ARE COMPUTER SKILLS NECESSARY FOR HIGH SCHOOL GRADUATES
ENTERING THE WORK FORCE?

By

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APPROVAL

of a professional project submitted by

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This professional project has been read and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Business.

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I would also like to thank Dr. Norm Millikin for the great advisor and educator that he is and for the part he played in helping in the completion of this project.
The major purpose of this study was to determine the importance of graduating students having computer skills as they enter the workforce in the Prescott area located in Arizona.

This study focused on the populations of Prescott, Prescott Valley, and Chino Valley businesses and past Bradshaw Mountain High School graduates. Bradshaw Mountain High School is located in Prescott Valley. The procedure that the researcher used to collect data for the study was through survey instruments. Two survey instruments were developed and used. One survey was utilized for the business population and a different survey was used for the student population. A random sample collection was used to select the respondents and gather data. Approximately 110 businesses and 81 students returned usable surveys.

Results indicated that both businesses and students feel that computer training should be a requirement for all high school students. Most businesses and half of the student respondents viewed favorably making computer training a high school graduation requirement. The computer training requirements ranged from basic or general knowledge of operating computers to operation of specific programs.

Most of the business and student respondents viewed themselves as being proficient operating the computer. While about half of the businesses found their employees lacking in computer skills, most businesses did not offer any type of funds for computer training for their employees. Both the business and student respondents didn’t see that lacking in computer skills would be a barrier to getting new employment or hiring new employees.

The researcher concluded that high school students should be required to have computer training for at least a year before graduating. Most businesses and students used computers in their place of work. Those that did not use computers foresaw the computer becoming a part of future work operations. Lack of computer skills was not seen as a barrier to future employment prospects. This result is probably from students basing their knowledge on their short length of time in the employment force, and businesses not using computers in the capacity they could be used in. As most businesses do not provide funding for computer training, any new hires would have to obtain their own computer training if required for the position.
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CHAPTER I

INTRODUCTION

The beginning of the new millennium is the time to determine how the US educators should prepare children to thrive in the 21st century. (Uchida, Cetron, & McKenzie, 1996)

With the 21st century fast approaching, students need to be able to graduate from high school with the skills that will prepare them to succeed in the computer-age that is overtaking businesses. Computer skills are found in all phases and levels of employment from operating robotic equipment on the assembly line to never having to leave the comfort of the home by working telecommuting with businesses. Information technology has become a defining feature of the United States workplace, turning computer literacy into a basic skill requirement and creating a demand for workers that has yet to be met. (Kaslow, 1998) High school graduates need to graduate equipped with enough skills, academic as well as technological, that will enable them to make the choices of where they want to work, global as well as local.

Statement of Problem

The major purpose of this study was to determine the importance of graduating students having computer skills as they enter the workforce in the Prescott area located in Arizona.

Questions to be Answered

1. What level of computer skills do employers expect from Prescott area high school graduates?
2. Do employers find themselves having to spend money for training Prescott area high school graduates in the area of computer skills?

3. Do Prescott area high school graduates find themselves being locked out of jobs due to lack of computer skills?

4. What levels of computer skills are being required of high school graduates from the Prescott area schools?

Need for the Study

Students will no longer have to compete with just Americans for employment positions. The impact that computers are making on the work field is causing more positions to be eligible to be filled from the global labor market. If a person in Japan can fulfill the needed requirements for a telecommuting position at a lower cost than a person in the United States, corporations will be looking overseas for their workforce.

A pool of well-trained foreign workers abroad is luring an increasing number of U.S. companies to set up shop outside U.S. borders. Foreign workers who come to the United States underscore how essential skills are to worker marketability and how ill-equipped American workers are at risk of being cast aside for internationals with more know-how. (Kaslow, 1998)

A person can now complete the duties of a computerized bookkeeping position at home having a personal computer to compute and store information. Employers will then hire a person who operates out of the home rather than pay to rent more expensive office space just to keep the bookkeeping duties in the office. The importance of the place is vanishing. Virtual and actual modes of transportation including airplanes, e-mail, telecommuting, video conferencing, and the Internet will make it easier and easier to work just about anywhere: home, office, or on the run. (Maiman, 1998)
About one-third of the work force, approximately 37 million adults, receive some type of formal training in either business or industry each year. Approximately 1.3 billion hours are spent annually in corporate classrooms. (Interstates Conference of Employment Security Agencies, Inc., 1995) The amount of time that corporate America is spending providing this formal training could be reduced thus saving money for the corporations if the basic computer training can be provided by today’s public secondary education.

From review of the related literature, authors feel that current and future employees are lacking in many basic skills area. The technology or computer area is just one of the skills area. High school could provide students a basic level of computer training in order to provide them with employable skills that will enable them to compete for employment positions.

**Terminology**

The following terminology is given to aid the reader of the study.

*Computer skills:* the ability to operate a device that computes, especially a programmable electronic machine that performs high-speed mathematical or logical operations or that assembles, stores, correlates or otherwise processes information. (The American Heritage Dictionary, 1992)

*Corporate:* having the nature of, or acting by means of, a corporation. (Websters New Word Dictionary, 1974)

*Educators:* person whose work is to educate others; teacher. (Websters New Word Dictionary, 1974)

*Global:* of, relating to, or including the whole earth; worldwide. (Websters New Word Dictionary, 1974)

*Robotic:* a mechanical device that sometimes resembles a human being and is capable of performing a variety of often complex human tasks on command or by being programmed in advance. (The American Heritage Dictionary, 1992)
Telecommuting: the practice of working at home by using a modem and a computer terminal connected with one’s business office. (The American Heritage Dictionary, 1992)

Work force: total number of workers actively employed in, or available for work in a nation, region, plant, etc. (Websters New Word Dictionary, 1974)

Limitations of the Study

The researcher limited the study to the businesses located in the tri-city area of Prescott, Prescott Valley, and Chino Valley located in Arizona. This study also included the high school graduates of the past two years of the Prescott High School, Bradshaw Mountain High School and Chino Valley High School located in the same tri-city area in Arizona.

The purpose of surveying these two categories is as follows. The businesses employ the local high school graduates who remain in the local area to work. The high school graduates can identify how helpful computer courses were and whether they would recommend keeping the courses as electives or making the courses a requirement.

Organization of the Study

The research project is organized into five chapters. Chapter 1 gives the reader the statement of the problem, questions to be answered, the need for the study, the definition of terms, the limitations of the study and the organization of the paper.

Chapter 2 presents a review of literature relating to this study. Chapter 2 is divided into the following areas:

1. The Labor Force
2. Education
3. Trends

4. The Future

Chapter 3 is a review of the procedures used in completing this paper. This chapter covers the sources of data, design of the instrument, time line, and participant selection.

Chapter 4 contains the results of the study. Findings of the surveys are presented and analyzed.

Chapter 5 summarizes the study. Included are the conclusions drawn from the study and the author’s recommendations resulting from the completion of the study.

Summary

Students need to have the skills to be able to compete for employment positions both locally and globally. The public schools should require the students to complete enough basic skills training in high school in order to prepare these students for entry-level work.

Computers play such a major role in the operations of today’s businesses, that these skills should be considered a necessity for high school graduates. If students are to succeed in today’s work force where computerization is occurring at a rapid rate, they should have the computer skills and know how that will enable them to succeed.
CHAPTER II

RELATED LITERATURE

To be a self-manager, and an effective member of a self-directed work team, each member must be able to read, to comprehend, to contribute verbally, to contribute new ideas, to problem solve, to write and to understand basic mathematics, statistics and computers. (Joyner, 1995)

In preparing students to prosper in the 21st century, the essential skills and knowledge need to be addressed or recognized. More and more of the workplace is operating with work teams and the skills demanded for employable workers is changing to meet the market’s need. Graduating high school students need to have these skills in order to survive and find a future in America’s work force.

The Labor Force

It has been predicted that the economy will face a labor shortage with the coming of the 21st century. A study was done on whether this is myth or fact. After studies and trends were completed and analyzed, the following was concluded.

A general labor shortage would not occur simply because the labor force would grow slowly in the 1990’s and the changing demographics of the work force would not necessarily produce a serious shortage of adequately skilled workers. A problem with labor force entrants would probably be that the educational system will not have provided an adequate basis for future technological innovation and productivity growth. (Mischel and Teixeira, 1991)

The labor shortage that should occur in the predicted amounts will not occur as it was estimated. During the next decade, the teen population will grow at twice the rate of the overall population. This will increase the need for elementary and secondary schools. The schools will need to provide the opportunities for training that will give the student
population the chance to experience the changes that will occur in technology and gain employable skills. This experience could be presented in the form of hands-on practices in the schools, and provided by the surrounding community by means of apprenticeships and cooperative work experience. Making use of the technology that is provided by the local communities will save schools funds and resources that they can use in other areas. It will also give the communities a chance to help in the training of their future work force. For example, Cisco Systems, Inc. has its one-year-old “Cisco Network Academy Program” in place at 1,043 high schools and colleges in 49 states. (Alexander, 1999) This program allows Cisco to provide the schools with networking certification classes for Information Technology professionals. Cisco hopes for potential company employees and other professionals who will be able to use their products.

Schools will not only have to concentrate on the technological education of American students but also of the immigrant students that enroll in America’s public schools. Immigration is still occurring in America with the immigrant population of students trying to gain the education and skills that will allow them to stay in America. This includes the training in computers and technology that will enable the immigrant student to become eligible for the skilled positions and not settling for the minimum wage positions.

The U.S. Department of Education is encouraging many communities to develop innovative ways to provide employers with candidates who actually have work experience, perform well on teams, the know-how to operate computers and sophisticated equipment, and able to solve problems. (Interstate Conference of Employment Security Agencies, Inc., 1995) The demands of the real world need to be placed in high school curriculums in order
for students to have the knowledge of what is expected of them in the work world and have the skills to survive. By involving local communities, high schools can actually teach the skills that are desired by employers for their specific area. Students can then stay in their local community to live the American dream if they so choose to.

Education

In 1995, studies revealed that only 86.9 percent of students that completed high school either went on to enter the work force or to further their education in the post secondary setting. Thirty-three percent (33%) of the 86.9 percent enter the work force and do not pursue any further education. Of the 54.1 percent that go on into post secondary education, 24.7 percent finish four or more years of college. (Snyder and Shafer, 1996) This information reveals approximately 25 percent of students complete college and the other 20 percent quit to enter the work force or pursue other avenues. Does the amount of education this 20 percent receives, allow them to obtain the higher paid skilled positions and not the low skilled minimum wage jobs? Requiring the use of computers in high school curriculums will assist in giving the students the basic skill foundations for those who enter the work force right out of high school or if they do not finish college.

In an October 1993 education statistics report, it was stated that out of the students surveyed in grades 9-12, approximately 58 percent use a computer in school. The percentage declined even further with computer use at home. (Snyder and Hoffman, 1995) While income level did not affect the level of computer usage in schools, the higher the income level the more likely a student would use a computer at home. Of the 58 percent of students using a computer in the school, the facts did not state whether this usage involved
using the computer for word processing, data entry, research, or to play games. The other 42 percent of students surveyed left high school without ever having to use a computer for any kind of activity.

The SCANS (Secretary’s Commission on Achieving Necessary Skills) Report is a report issued by the government that contains eight different competencies that students need in order to succeed in the work force. One of the eight skills and competencies listed by the SCANS Report for work force success is computation and computer skills. (Segebarth, 1995) Education is an excellent field to focus on and implement these skills. By making these skills either an integrated part of the required curricula or a separate required course will allow the students the chance to obtain the necessary competencies and skills.

Students need to know how to perform basic calculations and how to use a computer. Not only are most cash registers computerized, but also factory line workers are now operating computerized machines, which allows for improving the efficiency and quality of their work production. Employment in the local area should be an option not an unreasonable choice for high school graduates. These graduates should have the skills that can get them the positions that will allow the student to stay and build a future in the local community. Schools should provide the access that will allow the student and future employees to concentrate on and develop the needed computer skills. Career Education in high schools is giving students the opportunity to see what the requirements are of certain positions and what the necessary entry skills are for that field. Guest speakers and job shadowing are providing the student with information about the local job market. Students
can then focus their studies while in high school on getting the skills that will enable them to enter the local work force.

**Trends**

By the year 2000, approximately 32% of the work force may be telecommuting from home workstations linked to main offices via computer terminals. (Interstate Conference of Employment Security Agencies, Inc., 1995)

With the birth of new technology, fax machines, modems, copiers and user-friendly personal computers, home offices will become more commonplace. High costs of office space rentals will also force small businesses to find creative ways to employ workers. Free-lance and contract work is also on the rise. Advancement in technology will allow these trends to grow, not diminish. Employees may work with teams on projects where they will never see the other team members via the capabilities that modems and fax machines can provide.

By the year 2000, digitized voice recognition and voice synthesis systems will provide decision-makers with artificial intelligence and expert systems. When these devices become commonplace, they will also be capable of understanding and doing our bidding by listening to words and not by interpreting typed commands. (Interstate Conference of employment Security Agencies, Inc., 1995)

Trends like these should make training and education policies active rather than reactive. As technology advances, basic keyboarding skills will not be the main skill requirement for computer operation. With advancements in the mouse, various computer peripherals, and now voice recognition, operating a computer will be a possibility for everyone. Education should be an area that will provide the opportunity for people to master the future skills. Education should alter the path they are designing for graduation
requirements rather than adapt their current graduation requirements to existing conditions. With an eye on the future, education should be approached with providing the skills necessary to move students into a higher skilled work force.

The Future

In the age of merging, converging, and cross-functional teaming, (Sellars, 1994) students need to enter the work force as well equipped as other prospective employees. The global market is hitting every aspect of the business world, from fast food to the corporate headquarters. Not only will America’s future work force come from within, but also from all over the world. Students will find themselves lacking the needed skills and standing in the unemployment line when these skills were available to them in their local high school and they chose not to take advantage of this opportunity.

Should the Class of 2000 be made to pass a test that covers both computer skills and ethical issues? Future employers of this class will be able to answer this question as well as the class graduates upon entering the work force. (Winerip, 1994) The World Wide Web is providing more and more needed information for companies/businesses to operate with or being a resource for needed business information. Students need to possess the skills, which will enable them to quickly and accurately access the needed data. The rate at which automation and technology is entering businesses is amazing. Chances that students, who leave high school and think they will never touch a computer in their employment field, are slim to almost nothing. To be employable in the 21st century, students need to have a working knowledge of computers to give them that advantage over those who do not.
In comparing the past with the present: in 1950, 60% of the labor force’s jobs were unskilled; 20% were skilled; and 20% were professional. By 1991, the professional category remained at 20%; but unskilled had decreased to 35%; and skilled had increased to 45%. By 2000, the professional will still be 20%; unskilled will be 25%; and skilled will be 65%. (Hall & Hicks, 1995)

These statistics reveal the facts that skilled positions are becoming the norm for employment in the job market. Students need to be able to not only compete nationally for these positions but also globally. What can technology provide for employment opportunities for today’s students? The limitless opportunities that are found globally are no longer out of reach. High school graduates can graduate from high school, be employable, and make a decent living with a future. Computer skills need to be found in the curriculum and available for every graduating student to make this a reality.

A plethora of information is virtually at students’ fingertips. Education cannot stop with simply helping students learn to access information; they will also need to understand how to process and use the volumes of often conflicting information that will reach them every day. (Uchida, Cetron, & McKenzie, 1996)

All of the computer skills that students learn from accessing the information to processing it, will make that student much more employable in the work force. Students need to comprehend the connection between school and the work world in order for them to understand why learning about computers is so important. If work modules using real work situations involving technology and computers can and will be brought into the classroom, students will be able to make the connection easier and be more likely to take advantage of this opportunity to enhance their employability skills.

“The bottom line in America’s fight for long-term competitiveness ultimately will be won or lost not in the halls of Congress, not in the boardrooms around the world, but in America’s classrooms,” says John Clendenin, retired BellSouth CEO. (Overman, 1999)
Bradshaw Mountain, Chino Valley, and Prescott High School do not have computer classes as a graduation requirement. Prescott High School has made keyboarding a graduation requirement beginning with the class of 2002. Their keyboarding class is being taught on computers. Most of the computer classes being offered at the high schools fall under the electives category.

**Summary**

Trends and changes in technology will change the basic skills demanded of the present and future work force. It is up to the businesses and schools to train this work force to be prepared and employable. Computer skills are one type of skill that is stated as being a requirement throughout the related literature.

With the 21st century looming on the horizon, the number of skilled positions is increasing at slow steady pace. The number of projected skilled workers to fill these positions are not increasing at the same rate, thus creating the shortage in the work force.

As stated in recent education studies, approximately a little over half of the students graduating from high school go on for post secondary training with about a fourth of these students completing college. The future work force will be composed of the students now in high school. America needs to provide the 75 percent of the students who do not complete post secondary training or even finish high school, the skills that will enhance their employability chances.
CHAPTER III
PROCEDURES

Introduction

The major purpose of the study was to determine the importance of high school graduates having computer skills as they enter the local work force in the Prescott area of Arizona. Chapter 3 will examine the source of data, construction of the survey instrument, time line for data collection, and participant selection.

Sources of Data

Reference materials from Montana State University, Renne Library, provided the sources for related literature including reference articles, journal articles, and government publishings. The related literature proposes that a basic skill that all upcoming and current work force individuals should have is some degree of knowledge of computer skills. While the authors revealed that computer skills were not a recommendation for being a requirement in the high school curriculum, individuals wanting to be employable in the work force should have some kind of computer training. Many of the authors do recommend that students entering the work force should receive or be able to obtain the training in high school.

Data collected from the survey instrument was used to determine if high school graduates need to have computer skills upon entrance into the work force in order to be successful. A sample was collected from the Prescott, Prescott Valley, and Chino Valley employers and high school graduates located in Arizona.
Data Instrument

Survey instruments were used for this study (See Appendix). Two surveys were used because of the type of information that was needed. The business survey provided different information than what the student survey. The review of literature and primary suggestions provided the basis for the content of the survey forms.

The survey forms were sent to 250 Prescott, Prescott Valley, and Chino Valley employers. One hundred and ten (110) usable surveys were returned. One hundred and eighty (180) survey forms were sent to high school graduates located in Arizona. Eighty-one (81) usable surveys were returned. The instruments contained questions relating to the following areas:

1. The level of computer skills that were possessed by the high school graduates/employees.

2. The information about the businesses where the students are employed in the local area.

3. The importance of having computer skills as it relates to the area of local employment.

4. Whether computer classes should be a high school requirement of all high school students.

The initial survey instrument was reviewed by the researcher’s business education fellow graduate students and instructor, Dr. Norman Millikin, College of Business, Montana State University, in the graduate class of Research in Business Education during the summer of 1997. Upon the revision and completion of the instruments, they were then tested on the current senior class of Bradshaw Mountain High School and businesses belonging to the Prescott Valley area Chamber of Commerce, both of which are located in Arizona. Final revisions were made with the approval of Dr. Norman Millikin.
Time Line

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<td>Pilot survey</td>
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<tr>
<td>July 1998</td>
<td>Final approval</td>
</tr>
<tr>
<td>October 1998</td>
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<td>Follow-up survey</td>
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<tr>
<td>December 1998</td>
<td>Data analysis</td>
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<tr>
<td>July 1999</td>
<td>Final report completed</td>
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Participant Selection

The population chosen for this study consisted of local graduates from Bradshaw Mountain, Chino Valley, and Prescott High Schools located in Arizona. Lists of names and addresses of the students was obtained from the high school guidance counselors or attendance office records.

The employers chosen for this survey were also found in the area of Prescott, Prescott Valley, and Chino Valley located in Arizona. The list of names and addresses of the local area employers was obtained from the areas’ Chamber of Commerce.

The sample population used for these surveys was selected randomly from the lists. The surveys were mailed by October 1998.
Summary

Chapter 3 states the importance of requiring computer skills for the Prescott, Prescott Valley, and Chino Valley High School graduates as they enter the local work force in Arizona. The survey instruments contain questions relating to the issues and were reviewed by Dr. Norman Millikin and business education graduate students during the summer of 1997. A pilot study was conducted at Prescott Valley Chamber of Commerce and local high school, Bradshaw Mountain High school located in Arizona, to test the validity of the questions. Dr. Norman Millikin gave final approval before the surveys were sent to the sample populations.

Participants of the sample were selected by a random sampling of Prescott High School, Bradshaw Mountain High School and Chino Valley High School graduates along with employers located in the surrounding tri-city area of Arizona.
CHAPTER IV
RESULTS OF THE SURVEYS

This study was completed to determine the importance of graduating students having some kind of computer skills as they enter the workforce in the Prescott area located in Arizona. Questions covered areas ranging from how businesses and students felt their level of skills in computer usage was to whether computer classes should be a requirement for graduation.

Two hundred and fifty (250) business surveys were sent out to local area businesses through a random selection from information obtained from the local Department of Economic Security or Employment office. Forty-four percent (44) or 110 usable surveys were returned. Approximately 8 percent were returned undeliverable or no such address. One hundred and eighty (180) student surveys were sent out to former Prescott Valley High School graduates. These students were randomly selected from the past three years of graduates. Eighty-one (81) or 45 percent of student surveys were returned and were usable. Approximately 5 percent were returned “undeliverable”. The data that were going to be analyzed for this study were also going to come from past graduates from Prescott and Chino Valley High Schools as well as Prescott Valley or Bradshaw Mountain High School. But due to laws covering students’ confidentiality of personal information such as home addresses, the researcher could not use the other two schools' former graduates. Therefore Bradshaw Mountain High School graduates in Prescott Valley became the population for the study.
Statistics

Businesses Classification and Use of Computers

Businesses Surveyed: Of the businesses that were surveyed, the largest response, 24 surveys, came from service types of businesses. Arizona is a state where tourism is a major industry. With tourism, service businesses make up a large percent of the total composition of businesses. Twelve other business classifications, wholesale, retail, construction, mining, education, marketing/sales, financial, transportation, professional specialty, medical/health, and agriculture/forestry completed the types of businesses used in this study. Most of the businesses, 82 percent or 90 of them, fell under the classification of small businesses. (See Graph 1)

Graph 1

Types of Businesses Surveyed

1 Note: The return amount of 45 percent, 81, of student surveys and 44 percent, 110, of 250 business surveys will be used for the student and business percentages stated in the report.

2 Wh = wholesale, ret = retail, manu = manufacturing, ser = service, cons = construction, mng = mining, mrk/sal = marketing/sales, fin = financial, trans = transportation, prof.spec = professional specialty, med./hlth = medical/health, agri./fores = agriculture/forestry, edu = education, oth. = other
They only had 1 – 25 number of employees. In the Prescott area, the largest percentages of all businesses are classified under small businesses. There again, the service industry is known for service businesses employing a smaller number of people. Most of the businesses surveyed used computers in their work, 89 percent or 98 businesses, with those not currently using computers foreseeing the use computers in the future. (See Graph 3)

Of the surveyed businesses' employees, only a portion of their employees, less than 25 percent, graduated from the local area high schools. Most of the employees came from people graduating outside of the Prescott area. The Prescott area has also shown that the employees in this area tend to be a transient type of population. This is due to the fact that wages are low, a large job base of service type of employment, and the cost of living is fairly high as compared to other parts of Arizona.

**Students Surveyed and Use of Computers**

**Students Surveyed:** Of the number of students responding to the survey, only 77 of them said that computer classes were not a required course of their high school curriculum. (See Graph 2)
Of these students that graduated from Bradshaw Mountain High School (Prescott Valley), there was a chance that not all of them had gone to this high school for all four of their secondary years. This high school has grown from approximately 435 students in 1990 to the current enrollment of 1350 students in 1999. The Prescott Valley area is a growing area with lots of families moving in. Approximately 56 percent of the student respondents said that they used computer skills in their jobs since graduation.

Thirty-five percent (35) of students responded that their employer seemed to be lacking in computer skills. Another 35 percent did not know if their employers had the necessary computer skills for the business. Students not knowing the level of their employer's computer skills may be employed in a position where the student was not able to observe their employer working with a computer. Approximately half of the students use computers in some type of capacity in their job. (See Graph 3)
Most students responding, 39 percent, also see future employment areas needing computer skills. (See Graph 4) As evidenced by information from the current literature, the use of technology can be found in most jobs. Responding students can see that computers will be playing important roles in the changing of job requirements. Will education give them the foundation they need to help them in adapting to the changes? Students need the foundation of skills that will make them employable and job competitive in the area in which they choose to live.
What level of computer skills do you currently possess?

Level of Computer Skills Used: The level of skills of the businesses and students surveyed felt that they had also was a little surprising. Most of the respondents considered themselves to be proficient on the computer. (See Graph 5) Of the students that were surveyed, 56 percent said that they learned their computer training from home and high school. The other 49 percent learned their computer skills from computer courses offered somewhere other than high school, from self-teaching or through an adult education class offered. For the students that answered, 65 percent or 46 students, the computer courses that were offered in high school either helped somewhat or definitely helped in their jobs.
How much computer training should be required for high school students?

**Level of Required Computer Skills:** When comparing the level of computer skills that businesses and students thought that should be required, it was informative to see the results of the two areas. (See Graph 6) At least 53 percent of businesses surveyed thought that more than one year of computer training should be required for students while 59 percent of students thought that one year of computer training would provide enough computer knowledge. Most of the businesses, 100 percent, and students, 95 percent, felt that every high school student should take a computer course. (See Graph 6)
The types of computer training recommended ranged from general knowledge to more specific skills in keyboarding, word processing, database usage, spreadsheets, graphics and Internet usage. There were some businesses that would like to see employees with the skills of being able to maintain and repair computer and network systems. A few of the businesses requested business specific training in areas such as CAD or bookkeeping software. The most common requested computer skill was general or basic knowledge of computers. It was not specified what type of knowledge that would be found in this curriculum. (See Graph 7)
About a third of the responding students, 31 percent, noted that a combination program for computer skills, such as word processing, spreadsheets, databases, should be emphasized and provide enough for computer training for students still in high school. The main program of computer training that students felt that should be a requirement is a word processing program. They also thought that researching on the Internet and using E-mail as important work skills to have.

**Do you find employers/prospective employees lacking in computer skills?**

**Computer Training Offered:** Forty-five percent (45) percent of the responding businesses found that their current/prospective employees were lacking in computer skills

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3 Key = keyboarding, dbase = database, s.sheets = spreadsheets, grap = graphics, os = operating systems, inter = internet, repair = computer repair, basic = basic knowledge, prog = programming, win = windows, bkgk = bookkeeping, spec = specifics.
and 20 percent or 22 businesses did not know if their employees did not have or had computer skills. Approximately 65 percent of students, 53 students, and 92 percent of the businesses, 75 businesses, felt that lack of computer skills of potential employees did not affect their chances for future employment in the area. (See Graph 8) This data could result from the students and businesses not seeing where computers could be utilized in most employment areas. Most businesses, 72 percent or 72 businesses, also did not offer their employees any kind of computer training or funding for computer training. Fifty-seven (57) percent or 46 students also responded with that their employers either does not offer computer training or they did not know if the employer would. (See Graph 9)
Graph 9

Businesses That Provides Computer Training

Yes | No | Don't Know
---|---|---

0 | 20 | 40
20 | 60 | 80
40 | 80 | 100

- Businesses
- Students
Summary

Businesses and students feel that computer training should be a requirement for all high school students. Whether it should be a high school graduation requirement was something that the students and businesses lacked agreement. Businesses looked upon it favorably as making it a graduation requirement with only half of the students doing so. Computer training is not a requirement of any of the area high schools. It is offered as an elective course. If prospective employees from the local area need any computer training for their jobs or future employment possibilities, they would have to get this computer training from other places and pay for it with their own funds.

Most of the responding businesses used computers as well as most of the responding students. Not quite half of the businesses surveyed, 45 percent or 49 businesses, are finding that their potential employees are lacking in the necessary computer skills for technological requirements of the job. They would like to have their future employees trained to use the computer efficiently. As the data showed, most businesses did not offer any kind of avenue for their employees to follow or get funding to get computer training.

Offering computer training in high school seems to be a major theme through all of the surveys. This would provide a basic training on which students could build future skills if they were to pursue an advanced technical degree in the post secondary setting. This training would also provide a good foundation of technical skills that would enable students to be more competitive in the work place. While there are some computer classes offered in the local schools, students are not taking advantage of getting the free technical
training. If computers were a mandatory class, all students would be assured of having the ability to operate effectively in today's technology.

Making computer skills a graduation requirement was viewed favorably by businesses. Only half of the students felt that it should be a requirement. This could be due to the fact that the students had not been employed that long in the work force. They may not have had the opportunity to be employed in a position where computer skills are a job requirement. Students may also feel that with the amount of other graduation requirements that is placed upon them, that having one more may be too much to achieve.

It is surprising results that businesses and students view the lack of computer skills as not being a barrier to future jobs. This could result from the fact that any computer training was done by the employee on his or her own time. With a lot of the computer training being obtained by students at home and/or self-taught, students may feel that any job required computer skills could be learned on their own.
CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this study was to determine the importance of graduating students having computer skills as they enter the workforce in the Prescott area located in Arizona.

To determine the level of importance of having computer skills, surveys were sent to 250 businesses and 180 students. A return of 110 business surveys and 81 student surveys were attained. These responses were analyzed in Chapter IV.

Conclusions

The researcher drew the following conclusions.

- Students should have computer skills upon graduating from high school.
- High school students should undertake at least a year of computer training.
- The lack of computer skills was not viewed as a barrier to future employment prospects.
- Most of the business and student respondents viewed themselves as being proficient with computer skills used in their business or place of employment.
- Most of the high school students received their current computer training either at school or home. Many were self-taught!
- Most businesses as well as students used computers in their work or foresee their future operations using computers.
• The main type of computer training suggested was a combination or package program such as one that contains word processing, database, and spreadsheets.

• Technology is affecting everyone’s life, from the home to the work place. People need computer skills just to be able to cope or operate in every day life.

**Recommendations**

Based on the previous conclusions and review of the current literature, the research makes the following recommendations:

1. Make computer training a requirement for Prescott area high schools. Computer training is a work force skill that is a necessity for employees. By making computer training a graduation requirement for high school students, it gives them a foundation of technological skills. These skills can be used for students to either further train on in a post secondary setting, or for helping them obtain an entry-level position using technology. It would not only help students with a basic foundation, but it would also save businesses time and money in having to train their employees.

2. High school computer training should be at least a year and cover word processing, database and spreadsheet usage. Students should also be familiar with computer operations, terminology, and some troubleshooting skills. If students can use graphics, research on the Internet, and use e-mail; this would be an added bonus for the students' technological skills.

3. Schools should join local consortiums that will help them in networking with other schools in the area, post secondary training centers, and businesses. These consortiums can also help in getting funding to set up technology in schools.
4. Schools should work with local area businesses to see what technology skills are needed for employment. Businesses can also help schools in the areas of budgeting for updating equipment, setting up technological curriculum, and getting necessary equipment for technological training. To get businesses to participate with schools, schools should invite business personnel to serve on committees, be guest speakers for classes, and participate in Career Days.

Technology is moving at a pace where if you blink, it may pass you by. Technology is not just affecting the work place but it is also affecting every day life. America's future generation should move into the millennium with the skills and knowledge to keep America competitive in the global market. America should be able to provide its young people the skills and tools they need to make this a reality.

With foreign competition poised at the borders to lure away companies with the promises of cheaper and better labor, our labor pool should demand that technological training should be a requirement in our schools.

It is up to education to pave the way for the 21st century. It is up to education to provide the students with the ability to become a sports utility vehicle or to become the last decade's model. Education is the place where it can happen.
BIBLIOGRAPHY


Student Comments

I definitely think that computer literacy skills should become a high school graduation requirement. I found that employers are very impressed with the computer knowledge I possess and it saves a lot of time being trained.

Computer skills are an absolute necessity in today's work place. High school students and even elementary students should be required to take computer classes. Computer skills are important to all college students and workers.

Each job requires a special skill but computers are involved in all of them. Every student should be required to take a basic computer class that teaches them how to use the computer. This class should not focus on typing skills (speed) or on any specific individual program. It should, however, focus on getting to know the computer. An emphasis should be placed on reading instructions and finding answers individually. NOT on the teacher giving detailed instructions. Because in the business world, an individual must read instructions and function efficiently and proficiently without their boss walking them through step by step.

Just knowing the keyboard helps people out! Just about every job uses computers!

Computer classes should be required because most businesses today rely heavily on computers. It would be a great barrier to the students to not have any knowledge of or being able to use a computer.

My suggestion to anyone with ambitions to go to college should take high school computer courses, for speed, accuracy and proper format. College professors expect you to have some of these skills.

To possess any computer skill or fluid typing skills will greatly increase the type and position available to you. It will help in academics as well as in the work force. High schools should require more computer-oriented classes and encompass its use in the English classes at least.

All of the jobs I have ever had, I have always had to use a computer (word processing, databases, and spreadsheets). The computer class (Word Perfect) I took in high school
was probably a good foundation in becoming familiar with a computer program and the keyboard; but I really don't remember much from the class. Most employers seem to want experience with computers, but are willing to train in specifics.

**Employers' Comments**

I wish I had gotten some computer training in school, because all our lives seem to be controlled and run by computers and I do not even know how to turn one on. So I feel very left behind as well as stupid.

I have an Adult Care Home, it would be nice if the employee could run the paperwork and know how to print it.

The schools would do a disservice to the students and community without computer training on spreadsheets and word processing programs.

Since the kids can't spell anymore, spell checker becomes essential.

As far as I can see it is not a mandatory class, but should be made so. The world has moved into computers for nearly every aspect of life, and the school needs to also.

No one is going to be able to get and keep a job if they do not have computer skills. Some work will require minimal knowledge but any profession will require extensive computer knowledge.

My business is primarily computer oriented. I run a publishing program as well as MSWorks, etc.

Our business uses graphic intensive programs with scanners and CAD-link technology. Basic computer skills, such as navigation, program operation, computer terminology and keyboarding would benefit the potential employee.

Our personnel department has indicated that the bulk of students graduating from the Tri-City schools are lacking in most basic skills. Hence why the bulk of our employees are from outside the area.
Impress upon them that in a business environment, everyone has a computer on their desk, not just the secretary.

Computer skills are even more important than typing and shorthand were before.

In addition to computer courses, students should also have some hands-on experience say as interns in some fields.

Many of them have rudimentary knowledge that enables them to feel like they know computers, but really they are not proficient enough to perform complex, multilayered tasks. High school courses should give students a thorough knowledge of at least one program, e.g. word processing.

Computers are very much central to all types of business and professions. Students should come out of school with a good to very good working knowledge of computers to not only help them in college or other types of future education, but to make them more competitive in the work place.

I would recommend basic knowledge of computer operation and somewhat more study of operation of programs such as spreadsheets and word processing.

Actually, other than requiring a substitute when I am on vacation, my print shop does not require anyone with computer skills. However, the current trend in most areas of industry is utilizing computer-run equipment. Since most companies are going forward in progress, any people without computer skills is going to have a hard time finding a good job.

I believe every student graduating from high school should have a general knowledge of computers. In almost all career fields, anymore, some knowledge or use of computers are required. Running their own business down to housekeeping positions, most is done by computer.

My business is not currently affected by computer except bookkeeping for which I hire a bookkeeping service. I can foresee a future in my business in computer orders for parts and perhaps computer inventory if business continues to grow. Also computer generated payroll.
I think the situation may be improving because my children in elementary and middle school are having more computer classes and will be prepared by graduation. Current graduates probably had little experience in early years. One other problem is schools use Mac - rest of world (except graphic arts industry) uses IBM - windows.

Over the course of my career in the private sector and with the City of Prescott, I have worked in a number of capacities that include: laborer, equipment operator, foreman, project superintendent, inspector, Chief inspector and Superintendent of Streets. I walked away from a college scholarship in order to get married. Even so, I consider myself reasonably educated. I had no computer skills or exposure when I left college. In the performance of all of the above jobs I believe that I would have benefited from some computer skills. At this point in time I consider myself computer proficient. However this reality came with a high degree of effort and anxiety.

The City of Prescott employs over 300 people. I estimate that over 80 percent of the staff have some personnel exposure to computers and 100 percent provide data and reports regarding operations everyday. The City desires and works to promote from within its ranks. It is not uncommon for someone to start their career with the City as a laborer and end as a manager of some type. Computer skills make this advancement easier to accomplish.
Employers Computer Skills Survey

**Purpose statement:** The purpose of this survey is to determine whether the Tri-City area high school graduates need to complete computer courses that will help them in obtaining and keeping a work position in the local employment area.

**Directions:** Place a checkmark (✓) on the blank that precedes your answer to the following questions.

1. What is the current number of employees from your business?
   - _____ 1 - 25
   - _____ 26 - 50
   - _____ 51 - 75
   - _____ 76 - 100
   - _____ 101 - 125
   - _____ 126 - 150
   - _____ 151 and above

2. Is your business classified as:
   - _____ wholesale
   - _____ retail
   - _____ manufacturing
   - _____ service
   - _____ construction
   - _____ mining
   - _____ marketing/sales
   - _____ financial
   - _____ transportation
   - _____ professional specialty
   - _____ medical/health
   - _____ agriculture/forestry
   - _____ education

3. Does your business use any kind of computers?
   - _____ yes
   - _____ no

4. If not, do you see your business using computers in the future?
   - _____ yes
   - _____ no
   - _____ don't know

5. What percentage of your employees graduated from the Tri-City area high schools?
   - _____ 0 - 25%
   - _____ 25 - 50%
   - _____ 50 - 75%
   - _____ 75 - 100%

6. Do you find current/prospective employees lacking in computer skills?
   - _____ yes
   - _____ no
   - _____ don't know

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By Powell

Employers' Survey
7. Have prospective employees been disqualified for a certain work position because of lack of computer skills?
   _____ yes
   _____ no

8. Is your business providing money for training current employees that are lacking in computer skills?
   _____ yes
   _____ no
   _____ don't know

9. What level of computer skills do you currently possess?
   _____ expert
   _____ proficient
   _____ somewhat proficient
   _____ unskilled
   _____ never touched one

10. Do you recommend every high school student take a computer course?
    _____ yes
    _____ no
    _____ unsure

11. If yes, how much computer training should high school students complete?
    _____ one semester
    _____ one year
    _____ more than one year
    _____ not at all

12. What type of computer instructions should students receive?
    _____ general knowledge
    _____ specific skills (please list) ________________________________
    _____ none at all

13. Should the skills, you listed in item 12, become a part of a high school graduation requirement?
    _____ yes
    _____ no
    _____ don't know
Comments: Please write any comments or suggestions that you may have regarding the computer skills level that local area high school students graduate with and that affects your business.

If you would like the results of this survey mailed to you, please include your name and address on the following lines.
Student Computer Skills Survey

**Purpose statement:** The purpose of this survey is to determine whether the Tri-City area high school graduates need to complete computer courses that will help them in obtaining and keeping a work position in the local employment area.

**Directions:** Place a checkmark (✓) on the blank that precedes your answer to the following questions.

1. What level of computer skills do you currently possess?
   - expert
   - proficient
   - somewhat proficient
   - unskilled

2. Where did you obtain your computer training? (Check all that apply)
   - high school
   - home
   - self-taught
   - adult education
   - computer companies
   - on the job
   - other

3. Were computer classes offered at your high school as a (n)
   - required course
   - elective course
   - not offered

4. Do you recommend every high school student take a computer course?
   - yes
   - no

5. How much computer training should be required for high school students?
   - one semester
   - one year
   - more than one year
   - not at all

6. If you took a computer class at your high school, do you feel that is has helped in getting your jobs?
   - definitely helped
   - helped somewhat
   - did not help
7. If employed since high school, have computer skills been a skill that you have used in your job?
   _____ yes
   _____ no

8. If employed, does your current job/business use any kind of computers?
   _____ yes
   _____ no

9. Has lack of computer skills been a barrier to you in the job market?
   _____ yes
   _____ no

10. Do you find employers lacking in computer skills?
    _____ yes
        _____ no
        _____ don't know

11. If employed, does your employer provide extra money for training current employees that are lacking in computer skills?
    _____ yes
        _____ no
        _____ don't know

12. Do you see future possible employment possibilities for you that will require computer skills?
    _____ yes
        _____ no
        _____ don't know

13. What computer skills should be stressed in greater detail in high school?
    _____ word processing
    _____ spreadsheet
    _____ databases
    _____ or a combination of the above skills (list __________________________)

14. Should high schools stress more computer literacy skills as a graduation requirement?
    _____ yes
        _____ no
        _____ don't know

15. What computer skills should become graduation requirements?
    List them: ____________________________________________________________
                ____________________________________________________________

Graduate Study
By Powell
Student Survey
Comments: Please write any comments or suggestions that you may have regarding the computer skills level that local area high school students graduate with and that affects your business.