماء المشاركين في هذه الدراسة البحثية ستعامل بسرية تامة ولن تستخدم أو تذكر في تقارير شفهية أو كتابية .

إذا كان لديك أية أسئلة أو إستفسارات تتعلق بالدراسة أو خطواتها (أو إذا واجهت طفلك تأثيرات سيئة نتيجة لمشاركته في هذه الدراسة البحثية) ، فبإمكانك الإتصال بالباحث عمار حسن صفر على العنوان التالى : ٤٢٢ كلاكستون أديشن ، كلية التربية ، جامعة تينيسي ، نوكسفيل ، ولاية تينيسي ، الرمز البريدي ٣٧٩٩٦ ، الولايات المتحدة الأمريكية ، تلفون ٥٠٣٧-٩٧٤-٨٦٥-١٠٠ أو ٢٤٣١-٢٤٤ / ٩٧٥٤٥٧٠ .

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مشاركة طفلك في هذه الدراسة إختيارية . إذا قرر عدم المشاركة فإنه لا يتحمل أي جزاءات . أما إذا قرر المشاركة في هذه الدراسة فبإمكانه الإنسحاب في أي وقت دون أي عواقب أو جزاءات ودون فقد لفوائد أو أرباح . وفي حالة إنسحابه من هذه الدراسة قبل إستكمال مرحلة جمع البيانات فسيتم إما إعادة البيانات لك أو تدميرها .

شاكرين لكم حسن تعاونكم معنا ، ، ،

عمار حسن صفر

لقد قمت بقراءة وفهم المعلومات المذكورة أعلاه ، وقد تسلمت نسخة من هذه الصيغة . أوافق على التصريح (السماح) لنجلي/لكريمتي ..... للمشاركة في هذه الدراسة البحثية .

إسم ولي الأمر : .....

توقيع ولي الأمر : ..... التاريخ : .....

توقيع الباحث : ..... التاريخ : .....

تصريح بالإعلام عن الموافقة

آراء مختارة حول أهمية إستخدام تكنولوجيا الحاسوب في التربية من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية في دولة الكويت

إبنك مدعو للمشاركة في دراسة بحثية تتعلق بقضية أهمية إستخدام تكنولوجيا الحاسوب في مراحل التعليم من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية ، ويكمن الغرض الأساسي من تلك الدراسة في التوصل لتحليل وفهم أفضل لآراء بعض أعضاء الجهاز التربوي ممثلا في الإداريين والمدرسين والتلاميذ وأولياء الأمور وأعضاء المجتمع في دولة الكويت . لقد تم إجراء هذه الدراسة البحثية كجزء من المتطلبات للحصول على درجة الدكتوراه فى التربية بجامعة تينيسي ، نوكسفيل The University of Tennessee, Knoxville .

سيطلب من إبنك كمشارك القيام بتعبئة الإستبيان الذي سيستغرق ما يقارب من ٥ إلى ١٠ دقائق لإستكمال إجابته عليه .

قبل البدء في الدراسة الإستطلاعية ، سيحتاج إبنك لتقديم معلومات معينة عن نفسه مثل الإسم (إختياري) ، الجنس ، السن ، المحافظة ، سنوات الخبرة في إستخدام الحاسوب ، وما إلى ذلك . ثم سنقوم بقراءة تعليمات المعاينة والمواضيع معاً ، فعند وجود أي تعليمات أو جملاً غير واضحة نرجوا أن لا يتردد في طلب تفسيرلها . بعد ذلك يمكنه البدء في الإجابة عن الأسئلة الموجودة في الإستبيان .

يتألف الإستبيان من ١٨ جملة عن تكنولوجيا الحاسوب وإستخداماتها في التربية . تتعلق تلك الجمل بالأحاسيس والمعتقدات والآراء فيما يخص إستخدام الحاسوب والتكنولوجيا المتعلقة بها في مدارس دولة الكويت . يجب أن يختار إبنك إجابة واحدة فقط لكل بند (سؤال) ، ولا توجد إجابة صحيحة أو خاطئة . مساعدته الكبرى لنا تكون بالتعبير الصادق عن آرائه التي ستساعدنا علي تحديد أفضل السبل لتلبية إحتياجاته .

ستمدنا مشاركة إبنك بمعلومات هامة تجاه تلك القضية المتمثلة في أهمية إستخدام تكنولوجيا الحاسوب في جميع المراحل الدراسية من الروضة حتي الثانوية في دولة الكويت من خلال وجهات نظر العديد من أعضاء النظام التربوي . لا توجد مخاطر متوقعة أو أرباح مباشرة لمشاركته في هذه الدراسة ، ولكن قد تعود عليه فوائد غير مباشرة من المعلومات التي سيكتسبها من نتائج الدراسة البحثية .

سيتم الإحتفاظ بنماذج الموافقة الموقعة بصورة سرية وفي موقع آمن داخل جامعة تينيسي لمدة ٣ أعوام بعد إستكمال الدراسة . أمّا سجلات الدراسة فسيتم الإحتفاظ بها بصورة سرية وفي موقع آمن داخل جامعة الكويت لمدة ٣ أعوام بعد إستكمال الدراسة . ستستخدم البيانات التي تم الحصول عليها في أغراض علمية فقط ،

ولن يطلع عليها أحد غير الباحث . نؤكد أن أسماء المشاركين في هذه الدراسة البحثية ستعامل بسرية تامة ولن تستخدم أو تذكر في تقارير شفهية أو كتابية .

إذا كان لديك أية أسئلة أو إستفسارات تتعلق بالدراسة أو خطواتها (أو إذا واجهت إبنك تأثيرات سيئة نتيجة لمشاركته في هذه الدراسة البحثية) ، فبإمكانك الإتصال بالباحث عمار حسن صفر على العنوان التالى : ٤٢٢ كلاكستون أديشن ، كلية التربية ، جامعة تينيسي ، نوكسفيل ، ولاية تينيسي ، الرمز البريدي ٣٧٩٩٦ ، الولايات المتحدة الأمريكية ، تلفون ٥٠٣٧-٩٧٤-٨٦٥-١.. أو ٢٤٣١-٢٤٤ / ٩٧٥٤٥٧. .

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شاكرين لكم حسن تعاونكم معنا ، ، ،

عمار حسن صفر

لقد قمت بقراءة وفهم المعلومات المذكورة أعلاه ، وقد تسلمت نسخة من هذه الصيغة . أوافق على التصريح (السماح) لنجلي
للمشاركة في هذه الدراسة البحثية .

إسم ولي الأمر : .....

توقيع ولي الأمر : ..... التاريخ : .....

توقيع الباحث : ..... التاريخ : .....

تصريح بالإعلام عن الموافقة

آراء مختارة حول أهمية إستخدام تكنولوجيا الحاسوب في التربية من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية في دولة الكويت

إبنتك مدعوة للمشاركة في دراسة بحثية تتعلق بقضية أهمية إستخدام تكنولوجيا الحاسوب في مراحل التعليم من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية ، ويكمن الغرض الأساسي من تلك الدراسة في التوصل لتحليل وفهم أفضل لآراء بعض أعضاء الجهاز التربوي ممثلا في الإداريين والمدرسين والتلاميذ وأولياء الأمور وأعضاء المجتمع في دولة الكويت . لقد تم إجراء هذه الدراسة البحثية كجزء من المتطلبات للحصول على درجة الدكتوراه فى التربية بجامعة تينيسي ، نوكسفيل The University of Tennessee, Knoxville .

سيطلب من إبنتك كمشاركة القيام بتعبئة الإستبيان الذي سيستغرق ما يقارب من ٥ إلى ١٠ دقائق لإستكمال إجابتها عليه .

قبل البدء في الدراسة الإستطلاعية ، ستحتاج إبنتك لتقديم معلومات معينة عن نفسها مثل الإسم (إختياري) ، الجنس ، السن ، المحافظة ، سنوات الخبرة في إستخدام الحاسوب ، وما إلى ذلك . ثم سنقوم بقراءة تعليمات المعاينة والمواضيع معاً ، فعند وجود أي تعليمات أو جملاً غير واضحة نرجوا أن لا تتردد في طلب تفسيرلها . بعد ذلك يمكنها البدء في الإجابة عن الأسئلة الموجودة في الإستبيان .

يتألف الإستبيان من ١٨ جملة عن تكنولوجيا الحاسوب وإستخداماتها في التربية . تتعلق تلك الجمل بالأحاسيس والمعتقدات والآراء فيما يخص إستخدام الحاسوب والتكنولوجيا المتعلقة بها في مدارس دولة الكويت . يجب أن تختار إبنتك إجابة واحدة فقط لكل بند (سؤال) ، ولا توجد إجابة صحيحة أو خاطئة . مساعدتها الكبرى لنا تكون بالتعبير الصادق عن آرائها التي ستساعدنا علي تحديد أفضل السبل لتلبية إحتياجاتها .

ستمدنا مشاركة إبنتك بمعلومات هامة تجاه تلك القضية المتمثلة في أهمية إستخدام تكنولوجيا الحاسوب في جميع المراحل الدراسية من الروضة حتي الثانوية في دولة الكويت من خلال وجهات نظر العديد من أعضاء النظام التربوي . لا توجد مخاطر متوقعة أو أرباح مباشرة لمشاركتها في هذه الدراسة ، ولكن قد تعود عليها فوائد غير مباشرة من المعلومات التي ستكتسبها من نتائج الدراسة البحثية .

سيتم الإحتفاظ بنماذج الموافقة الموقعة بصورة سرية وفي موقع آمن داخل جامعة تينيسي لمدة ٣ أعوام بعد إستكمال الدراسة . أمّا سجلات الدراسة فسيتم الإحتفاظ بها بصورة سرية وفي موقع آمن داخل جامعة الكويت لمدة ٣ أعوام بعد إستكمال الدراسة . ستستخدم البيانات التي تم الحصول عليها في أغراض علمية فقط ،

ولن يطلع عليها أحد غير الباحث . نؤكد أن أسماء المشاركين في هذه الدراسة البحثية ستعامل بسرية تامة ولن تستخدم أو تذكر في تقارير شفهية أو كتابية .

إذا كان لديك أية أسئلة أو إستفسارات تتعلق بالدراسة أو خطواتها (أو إذا واجهت إبنتك تأثيرات سيئة نتيجة لمشاركتها في هذه الدراسة البحثية) ، فبإمكانك الإتصال بالباحث عمار حسن صفر على العنوان التالى : ٤٢٢ كلاكستون أديشن ، كلية التربية ، جامعة تينيسي ، نوكسفيل ، ولاية تينيسي ، الرمز البريدي ٣٧٩٩٦ ، الولايات المتحدة الأمريكية ، تلفون ٥٠٣٧-٩٧٤-٨٦٥-١.. أو ٢٤٣١-٢٤٤ / ٩٧٥٤٥٧٠ .

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مشاركة إبنتك في هذه الدراسة إختيارية . إذا قررت عدم المشاركة فإنها لا تتحمل أي جزاءات . أما إذا قررت المشاركة في هذه الدراسة فبإمكانها الإنسحاب في أي وقت دون أي عواقب أو جزاءات ودون فقد لفوائد أو أرباح . وفي حالة إنسحابها من هذه الدراسة قبل إستكمال مرحلة جمع البيانات فسيتم إما إعادة البيانات لك أو تدميرها .

شاكرين لكم حسن تعاونكم معنا ، ، ،

عمار حسن صفر

لقد قمت بقراءة وفهم المعلومات المذكورة أعلاه ، وقد تسلمت نسخة من هذه الصيغة . أوافق على التصريح (السماح) لكريمتي
للمشاركة في هذه الدراسة البحثية .

إسم ولي الأمر : .....

توقيع ولي الأمر : ..... التاريخ : .....

توقيع الباحث : ..... التاريخ : .....

INFORMED CONSENT STATEMENT

Selective Perspectives of Implementing Computer Technology
in K-12 Education in the State of Kuwait

You are invited to participate in a research study. The primary purpose of this study is to analyze and help better understand the opinions of administrators, teachers, students, parents, and community members in the State of Kuwait regarding the issue of implementing computer technology in K-12 education. This study is being conducted as a part of the requirements for the Ph.D. degree in education at The University of Tennessee, Knoxville.

As a participant you will be asked to take part in a survey questionnaire. It will take you approximately 5-10 minutes in order to complete the questionnaire. Before starting with the survey, you need to provide certain information about yourself such as name (optional), gender, age, occupation, governorate (district), years of experience with computers, and so on. Next, we will read the survey instructions and statements together. If any instruction or statement is unclear to you, do not hesitate to ask for an explanation. Then, you can begin responding to the statements on this survey questionnaire.

The questionnaire is composed of eighteen technology-in-education statements. These statements pertain to feelings, beliefs, and opinions toward the use of computers and technology in the schools of the State of Kuwait. You should give only one answer to each item. There are no right or wrong answers. You can help us most by indicating how you really feel about each of the statements on this survey. Indicating your honest opinions will help us determine how best to serve your needs.

There are no foreseeable risks nor direct benefits involved in your participation in this project. Your participation will provide important information about the issue of implementing computer technology in K-12 education in the State of Kuwait from the perspectives of various members of the educational system. You may indirectly benefit from the knowledge gained from project findings.

The information in the study records will be kept confidential. The signed consent and assent forms will be stored in a secure location at The University of Tennessee for 3 years after the completion of the study. The obtained data will be used only for scientific purposes. Data will be stored securely at Kuwait University for 3 years after the completion of the study and will be made available only to persons conducting the study. No reference will be made in oral or written reports which could link you to the study.

_____ Participant's Initials

If you have questions at any time about the study or the procedures (or if you experience adverse effects as a result of participating in this study), you may contact the researcher, Ammar H. Safar, at 422 Claxton Addition, College of Education, The University of Tennessee, Knoxville, TN 37996, U.S.A., and phone # 001-865-974-5037 in U.S.A. or 244-2431 in the State of Kuwait.

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at anytime without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed.

I have read and understand the above information. I have received a copy of this form. I agree to participate in this study.

_____

Participant's Name _____

Participant's Signature _____ Date _____

Investigator's Signature _____ Date _____

تصريح بالإعلام عن الموافقة

آراء مختارة حول أهمية إستخدام تكنولوجيا الحاسوب في التربية
من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية في دولة الكويت

أنت مدعو للمشاركة في دراسة بحثية تتعلق بقضية أهمية إستخدام تكنولوجيا الحاسوب في مراحل التعليم من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية ، ويكمن الغرض الأساسي من تلك الدراسة في التوصل لتحليل وفهم أفضل لآراء بعض أعضاء الجهاز التربوي ممثلا في الإداريين والمدرسين والتلاميذ وأولياء الأمور وأعضاء المجتمع في دولة الكويت . لقد تم إجراء هذه الدراسة البحثية كجزء من المتطلبات للحصول على درجة الدكتوراه فى التربية بجامعة تينيسي ، نوكسفيل The University of Tennessee, Knoxville .

سيطلب منك كمشارك القيام بتعبئة الإستبيان الذي سيستغرق ما يقارب من ٥ إلى ١٠ دقائق لإستكمال إجابتك عليه .

قبل البدء في الدراسة الإستطلاعية ، ستحتاج لتقديم معلومات معينة عن نفسك مثل الإسم (إختياري) ، الجنس ، السن ، الوظيفة ، المحافظة ، سنوات الخبرة في إستخدام الحاسوب ، وما إلى ذلك . ثم سنقوم بقراءة تعليمات المعاينة والمواضيع معاً ، فعند وجود أي تعليمات أو جملاً غير واضحة نرجوا أن لا تتردد في طلب تفسيرلها . بعد ذلك يمكنك البدء في الإجابة عن الأسئلة الموجودة في الإستبيان .

يتألف الإستبيان من ١٨ جملة عن تكنولوجيا الحاسوب وإستخداماتها في التربية . تتعلق تلك الجمل بالأحاسيس والمعتقدات والآراء فيما يخص إستخدام الحاسوب والتكنولوجيا المتعلقة بها في مدارس دولة الكويت . يجب أن تختار إجابة واحدة فقط لكل بند (سؤال) ، ولا توجد إجابة صحيحة أو خاطئة . مساعدتك الكبرى لنا تكون بالتعبير الصادق عن آرائك التي ستساعدنا علي تحديد أفضل السبل لتلبية إحتياجاتك .

ستمدنا مشاركتك بمعلومات هامة تجاه تلك القضية المتمثلة في أهمية إستخدام تكنولوجيا الحاسوب في جميع المراحل الدراسية من الروضة حتي الثانوية في دولة الكويت من خلال وجهات نظر العديد من أعضاء النظام التربوي . لا توجد مخاطر متوقعة أو أرباح مباشرة لمشاركتك في هذه الدراسة ، ولكن قد تعود عليك فوائد غير مباشرة من المعلومات التي ستكتسبها من نتائج الدراسة البحثية .

سيتم الإحتفاظ بنماذج الموافقة الموقعة بصورة سرية وفي موقع آمن داخل جامعة تينيسي لمدة ٣ أعوام بعد إستكمال الدراسة . أمّا سجلات الدراسة فسيتم الإحتفاظ بها بصورة سرية وفي موقع آمن داخل جامعة الكويت لمدة ٣ أعوام بعد إستكمال الدراسة . ستستخدم البيانات التي تم الحصول عليها في أغراض علمية فقط ،

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شاكرين لكم حسن تعاونكم معنا ، ، ،

عمار حسن صفر

لقد قمت بقراءة وفهم المعلومات المذكورة أعلاه ، وقد تسلمت نسخة من هذه الصيغة . أوافق على التصريح للمشاركة في هذه الدراسة البحثية .

إسم المشترك : .....

توقيع المشترك : ..... التاريخ : .....

توقيع الباحث : ..... التاريخ : .....

APPENDIX H

The Survey Questionnaire

Part I
Demographic Information Sheet

Participant's name (optional): _____

Choose the appropriate answer by putting an "X" in the square [ ] following your choice:

Governorate: Al-A'sema [ ] Hawalli [ ] Al-Ahmadi [ ] Al-Farwaniya [ ] Al-Jahra [ ]

Category: Administrator [ ] Teacher [ ] Student [ ] Parent [ ] Community Member [ ]

Gender: Female [ ] Male [ ]

Age: 5-9 [ ] 10-14 [ ] 15-19 [ ] 20-24 [ ] 25-29 [ ] 30-34 [ ] 35-39 [ ] 40-44 [ ] 45 or more [ ]

Highest earned educational certificate or degree:

None [ ] Elementary School Certificate [ ] Middle School Certificate [ ] High School Certificate [ ]

Diploma [ ] Bachelor [ ] Master [ ] Doctorate [ ]

Type of school (if administrator or teacher or student): Kindergarten School [ ] Elementary School [ ] Middle School [ ] High School [ ]

Occupation (if parent or community member): _____

Years of work experience (if other than student): 5 or less [ ] 6-10 [ ] 11-15 [ ] 16-20 [ ] 21 or more [ ]

Have you used a computer? Yes [ ] No [ ]

If you have used a computer:

where did you use it? (check all that apply) Work [ ] Home [ ] School [ ] Other [ ]

how many hours a week do you use it? 5 or less [ ] 6-10 [ ] 11-15 [ ] 16-20 [ ] 21 or more [ ]

how many years have you been using one? 5 or less [ ] 6-10 [ ] 11-15 [ ] 16-20 [ ] 21 or more [ ]

do you use a computer for:

- **Letters:** Yes [ ] No [ ] • **Internet:** Yes [ ] No [ ] • **Daily Work:** Yes [ ] No [ ]
- **E-mail:** Yes [ ] No [ ] • **School Work:** Yes [ ] No [ ] • **Other Uses:** Yes [ ] No [ ]

do you consider yourself to be a: Novice [ ] Intermediate [ ] Advance [ ] Professional [ ]

Do you own a computer? Yes [ ] No [ ]

Have you received any formal training (e.g., workshops, seminars, conferences, and courses) in using computers? Yes [ ] No [ ]

if yes, how do you consider your training to be: Initial [ ] Moderate [ ] In Depth [ ]

Part II

Selective Perspectives of Implementing Computer Technology in K-12 Education in the State of Kuwait Questionnaire

Respond to the following questions/statements with the appropriate choices that reflect your viewpoints and understanding of each question/statement. All answers to this survey will be kept confidential. **Please answer all questions.** Thank you for your participation. [#(5) means strongly agree; #(4) means agree; #(3) means undetermined; #(2) means disagree; and #(1) means strongly disagree.]

	5	4	3	2	1
1. School is a better place with computers.					
2. Computer technology knowledge and skills should be taught as an independent subject in all grade levels.					
3. Computer technology knowledge and skills should be integrated into all subjects in all grade levels.					
4. Computers and related technologies have the potential to improve education and student achievement and learning.					
5. Fund raising for computers and related technologies in K-12 schools should be shared among all sectors (i.e., governmental, public, and private) of society.					
6. The success of a computer technology program depends on an ongoing partnership among administrators, teachers, students, parents, and the community.					
7. Learning about computers is interesting.					
8. Computer technology knowledge and skills should be utilized in K-12 Education.					
9. Using computer technology as a tool for teaching and learning is a good idea.					
10. Knowing about computers gives people an advantage at work.					
11. We should develop national technology standards in order to effectively utilize computers and related technologies in our schools.					
12. As much attention should be given to training teachers as is given to design and acquisition of computer hardware, software, and the infrastructure.					
13. Computer technology knowledge and skills are useful in most classes.					
14. The study of computer technology as an independent subject in all grade levels in our schools is a good idea.					
15. Computer technology knowledge and skills are as important today as the knowledge and skills of reading, writing, science, and mathematics.					
16. A well-planned and flexible computer technology program is needed for our K-12 educational system.					
17. Universities, colleges, and other post secondary institutions should prepare computer teachers in addition to preparing mathematics teachers, science teachers, art teachers, and so on.					
18. Computers can help make learning fun.					

الجزء الأول

ورقة معلومات إحصائية

إسم المشترك (إختياري) : .....

إختر الإجابة المناسبة بوضع علامة " X " على المربع [ ] الذى يناسبك :

المحافظة : العاصمة [ ] حولي [ ] الأحمدي [ ] الفروانية [ ] الجهراء [ ]

الفئة : إداري [ ] معلم [ ] طالب [ ] ولي أمر [ ] عضو في المجتمع [ ]

الجنس : أنثي [ ] ذكر [ ]

العمر : ٥-٩ [ ] ١٠-١٤ [ ] ١٥-١٩ [ ] ٢٠-٢٤ [ ] ٢٥-٢٩ [ ] ٣٠-٣٤ [ ] ٣٥-٣٩ [ ] ٤٠-٤٤ [ ] ٤٥ أو أكثر [ ]

أعلى شهادة أو درجة علمية تم الحصول عليها :

لا يوجد [ ] شهادة الدراسة الإبتدائية [ ] شهادة الدراسة المتوسطة [ ] شهادة الدراسة الثانوية [ ]

دبلوم [ ] بكالوريوس أو ليسانس [ ] ماجستير [ ] دكتوراه [ ]

نوع المدرسة (إذا كان المشارك إدارياً أو معلماً أو طالباً) : رياض الأطفال [ ] الإبتدائية [ ] المتوسطة [ ] الثانوية [ ]

الوظيفة (إذا كان المشارك ولي أمراً أو عضواً في المجتمع) : .....

عدد سنوات الخبرة في العمل (إذا لم يكن المشارك طالباً) : ٥ أو أقل [ ] ٦-١٠ [ ] ١١-١٥ [ ] ١٦-٢٠ [ ] ٢١ أو أكثر [ ]

هل تستخدم الحاسوب ؟ نعم [ ] لا [ ]

إذا كنت تستخدمه :

أين تقوم بإستخدامه ؟ (إختر جميع الإجابات الممكنة) في العمل [ ] في المنزل [ ] في المدرسة [ ] في جهات أخرى [ ]

كم ساعة في الأسبوع تقوم بإستخدامه ؟ ٥ أو أقل [ ] ٦-١٠ [ ] ١١-١٥ [ ] ١٦-٢٠ [ ] ٢١ أو أكثر [ ]

كم عام قمت بإستخدام الحاسوب ؟ ٥ أو أقل [ ] ٦-١٠ [ ] ١١-١٥ [ ] ١٦-٢٠ [ ] ٢١ أو أكثر [ ]

هل تستخدم الحاسوب من أجل :

الرسائل : نعم [ ] لا [ ] الإنترنت : نعم [ ] لا [ ] الأعمال اليومية : نعم [ ] لا [ ]

البريد الإلكتروني : نعم [ ] لا [ ] الأعمال المدرسية : نعم [ ] لا [ ] إستخدامات أخرى : نعم [ ] لا [ ]

كيف تُقيّم نفسك في إستخدام الحاسوب : مبتدئ [ ] متوسط [ ] متقدم [ ] محترف [ ]

هل تمتلك حاسوباً : نعم [ ] لا [ ]

هل تلقّيت أي تدريب منتظم (على سبيل المثال ورش عمل ، ندوات ، مؤتمرات ، ودورات) في إستخدام الحاسوب ؟ نعم [ ] لا [ ]

إذا كانت الإجابة بنعم ، فبماذا تُقيّم تدريبك : تمهيدي [ ] متوسط [ ] مكثف [ ]

الجزء الثاني

الإستبيان المسحي

أجب على الأسئلة والعبارات التالية باختيار الإجابة المناسبة التي تعكس رأيك وفهمك لكل سؤال . جميع الإجابات على هذا المسح سيتم حفظها بسرية . **أرجو الإجابة على جميع الأسئلة** . أشكر لك تعاونك ومشاركتك . [علماً بأن الإجابة (٥) تعني بأنك موافق بشدة ، الإجابة (٤) تعني بأنك موافق ، الإجابة (٣) تعني بأنك لا تستطيع تحديد إجابتك ، الإجابة (٢) تعني بأنك غير موافق ، الإجابة (١) تعني بأنك غير موافق بشدة] .

١	٢	٣	٤	٥

١- تعتبر المدرسة مكاناً أفضل بوجود الحاسوب .

٢- يجب أن يتم تدريس تكنولوجيا الحاسوب والمهارات الخاصة بها كمادة مستقلة في جميع المراحل التعليمية .

٣- معرفة معلومات ومهارات تكنولوجيا الحاسوب يجب أن يتم دمجها أو إدخالها في جميع المواد الدراسية وفي جميع مراحل التعليم .

٤- الحاسوب والتكنولوجيا المتعلقة بها لديهم القدرة على تحسين التعليم وتطوير وزيادة فعالية تعلم الطالب وإنجازاته .

٥- يجب أن تشارك كافة القطاعات (على سبيل المثال الحكومية ، والعامة ، والخاصة) في المجتمع في تقديم الدعم المالي اللازم لإدخال الحاسوب والتكنولوجيا المتعلقة بها في مدارسنا .

٦- نجاح أي برنامج للحاسوب والتكنولوجيا المتعلقة بها يعتمد على التعاون المستمر والمتبادل بين الإداريين ، والمعلمين ، والطلاب ، وأولياء الأمور ، وأعضاء المجتمع .

٧- التعلم عن الحاسوب يعتبر مشوقاً .

٨- معرفة تكنولوجيا الحاسوب ومهاراتها يجب أن يتم إستغلالها ، والإنتفاع بها ، وإستخدامها في جميع المراحل التعليمية .

٩- إستخدام تكنولوجيا الحاسوب كأداة من أدوات التدريس والتعلم تعتبر فكرة جيدة .

١٠- الإلمام بالحاسوب ومهاراتها يعطي الناس ميّزات في وظائفهم .

١١- يجب إعداد مقاييس أو معايير تكنولوجية قومية لكي نتمكن من إستخدام الحاسوب والتكنولوجيا المتعلقة بها في مدارسنا بفعالية .

١٢- بقدر الإهتمام بتصميم ، وتركيب ، وشراء ، العناصر الميكانيكية والكهربية للحاسوب (الإمكانات الفنية أو Hardware) والبرمجيات (Software) ، يجب أن يتم الإهتمام بتدريب المعلمين على كيفية إستخدام الحاسوب في العملية التعليمية .

١٣- تكنولوجيا الحاسوب والمعلومات والمهارات المتعلقة بها تعتبر ذات فائدة كبيرة في معظم الصفوف الدراسية .

١٤- دراسة تكنولوجيا الحاسوب ومهاراتها كمادة مستقلة في جميع المراحل التعليمية تعتبر فكرة جيدة .

١٥- تعتبر معرفة تكنولوجيا الحاسوب ومهاراتها على نفس الدرجة من الأهمية الآن كمعرفة مهارات القراءة ، والكتابة ، والعلوم ، والرياضيات .

١٦- يحتاج نظام التعليم من مرحلة رياض الأطفال إلى نهاية المرحلة الثانوية إلى برنامج مرن ومخطط جيداً حول تكنولوجيا الحاسوب وإستخداماتها في العملية التعليمية .

١٧- يجب أن تقوم الجامعات ، والكليات ، وغيرهم من المعاهد الدراسية العليا التي تلي المرحلة الثانوية بإعداد معلمي الحاسوب بالإضافة إلى إعداد معلمي الرياضيات ، ومعلمي العلوم ، ومعلمي المواد الأدبية ، وهكذا .

١٨- يمكن أن يساعد الحاسوب على جعل التعلم أكثر متعة .

APPENDIX I

Population of the State of Kuwait

THE STATE OF KUWAIT POPULATION ACCORDING TO

2001 ESTIMATE BY GENDER

Population	Kuwaitis	Non-Kuwaitis	Total
Female	435,139	451,877	887,016
Male	424,819	963,145	1,387,964
Total	859,958	1,415,022	2,274,980

THE STATE OF KUWAIT POPULATION ACCORDING TO

1998 ESTIMATE BY GOVERNORATE

Governorate	Kuwaitis	Non-Kuwaitis	Total
Al-A'sema	167,088	221,575	388,663
Hawalli	224,446	406,663	631,109
Al-Ahmadi	161,078	212,416	373,494
Al-Farwaniya	152,716	438,548	591,264
Al-Jahra	80,555	202,176	282,731
Total	785,883	1,481,378	2,267,261

APPENDIX J

Map of the State of Kuwait


IRAQ
IRAN
SAUDI ARABIA
Persian Gulf
Kuwait Bay
AL JAHRAH
AL AḤMADĪ
Al Başrah
Khorramshahr
Bandar-e Khomeyni
Shatt al Basrah Canal
Shaṭṭ al 'Arab
Az Zubayr
Ābādān
Khawr az Zubayr
Khosrowābād
Khowr-e Mūsá
Ṣafwān
'Abdalī
Umm Qaṣr
Warbah
Khawr 'Abd Allāh
Al Fāw
Nahr-e Qaṣr
Ar Rawḍatayn
agreed-upon maritime boundary
Būbiyān
Qaṣr as Sabiyah
Maskān
Az Zawr
Faylakah
Ad Dawḥah (Doha)
Kuwait
Al Jahrah
Al Abraq
Wādī al Bāṭin
As Sālimīyah
'Awhah
Ḥawallī
Al Farwānīyah
Al Maqwá'
Al Aḥmadī
Al Fuḥayḥīl
Mīnā' al Aḥmadī
Ash Shu'aybah
Mīnā' 'Abd Allāh
Kubbar
Salemy
Qārūh
Mīnā' Su'ūd
Al Khiran
Umm al Marādim
Al Wafrah
Qaṣr
Ra's al Khafjī
Al Mish'āb
Kuwait
International boundary
Governorate (muḥāfaẓah) boundary
National capital
Governorate (muḥāfaẓah) capital
Railroad
Built-up area
Expressway
Road
Governorate boundaries are approximate
0 10 20 30 Kilometers
0 10 20 30 Miles
Lambert Conformal Conic Projection, SP 12N 38N
47
48
49
30
29
28

VITA

Ammar Hassan Safar was born in the State of Kuwait on October 14, 1971. He is the fourth of sixth children in the family. He graduated from Al-Gahez High School and received General Secondary Education Certificate in May, 1989. In Fall Semester, 1989, he began his undergraduate study at Kuwait University in the State of Kuwait where he graduated in June, 1994, with a Bachelor of Arts degree in Education, with a concentration in "Kindergarten/Elementary Mathematics/Science."

In September, 1994, he accepted a position of "Senior Clerk" in the Department of Treasury Operations for The Gulf Bank in the State of Kuwait. In February, 1995, he was awarded a scholarship from Kuwait University to pursue his graduate study majoring in "Educational Computing" in the United States. From February, 1995, until present, he has been sponsored by Kuwait University as a "Graduate Student on Scholarship."

In August, 1996, he enrolled in the Graduate School at the University of Dayton in Ohio, and began working on a masters degree. In Fall Semester, 1997, he received his Master of Science degree in Education, with a concentration in "Computers in Education."

He entered The Graduate School at The University of Tennessee in August, 1998, and began working on a doctoral degree. In August, 2001, he earned his Doctor of Philosophy degree in Education, with a concentration in "Instructional Technology."

Mr. Safar is an "Assistant Professor" of "Instructional Technology or Computer Education" in the Department of Curriculum and Instruction in the College of Education at Kuwait University in the State of Kuwait.